

# **SUSTAINABLE ENVIRONMENT, MANIFESTATION AND AUGMENTATION**



**Dr. Arceloni Neusa Volpato**

**Dr. B. Balaji**

**Dr. S. Vasanthakumari**

**Dr. S. Karthikeyan**

**Dr. Divya R. Panjwani**

# SUSTAINABLE ENVIRONMENT, MANIFESTATION AND AUGMENTATION

## **Editors:**

Dr. ARCELONI NEUSA VOLPATO

Dr. B. BALAJI

Dr. S. VASANTHAKUMARI

Dr. S. KARTHIKEYAN

Dr. DIVYA R. PANJWANI

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Dr. Arceloni Neusa Volpato

Dr. B. Balaji

Dr. S. Vasanthakumari

Dr. S. Karthikeyan

Dr. Divya R. Panjwani

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- Dr. Arceloni Neusa Volpato
- Dr. B. Balaji
- Dr. S. Vasanthakumari
- Dr. S. Karthikeyan
- Dr. Divya R. Panjwani

**Editors**

## PREFACE

The world is facing unprecedented environmental challenges that are affecting the quality of life of people, ecosystems and economies. Climate change, biodiversity loss, pollution, and resource depletion are just a few of the issues that need to be addressed urgently to secure a sustainable future for generations to come. The complexity and interdependence of these issues require a multidisciplinary approach that brings together expertise from different fields of knowledge. This edited book aims to contribute to this effort by bringing together a collection of articles that explore the sustainable environment, manifestation, and augmentation from different perspectives.

This book focuses on the concept of sustainability, its historical development, and its current challenges. The authors analyze the relationship between human activities and the environment, and how to balance economic, social, and environmental goals in a sustainable way. They also examine the role of technology, governance, and education in promoting sustainable development.

The book also deals with the manifestation of environmental problems in different contexts, such as urban areas, natural resources management, and food production. The authors discuss the challenges of urbanization, the impacts of climate change on natural resources, and the role of agriculture in sustainable food systems. They also examine the social and economic dimensions of environmental problems, and how to ensure equitable and just solutions.

This book explores the augmentation of environmental sustainability through innovation, design, and entrepreneurship. The authors present case studies and examples of how new technologies, products, and services can contribute to sustainability goals. They also analyze the role of business, research, and policy in promoting sustainable innovation.

Overall, this edited book offers a comprehensive and interdisciplinary overview of the challenges and opportunities of sustainable development. The articles presented here provide a rich source of information and ideas for researchers, students, practitioners, and policymakers interested in the sustainable environment, manifestation, and augmentation. We hope that this book will inspire further research, discussion, and action towards a more sustainable future for all.

- Dr. Arceloni Neusa Volpato
  - Dr. B. Balaji
- Dr. S. Vasanthakumari
  - Dr. S. Karthikeyan
- Dr. Divya R. Panjwani
  - **Editors**

-

## FOREWORD

Sustainability is the need of the hour. With the ever-increasing global population and the depletion of natural resources, it is becoming imperative to adopt sustainable practices to ensure the well-being of our planet and its inhabitants. In this context, the edited book "**Sustainable Environment, Manifestation and Augmentation**" is a timely and much-needed contribution to the field. The editors of this book, **Dr. Arceloni Neusa Volpato, Dr. B. Balaji, Dr. S. VasanthaKumari, Dr. S. Karthikeyan, and Dr. Divya R. Panjwani** have put together an outstanding collection of articles that explore the various aspects of sustainable environment and its manifestation and augmentation. The book covers a wide range of topics, including sustainable development, climate change, energy management, waste management, and environmental policies and regulations.

One of the unique features of this book is its multidisciplinary approach. The editors have brought together a diverse group of authors from different fields such as engineering, science, social sciences, and policy studies. This interdisciplinary approach helps to provide a comprehensive understanding of the complex issues related to sustainable environment and its manifestation and augmentation. The articles in this book not only highlight the challenges that we face in achieving a sustainable future but also provide practical solutions and innovative ideas. The authors have presented their research and case studies in a clear and concise manner, making it accessible to a wide range of readers, from students to policymakers. The edited book "Sustainable Environment, Manifestation and Augmentation" is a valuable contribution to the field of sustainability. It brings together the latest research and practical solutions to some of the most pressing environmental issues of our time. I commend the editors and authors for their efforts and hope that this book will inspire further research and action towards a sustainable future.

- **Prof. Dr. Suresh Paul Antony**  
Indian Institute of Management, Tiruchirappalli



## INTRODUCTION

The world today is facing unprecedented challenges to maintain the balance between economic growth and environmental conservation. The need for sustainable development has never been more crucial than it is now, with the pressing concerns of climate change, biodiversity loss, and environmental degradation. Sustainability has become a global issue that requires immediate attention and action from all stakeholders, including policymakers, researchers, and society at large. This edited book, titled "**Sustainable Environment, Manifestation and Augmentation**", is a compilation of research studies and case studies that focus on various aspects of sustainability, including environmental management, resource conservation, and eco-friendly technologies.

The concept of sustainability originated from the Brundtland Report in 1987, which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Since then, the definition of sustainability has evolved to include environmental, social, and economic aspects, known as the triple bottom line. Sustainable development is no longer limited to environmental conservation but includes social equity and economic growth. The United Nations Sustainable Development Goals (SDGs) provide a global framework for achieving sustainable development by 2030, with 17 goals and 169 targets. This edited book focuses on the environmental aspect of sustainability, which is a critical component of achieving sustainable development. Environmental sustainability involves managing natural resources and ecosystems to meet the needs of the present and future generations while minimizing negative impacts on the environment. The chapters in this book cover a wide range of topics related to environmental sustainability, including environmental management, green technologies, renewable energy, waste management, and biodiversity conservation.

One of the critical challenges of environmental sustainability is the management of natural resources. Human activities, such as deforestation, mining, and overfishing, have significantly depleted

natural resources, resulting in environmental degradation and ecological imbalances. The first chapter of this book, "Sustainable Natural Resource Management for Environmental Conservation," discusses the sustainable management of natural resources, including forests, water, and land, to ensure environmental conservation and sustainable development. The chapter also highlights the role of community participation and cooperation in natural resource management.

Green technologies and renewable energy are essential for achieving environmental sustainability. Green technologies refer to technologies that minimize the negative impact on the environment while maximizing economic and social benefits. Renewable energy, such as solar, wind, and hydropower, is an eco-friendly alternative to fossil fuels, which are major contributors to greenhouse gas emissions. The second chapter of this book, "Green Technologies for Environmental Sustainability," focuses on the development and application of green technologies for environmental sustainability. The chapter discusses various green technologies, including energy-efficient buildings, sustainable transportation, and sustainable agriculture.

Waste management is another critical aspect of environmental sustainability. Improper waste disposal can have severe environmental and health impacts, such as water pollution, air pollution, and the spread of diseases. The third chapter of this book, "Waste Management for Environmental Sustainability," discusses the challenges and opportunities in waste management, including waste reduction, recycling, and waste-to-energy technologies. The chapter also highlights the importance of public awareness and education in promoting sustainable waste management practices.

Biodiversity conservation is essential for environmental sustainability. Biodiversity refers to the variety of life on Earth, including species, ecosystems, and genetic diversity. Biodiversity loss can have severe consequences for ecosystems, including reduced ecosystem services and ecological imbalances. The fourth chapter of this book, "Biodiversity Conservation for Environmental Sustainability," focuses on the conservation of biodiversity, including protected areas, wildlife

management, and conservation planning. The chapter also discusses the role of traditional knowledge and community participation in biodiversity conservation.

The concept of sustainability has evolved over the years and is now widely accepted as a crucial factor in maintaining the balance between economic growth, social development, and environmental protection. The sustainable environment is a complex issue that involves a wide range of factors, including social, economic, and environmental factors. In this context, the edited book "Sustainable Environment, Manifestation, and Augmentation" aims to provide a comprehensive understanding of the concept of sustainability and its application in various fields.

The book focuses on exploring sustainable practices that can help in managing natural resources, protecting the environment, and promoting economic growth. It emphasizes the importance of sustainability in achieving a better quality of life for present and future generations. The book provides insights into the challenges facing the sustainable environment and presents innovative solutions to address them. The book covers a wide range of topics, including sustainable energy, water management, waste management, sustainable agriculture, and sustainable urban planning.

One of the key themes of the book is the manifestation of sustainable practices in various fields. It emphasizes the need to integrate sustainability into various aspects of our lives, such as agriculture, urban planning, transportation, and energy. The book provides examples of sustainable practices in different fields and emphasizes the need for collaboration between various stakeholders to achieve sustainable development.

The book also emphasizes the role of technology in augmenting sustainability efforts. It provides insights into the use of modern technology such as IoT, AI, and blockchain in managing natural resources, reducing waste, and promoting sustainable practices. The book also emphasizes the importance of education and awareness in promoting sustainable practices and inculcating a culture of sustainability.

The contributors to the book include experts from various fields, including academia, industry, and government. They provide a diverse range of perspectives and insights into the challenges and opportunities facing the sustainable environment. The book aims to serve as a valuable resource for researchers, policymakers, and practitioners who are interested in sustainable development.

In conclusion, the edited book "Sustainable Environment, Manifestation, and Augmentation" provides a comprehensive understanding of the concept of sustainability and its application in various fields. The book emphasizes the importance of sustainable practices in managing natural resources, protecting the environment, and promoting economic growth. It provides innovative solutions to address the challenges facing the sustainable environment and emphasizes the need for collaboration between various stakeholders. The book also emphasizes the role of technology and education in augmenting sustainability efforts. It is a valuable resource for anyone interested in sustainable development and provides insights into the challenges and opportunities facing the sustainable environment.

- Dr. Arceloni Neusa Volpato
  - Dr. B. Balaji
- Dr. S. Vasanthakumari
  - Dr. S. Karthikeyan
- Dr. Divya R. Panjwani
  - **Editors**

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## Cyberbullying and The Laws: A Legal Barrier To Prevent Cyber Crimes

**Nashra Javed**

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh- 226026

**Tasneem Ahmed**

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh- 226026

**Mohammad Faisal**

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh- 226026

### Abstract

*Every aspect of human life has been impacted by the internet, which has made it simpler to link people from all over the world and has made knowledge available to many people with the simple click of a mouse. The unintended repercussions of cybercrimes also evolved along with technology. Only a few instances of possible cybercrimes—including cyberstalking, cyberbullying, spoofing, phishing, and financial fraud—have been identified; there are undoubtedly many more. Cyberbullying is a form of electronic communication that has long-term consequences, harms a person's reputation or privacy, and threatens or harasses them. Through the use of electronic media when someone tries to cross the limit in an unlawful manner that hurts another person's life or reputation. In reality, given the times we live in and the pandemic we're battling, the internet has shown to be pretty amazing in terms of assisting folks who are quarantined in their houses as well as assisting in the dissemination of critical information. In a nutshell, the internet has put the entire world at our fingertips. However, just as every coin has two sides, technological growth has also brought the unanticipated event of cybercrime. One such crime that is turning out to be a major concern for everyone is cyberbullying. It is a type of internet-based harassment in which one individual purposefully harasses another person. Cyberbullying isn't just a problem for adults; it's also a problem for tweens, teens, and youths. It may happen at any time and in any location; even our own homes are not immune to cyberbullying. The internet's relatively new type of bullying has presented an interesting dilemma for members of the court. Arguments are made that the current laws are sufficient to solve the issue and that enacting new rules would restrict people's freedom of speech. Others, on the other hand, contend that new legislation is required since technology has advanced beyond the scope of the current rules. The goal of this study is to ascertain the prevalence of cyberbullying and if the most common tactics used by cyberbullies are covered by existing laws.*

**Keywords:** Cybercrimes, Cyberbullying, Cyber Stalking, and Cyber Laws.

### 1. INTRODUCTION

Cyberbullying is described as the use of a mobile device or the Internet by one individual or a group of people intending to threaten, embarrass, or degrade another person. [1]. Bullying online has the same potential for harm as bullying in person. Cyberbullies may mock certain facets of an individual's life, including photos of the victim, images of goods that interest them, or updates on their locations. Cyberbullies pick their targets meticulously and publicly embarrass them on social media, typically by posting nasty or humiliating remarks. The major trait of cyberbullies is to humiliate whomever they want in public at any time of day using a plethora of technologies. The use of cell phones, instant messaging platforms, social media networks, tablets, interactive gaming websites, and even email are examples of such tools through which a perpetrator bullies the victim [2]. As more youngsters are using these platforms, it is easier than ever to fall prey to prejudices or even become the key suspect. Cyberbullying may be as traumatic as conventional kinds of bullying, if not more so. It is persistent in that a victim can be messaged or abused at any hour of the day or night. Bullying messages can be found on the victim's mobile device, in group discussions, and on social media platforms including WhatsApp, Facebook, YouTube, Twitter, Snapchat, Instagram, and TikTok. Additionally, prevalent in gaming communities is cyberbullying. As they say, it's "forever on the internet." False stories and defamation images can affect every element of a young person's life [2],[3].

Cyberbullying is a source of emotional anguish since it targets a young person's character and self-esteem. They can lead to feelings of humiliation, shame, worry, and sadness. Several teen suicides have been linked to cyberbullying. A student in high school, for example, clicks an ugly photograph of a classmate [5]. They email it (by mobile phone) to all of her pals with harsh comments. After that, scores of students mock the selected student. Usually, a group of individuals cyberbullies a victim and the victim has to deal with the situation all alone. The photograph becomes viral among others and strangers get the advantage to join in the taunting,

creating a nightmare situation for a victim who is acutely aware of peer pressure. This type of situation has disastrous consequences. Some common tricks by perpetrators are [4] (a) Circulating a mean post or unflattering picture/video of any classmate and making fun of it, (b) Spreading rumors on social media platforms for bullying someone, (c) Posting threatening messages to the victim, (d) Social exclusion of someone for their sexual orientation or gender identity (e) Sending hurtful messages to victim provoking to kill themselves, and (f) Pretending to be someone else in online conversations and then expose them purposely. The most prevalent sites where cyberbullying usually occurs are listed in Table 1.

**Table 1 – Cyberbullying in Social Media**

Social Media	Cyberbullying
Instagram	42%
Facebook	37%
Snapchat	31%
WhatsApp	12%
Youtube	10%
Twitter	9%

Most individuals are unaware that cyberbullying is against the law. Up until the middle of the 2000s, there were no specific laws in place to deal with offenses related to cyberbullying. In contrast hand, lawmakers have not remained oblivious to the rise in suicides and violent occurrences at schools. Law enforcement is entrusted to school officials in several places. In these cases, cyberbullying is generally viewed as a civil rather than a criminal issue. Existing criminal harassment legislation has allowed some prosecutors to pursue cyberbullying in public schools. Almost half of all states currently have cyberbullying laws [3]. The majority of states also prohibit electronic harassment. Only a limited number of states deal with the punishment for cyberbullying behavior, and some schools address cyberbullying cases that happened inside or outside the campus. Depending on the state, victims may be able to seek legal redress or convince prosecutors to file charges after taking the conduct seriously enough.

#### *BULLYING AND CYBERBULLYING*

Cyberbullying has evolved in recent years as a unique and particularly destructive method of harming people. Bullies often humiliate victims in front of the public using tools like tweets, SMS, and Web postings. The majority of authorities' view cyberbullying as a kind of verbal and interpersonal bullying that satisfies the same definitional criteria. As per the Centers for Disease Control and Prevention, cyberbullying is explained by three major factors: (a) deliberate aggressiveness of an individual, (b) is their imbalance of power between the perpetrator and the victim, and repetitive acts of violence from the bully. Each of these demands raises legal and policy concerns. Bullying is described as purposeful antagonism and can take the form of any type of abuse that can be physical, verbal, or social abuse. Due to this, other crimes including robbery, extortion, crimes related to hate, and sexual harassment are commonly mistaken for bullying. It might be challenging to contrast bullying with teasing, horseplay, or confrontation in its more subdued manifestations. It might be difficult to distinguish between children's friendship disagreements and significant social exclusion when it comes to relational or social bullying [5]–[7].

The second characteristic that differentiates bullying from other types of intergroup hostility is the power disparity between the attacker and the victim [8]. On the other hand, determining a power imbalance is challenging. Physical bullying may be assessed for height and strength, but most bullying occurs verbally or socially, that requires an assessment of peer status, self-confidence, or cognitive aptitude [6], [9]. Sometimes less obvious factors like the victim's sexual orientation, a disability, or membership in a certain racial or cultural group contribute to their lack of power. Another issue is that interpersonal power fluctuates depending on the circumstance [7]. Bullying requires repeated conduct as its third criterion. Enforcing bullying rules and regulations may become more challenging if observers must find many instances of abusive behavior before establishing that bullying has occurred [10], [11]. The majority of definitions agree that bullying may be defined as a single incident if it causes enough harm or is likely to happen again. The negative and psychological effects are depicted in Table 2.

**Table 2 – Negative Impact of Cyberbullying**

Negative Impact	Percentage
Developed social anxiety	41
Developed depression	37
Had suicidal thoughts	26
Deleted their social media profile	26
Self-harmed	25
Stopped using social media	25
Skipped class	20
Developed an eating disorder	14

Bullying online is more frequent than you would believe. It is a very serious hazard to many teens, young adults, and social media users. The National Center for Education Statistics estimates that 20.2 percent of all pupils have experienced bullying. Youth who identify as LGBTQ (lesbian, gay, bisexual, and transgender) have been more vulnerable to cyberbullying, according to one study from National Center for Education Statistics which is published in 2020 [12]. Only about a third of non-LGBTQ students have experienced cyberbullying, compared to 56 percent of LGBTQ students, according to the Cyberbullying Research Center [7]. Around 16% of kids have cyberbullied others at some point, according to the Cyberbullying Research Center [13], [14]. Admissions estimate that as of 2020, 5.1% of students bullied others in some capacity. One of the trending searches by teachers was cyberbullying as the top internet problem for students in one of the Google research, more than the terms privacy, inappropriate content, and other problems [9]. As per the research by the Centers for Disease Control and Prevention, cyberbullying may have disastrous effects on both victims and bullies. Bullies are more likely to experience later-life worry and depression, as well as poor academic performance and the chance of dropping out. Bullies are also more prone to develop violent or drug addiction. There are several varieties of cyberbullying, all of which are punishable by law. Some of the most prevalent are included in Figure 1.

**Figure 1 - Common Types of Cyberbullying**

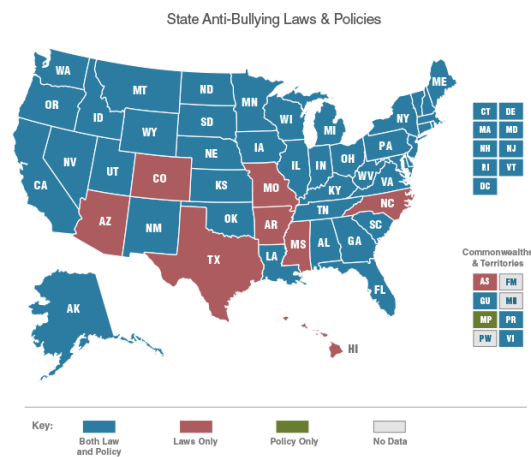
Cyberbullying differs from traditional bullying in key ways, making it a particular concern for parents and educators. What distinguishes bullying from cyberbullying? may be determined with the use of the qualities given below. Internet bullies could be able to hide their identity, in contrast to conventional bullies. Bullies may be more violent and brutal online due to the anonymity of the medium, and the victim has no way of knowing who is harassing him or her. Bullying often ends when the victim is removed from the negative social milieu. Contrarily, people can now connect from anywhere at any time thanks to smartphones, laptops, and other smart gadgets [9]. The ability of cyberbullies to harass their victims around the clock, seven days a week, may make it difficult for them to leave by returning home or switching schools [11], [13].

Only individuals who interact with the victims are aware of the abuse in traditional bullying. However, when anything is shared or put online, it is very easily available for anybody to view. This raises the possibility of receiving disapproval or harm from others. The anonymity offered by virtual surroundings makes this worse; whereas bullying can be carried out covertly or out of plain sight to avoid punishment in person, cyberbullies do not have to be concerned about being caught in the act since their identities are unknown. Due to the difficulty of deleting online content, cyberbullying may have a lasting negative impact on both the victim and the abuser. Even if the content is deleted or removed from the originating website, screenshots of it may still be distributed elsewhere [13]. For both bullies and victims, this may have a considerable effect on upcoming professions, college admissions, and relationships [9]. Since mentors, parents, administrators, professors, and instructors do not have sufficient access to kids' online activity, cyberbullying may be harder to see. They are unable to see the

internet assault in progress. Bullying may go unnoticed by parents and teachers unless it is brought to their attention. Despite the evident contrast between cyberbullying and bullying, cyberbullying is still bullying, with the same impacts and risks, if not intensified in severity and duration[13]. Even though it is not as common as traditional bullying, cyberbullying must be taken seriously [15].

## 2. CYBERBULLYING LAWS IN DIFFERENT COUNTRIES

In recent years, cyberbullying has become such a pervasive issue that all tiers of government now have policies and laws in place to address it. Law in the United Kingdom in the UK, bullying is not considered a crime. Cyberbullying is a crime that is punishable by law. The Protection from Harassment Act of 1997 is applicable for persistent offenses. It prohibits harassment and provides a civil remedy for individuals who transgress the prohibition. Threats are illegal under Section 4. Rude and offensive communication is prohibited by the 2003 Communication Acts. Threatening electronic messages must comply with the Malicious Communication Act of 1988. The Public Order Act of 1986, the Obscene Publications Act of 1959, the Computer Misuse Act of 1990, and the Crime, Defamation, and Disorder Acts of 1952 and 1996 all provide further remedies. Law in the United States to address it, almost every state has made changes and passed laws. Federal law 33 is known as the Megan Meier Cyberbullying Prevention Act. Regulations in Europe European data protection law addresses identity theft, cyberbullying, and online abuse [8], [14]. International perspective The Human Rights Commission, UNICEF, and the United Nations are pleading with nations all over the world to adopt a coordinated strategy. Figure 2 illustrates the state anti-bullying laws across America [16], [17].



**Figure 2 - State Anti-Bullying Laws & Policies**

### *Cyber Laws in India*

Regarding cyberbullying and its manifestation, Indian law is silent. India is currently ranked third internationally in terms of cyberbullying instances due to the continually increasing number of incidences. The legislation that addresses computer-related concerns is the Information Technology Act of 2000, as revised in 2008. Strangely, the IT Act doesn't address the risks and crimes associated with online communication. Everything has both advantages and disadvantages. Similar to other situations, communication has possible risks and restrictions [18] [19], [20].

### *Some Legal Remedy under Information Technology Act for Cyberbullying*

Cyberbullying is a disease that causes long-lasting damage. It's challenging to handle. It is not a remedy nor a means for the victim to get over it to keep quiet and let the bullies go. If you let bullies go without reporting them or doing action against them, they can attack you or become hostile since they are no longer in danger. There are legal options for dealing with cyberbullying. A civil or criminal remedy is available. Cyberstalking became a criminal violation after the Indian Penal Code of 1860 was amended in 2013[21]. The various treatments are listed in the next section. Chapter 11 of the Information Technology Amendment Act deals with transgressions, including cyberbullying, which has no precise definition[2]. Nonetheless, under sections 66 and 67 of the act, there are remedies available [22].

### *Remedies under the Indian Penal Code*

The Indian criminal law included remedies for libelous acts and acts that offend women's modesty. The Act was amended in 2013, adding new offenses as well as making cyberstalking illegal. According to section 354C, anybody who photographs or observes a woman at a place where she expects privacy or when she is engaged in a private action and assumes no one is looking is subject to a one- to three-year jail sentence as well as a fine [2]. A term of three to seven years in prison and a fine is imposed for a second or later conviction. An image-taker who engages in cyberbullying may be punished under this section as well as other sections if he transmits or publishes the photographs. Section 354A makes it unlawful to engage in sexual harassment. Stalking is a crime that is sanctioned under Section 354D. A guy who approaches tries to get in touch with or observes a woman's online behavior after she has demonstrated disinterest risks up to three years in prison [9], [23] and a fine on the first conviction. He faces a five-year jail sentence and a fine if convicted a second or subsequent time[21].

Although there isn't a specific law in India that establishes guidelines for preventing cyberbullying, laws like Section 67 of the Information Technology Act do something to address the problem. Under section 67 of the act, publishing or conveying obscene content in electronic form [19] is punishable by up to five years in prison and a fine of up to 10 lakh rupees. The following sections of India's cyberbullying legislation apply, aside from Section 67 of the IT Act [20], [23], [24]:

- Section 507 IPC - The section states that the person issuing the threats might spend up to two years in jail if they threaten someone in a way that results in criminal intimidation. Because the word anonymous is used, this section also covers anti-bullying and cyberbullying [24], [25].
- Section 66 E of IT Act - This law makes privacy violations illegal. The section states that anybody who intentionally violates another person's privacy by emailing, recording, or publishing their private images might spend up to three years in jail or pay a fine of up to three lakhs [23].

Sec 66A allows relief from transmitting offensive communications via communication services and other means. Section 66A of the Information Technology Act, 2000 was knocked down by the Supreme Court in Shreya Singhal and Ors. Vs. Union of India. The court ruled that the cyber law clause was unclear and unlawful since it was thought to limit Indian residents' freedom of speech. Whereas Sec 66C deals with the identity theft of an individual, Sec 66D deals with impersonation using computer resources, Sec 66E with privacy violations, Sec 67B with penalties for posting or sending content portraying children or sexually explicit acts, and Sec 72 with breaches of confidentiality and privacy. The national web portal <https://www.cybercrime.gov.in/> helps the victims to report cybercrimes[20].

The Indian penal law allowed remedies for defamatory conduct or an act that violated a woman's modesty. In 013 the Act was amended by adding new offenses as well as making cyber stalking illegal. The following part of the IPC deals with some sort of cyberbullying. Printing, selling, or promoting highly immoral or scurrilous content or matter designed for blackmail [26] is prohibited under Section 292A. Section 354 A - Making sexually charged statements constitutes sexual harassment. A cyberbully who takes images may face penalties under Section 354C, and if he transfers or publishes the photos, he may face penalties under this and other sections. Following and contacting (or attempting to contact) a woman (Section 354D). E-mailing libelous messages is covered under Section 499. Sec. 500 – email abuse, Sec. 503 – sending threatening emails, Sec. 509 – insulting a woman's modesty with a word, gesture, or deed, and Sec. 507 – criminal intimidation through anonymous communication. Many violations still need to be covered by the IT Act in light of the current societal situation, since technological progress and innovation is unbelievably quick. Offenses such as cyberbullying, chat room abuse, and viewing pornographic websites are not included under the IT Act, although some of these issues are addressed by existing legislation and other laws.

### **3. PREVENTION AND SUPPORT SERVICES**

Parents and schools must work harder than ever to avoid cyberbullying, intervene when it occurs, and respond correctly to both victims and bullies as it grows more widespread and popular among teenagers and young adults. A wonderful way to start is by spreading knowledge about cyberbullying [13], [27].

#### *Guidelines for Appropriate Internet Use*

Even before youngsters are mature enough to access the internet, start conversations about internet safety. Keep the lines of communication open with your teen. You'll probably need to have additional conversations as their online behaviors change and new security threats emerge. Before your teen goes online, you should talk about them about the following important topics:



*Privacy:* Teach your adolescent the value of maintaining their online privacy. Make sure children are aware of the significance of never giving out personal information, including addresses and phone numbers, online. Make sure kids are aware that they should never tell anybody, including close friends, their account passwords.

*Strangers:* Tell them that strangers on the internet follow the same laws as strangers in person. Make sure students understand that they should never engage in an online conversation with strangers. Inform them that they can never tell what someone is up to and that some people may attempt to become their friends to deliberately hurt their emotions [13].

*Permanence:* Remind your student that even when something is removed from the internet, it cannot be completely removed. Inform them that they have no control over who will see their work and that they should be cautious before publishing anything online. Establish clear expectations for how your young adult should use the internet. Make it clear that you want them to act responsibly online just as they would in person. Consider signing a parent pledge and having your adolescent sign a youth pledge. Remind them that breaking the commitment might result in repercussions, and urge them to assist you in holding yourself responsible. Encourage children to ask questions if anything they encounter online is unclear.

#### *Steps To Be Followed When Dealing With A Cyberbully*

Give your kid the means to cope with anyone online that is disrespectful to them, including a cyberbully [13]. Because notifying an adult about cyberbullying can be challenging for teenagers, they must be prepared to address the matter on their own. When engaging with a cyberbully, emphasize the need for common sense:

*Try Not To Engage:* Encourage your teen to stay away from cyberbullying. It could be challenging to ignore intentionally hurtful remarks, but reassure your kid that doing so will only encourage the bully's behavior and that they are only saying it to get a reaction. The discrepancy is greater. Give your child the tools to deal with any online bully who is being unkind to them. Teens must be prepared to handle the issue on their own because coming forward to an adult about cyberbullying may be difficult. Stress the need of using common sense when dealing with a cyberbully: If your kid ignores them, the bullying will stop [13].

*Prefer To Always Block Them:* Inform your child that the social media accounts and phone numbers of bullies should be blocked. This is crucial in particular if your adolescent struggles to avoid bullies or if they continue in doing so [13]. Ask that the bullies be banned as well since they could make new accounts or recruit others to torment your child.

*Frequently Change The Contact Information:* Inform your child that you may always alter their contact information if ignoring and blocking cyberbullies does not help or makes their attempts worse. Assertively thank them for being willing to assist you in updating their phone number and email address.

*Maintain A Proper Record:* Make it a point for your teen to keep note of all online bullying messages, comments, and other forms of harassment. Teach them how to take screenshots and avoid removing any text [5]. If you need to report the bullying to the authorities, documentation of the incident is crucial. It could be easier said than done to urge your teen to spend more time online. Your teenager may be able to prevent cyberbullying by putting down their devices and concentrating on something else.

#### *Monitoring Social Media Activity*

Strike a balance between keeping an eye on and letting your adolescent use the internet. How carefully you will be watching your teen should be discussed with them. The thought may not excite them, but they explain that it is necessary for their online security. Always be open and honest with your child if you decide to keep an eye on their text messages or social media profiles. Do not snoop on personal items or messages without your teen's consent; doing so is a serious violation of their privacy. Apart from relying on technology to combat cyberbullying, teachers, parents, and students must take proactive steps to avoid such behavior. There may be commercials on the impacts and ideas of cyberbullying. Anti-ragging cells, as well as school signs, can assist to avoid it. Students should be taught about cyberbullying, including its causes, repercussions, and impacts. They should teach pupils about internet ethics and provide information about cyberbullying legislation. Schools may avoid this by holding activities or interactive sessions to introduce students to the concept of cyberbullying. The ability of schools to interfere with a student's off-campus activities should be made clear in their policies [1] behavior if it has an impact on the students on campus[2]. Additionally, the school must have a teacher and a

counselor who can look into cyberbullying and help the victim cope with it. Additionally, the school should keep an eye on pupils' online behavior and implement the proper sanctions as necessary.

Parents should aid their children if they have experienced cyberbullying and should explain to pupils what it is. Parents should monitor their children's online behavior and use of computers [1]. Additionally, they ought to establish internet usage guidelines for the household. They ought to keep up good contact with the kid and urge him or her to come forward if they're being bullied. They should also save the proof and provide the youngster advice on how to prevent or overcome it. They ought to keep him occupied and inspire him to do good deeds. They ought to file a grievance as soon as feasible. Parents should also tell the administrators at the school. They might also file a case to ask the court for protection [1], [12].

Schools may avoid this by hosting activities or interactive sessions to introduce students to the concept of cyberbullying. Additionally, schools should make clear in their policies that they have the right to step in and control a child's behavior if it affects children on campus [2]. The school should also have a teacher and a counselor who can look into cyberbullying and help the victim cope. The school should also keep an eye on students' online behavior and, if required, implement the proper disciplinary measures. A crucial requirement for schools is guidance on efficient preventive and intervention programs. School administrators are besieged with programs and services that promise to reduce bullying but lack scientific proof [6], such as motivating speakers, encouraging movies, guidebooks, and curricula. To ascertain the success of such undertakings, more research is required. Meanwhile, mounting research points to the efficacy of school-based strategies for reducing student hostility and disruptive conduct [15].

#### 4. RECOMMENDATIONS

Although the creation of anti-bullying policies in schools is mandated by almost all states, little is known about how effectively they are put into practice [28]. State anti-bullying laws mandate that school policies follow the law, but they also need to represent best practices supported by scientific research. We suggest that school bullying rules include the following fundamental components based on the data: (a) According to state law, all pupils should be shielded from bullying and harassment by their peers. Bullying should be separated from peer antagonism and harassment due to study findings revealing its varying effects and the need for specific prevention and response techniques. Bullying should be defined in a way that encourages schools to employ scientific assessments and treatments to distinguish it from other types of peer victimization [2], [6], [7]. (b) Bullying should be discussed with students and parents, and they should be provided with many choices for seeking help. Because many children and adolescents are reluctant to report bullying that they witness or experience [6], legislation should include characteristics that make reporting simpler, such as anonymous reporting mechanisms. (c) Any alleged or reported bullying has to be thoroughly investigated. According to the Office for Civil Rights of the US Department of Education [6], this should include "immediate intervention strategies for protecting the victim from additional bullying or retaliation, notification to parents of the victim or reported victim of bullying and the alleged perpetrator, and, if appropriate, notification to law enforcement officials." (d) Why Due to the wide diversity of forms and severity, bullying should not be classed as a criminal act. Bullying is generally adequately dealt with through disciplinary and therapeutic techniques at school. The context and intensity of the behavior should be taken into consideration when dealing with bullying that crosses the line into unlawful action, such as violence or extortion. School officials must follow the law when bullying conduct involves sexual harassment or other civil rights violations. (e) Regardless of the circumstance or intensity of the behavior, schools shouldn't use zero-tolerance rules that impose severe penalties for breaking a school rule. Instead, bullying should result in progressive repercussions based on the circumstance, the seriousness of the action, and the qualities of the student [6], [7]. (f) School policies should require staff to check bullied kids for mental health and academic difficulties and to support and send them as needed to outside resources [6]. Bullies should get support and referrals, and staff members should be instructed to do so. (g) All employees should receive training on how to prevent, recognize, and deal with bullying in accordance with school standards [6]. Recognizing the connection between bullying and criminal behavior would be a part of this training. (h) Evidence-based prevention and intervention programs should be easier to access thanks to school policy. Schools should be wary of initiatives or tactics that just rely on emotional appeals and offer no proof of their efficacy [6], [7], [29].

**Bullying in Schools and Colleges in India: Anti-bullying or Cyberbullying Laws:**

- i. Although there is no specific rule in India to deal with school bullying, there is a pressing need to do so [1]. Bullying is very widespread in Indian schools, especially boarding ones. In schools, bullying must be eliminated. To penalize pupils who support anti-bullying initiatives, the HRD government has established anti-ragging committees in schools. Rustication might be used as punishment in the worst cases [19].

- ii. The rules of the Code of Criminal Procedure, 1973 may likewise be used to prosecute a college student who engages in cyberbullying. Bullying at schools, however, is not covered under either the Indian Penal Code or the Code of Criminal Procedure [1], [16]. To counteract bullying at the higher education level (colleges and universities), the "UGC Regulations on Curbing the Menace of Ragging in Higher Education Institutions, 2009" [30] were adopted.
- iii. The rules of the Code of Criminal Procedure, 1973 may likewise be used to prosecute a college student who engages in cyberbullying. Bullying at schools, however, is not covered under either the Indian Penal Code or the Code of Criminal Procedure [19].
- iv. Why are schoolchildren exempt from anti-bullying or anti-cyberbullying legislation? Because schoolchildren are considered juveniles, they are treated differently in our country under the Juvenile Justice Act[31]. Make contact with respected cybercrime lawyers to learn more about bullying and how to stop it [1].

## 5. CONCLUSION

It could be more challenging for teachers, administrators, and parents to identify cyberbullying since they may not have access to their kids' online activities as the abuse might not be audible or visible to them. If nobody speaks up, parents or teachers might not be aware that bullying is taking place. Cyberbullying is still bullying, even though there is a clear separation between the two, and the risks and consequences are the same, if not intensified and prolonged. Cyberbullying needs to be taken seriously even when the abuse takes place online rather than in person. Cyberbullying is one of the transgressions that have to be addressed right away since it has the potential to get unpleasant in the future. Policymakers should consult a psychiatrist while drafting cyberbullying legislation since such a crime has such a severe effect on a child's mind. The laws should include both the psychological mindset of the people who are involved and the legal expertise of law enforcement personnel. Without legislation, many cyberbullies would go unpunished, leaving victims to deal with the fallout and weakening the idea of justice. In our conclusion, we make the case against ineffective disciplinary procedures and for a higher emphasis on evidence-based practices. Rules for schools, colleges, universities, and offices should be based on industry best practices. It is foolish to depend solely on criminal sanctions for bullying because it may take many different forms and range in intensity so widely. The best approach would seem to include education, interventions in schools, and governmental reform that results in cultural change. This study recommends that politicians and lawmakers support the notion that bullying is an impediment to all children's right to public education and that cyberbullying is a social injustice.

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## Mutation Based Cuckoo Search Optimization and Linear Contrast Stretching for Off-Line Handwriting Text Recognition

Dr. M. Sivasankari

Assistant Professor, Department of Computer Applications  
Don Bosco College of Arts and Science, Keela Eral, Thoothukudi District, Tamilnadu

### Abstract

*Interest in digitizing pre-digital books and papers has risen in recent years, mainly because of the broad usage of digital technologies. Document image analysis methods for handwritten documents (page segmentation, keyword spotting, OCR and so on.) weren't as advanced as those for printed texts in most of these digitization efforts. Consequently, there is a pressing requirement to create new methods for understanding, indexing, and searching manuscripts. Handwriting identification is critical to the digitization process and has been the subject of intensive study for many years. As a result of the data's cursive style and the lack of distinct letters, handwriting recognition is complex. To overcome these drawbacks, one novel framework for offline character recognition is designed in this paper. In which Enhanced linear contrast stretching is used to enhance the input characters. And then, Scanning and Skeletonization will be performed on the input to minimize the foreground regions in a binary image. Then edge detection is computed using adaptive variance selection based canny edge detector method, which increases the visibility of the edge region. Statistical features are extracted using improved GLCM features. Then mutation-based improved cuckoo search is introduced for feature selection to reduce the time consumption. Finally, offline handwritten text recognition will be performed by means of a Hybrid Convolutional Neural Network with Improved Long Short Term Memory (LSTM) neural network (HCNLTM). The simulation outcomes indicated effectiveness of suggested model with respect to precision, accuracy, recall, and f-measure.*

**Keywords:** *Handwritten documents, digital technologies, Handwriting recognition, enhanced linear contrast stretching, edge detection, and GLCM features.*

### 1. INTRODUCTION

Handwritten documents are still common, despite the rise of typewriters and computers, because of personal preference and technical difficulties in converting all texts to digital text. Despite their legitimacy, handwritten documents eventually reveal a variety of physical flaws. It's also difficult to read and understand because handwriting differs from one person to another. For the time being, the most frequent methods for converting handwritten text to digital form are manual typing or taking a photograph of the text. However, neither approach is better because typing by hand takes longer, and picture capture still has the drawbacks of handwriting [1,2]. Most related work depends on text segmentation down to the word or character level, which means that the system can only predict one word or one character per input. This research focuses on offline handwritten word identification using deep learning for image processing [3,4].

In this, deep learning has been applied to OCR and handwriting recognition by many academics. It's common to categorize handwriting recognition solutions as either "offline" or "online." Using online recognition, a two-dimensional coordinate system is used to preserve the order of the strokes in the text input. An optical scanner captures a single image of the entire written text in offline recognition. [5,6] Offline recognition will be used in this project. It is improving input characters with Enhanced linear contrast stretching. Scan and Skeletonize the image to remove the foreground regions and create a binary image. The adaptive variance selection-based canny edge detector approach is then used to calculate edge detection, increasing the visibility of the edge region. Improved GLCM features are used to extract statistical features. It is then used for feature selection in a mutation-based improved cuckoo search. Finally, the recognition of handwritten text will be carried out with HCNLTM neural networks [7,8].

### 2. LITERATURE REVIEW

This section reviews different methods for offline handwritten text recognition. Zhang et al. [9] proposed a new adversarial feature learning (AFL) approach that integrates past knowledge of printed material and writer-independent semantic characteristics to enhance the accuracy of HCR on limited training data. Unlike existing handmade feature techniques, the proposed AFL method automatically utilizes writer-independent semantic characteristics and standard printed data as prior knowledge.

Khan et al. [10] introduced a novel idea of similarity and dissimilarity GMM. DGMM shows the difference between the writer's styles and some diverse writing styles on the other. This concept assumes that handwriting from similar author will have more comparable textual patterns than handwriting from other authors. suggested method has been thoroughly tested on 3 English, 2 Arabic, 1 hybrid language databases, as well as findings reveal that it outperforms conventional methods. Akramand Khalid [11] presented an offline handwritten Arabic text recognition system, built without explicit segmentation on HMM Toolkit. Preprocessing is initial stage in which data is fed to the system subsequent to quality upgrades. after that, using the sliding window technique, a collection of characteristics (local density features and feature statistics) is extracted. The generated feature vectors are then fed into HTK. Finally, "Arabic-Numbers" and IFN/ENIT is utilized to assess accuracy.

Roy et al. [12] proposed a new method for Bengali handwritten word recognition using HMM. Character segmentation in the Bangla script is complex because of the script's many complicated elements, such as headlines, vowels, modifiers, etc. Vowels and compound letters also complicate the effort of segmenting words into characters. These issues can be addressed using a new strategy that uses zone-wise word breakup followed by HMM-based recognition. These zones are referred to as "upper," "middle," and "lower" zones. HMM is used to simulate the components in the intermediate zone. The number of separate component classes in the Bangla character set is reduced due to this zone segmentation approach. Individual component boundaries are defined in the middle zone by using an HMM-based forced alignment in this area. Different zones will be added to the segmentation paths as time goes on. The suggested technique outperforms the bespoke HMM-based recognition method on 10,120 Bangali handwritten words.

Rajnohaet al. [13] suggested a technique for pre-processing and normalization data and optical character recognition depending on SVM algorithm. Models for forensic purposes and author identification have been trained and statistically analyzed, where we have emphasized diverse writing styles by the same characters. Without any additional post-processing, such as a spellchecker, the best system obtained 92.86 %. The use of several categorization models for character recognition has also been shown to boost accuracy over a single model method.

Zhong et al. [14] designed a streamlined version of GoogLeNet for image classification with deep architecture, named HCCR-GoogLe Net. Only 7.26 million parameters are involved in the HCCR-GoogLeNet. ICDAR 2013 offline HCCR competition database was used for the experiments. The designed HCCR-GoogLeNet approaches attain new prediction accuracy is 96.35 % and 96.74 %, correspondingly, exceeding the preceding outcome with a massive difference.

Nair et al. [15] developed a technique to construct mid-level image representation for text in Washington and Moore database for reusing weights from sections on IAM offline handwritten database. Regardless of changes in writing style and fonts, the transferred representation captures a Spatio-temporal representation, which leads to much superior recognition outcomes. Furthermore, the model is assessed with varied fine-tuning samples to support the notion that accuracy does not primarily rely on the number of samples.

### **3. HYBRID CONVOLUTIONAL NEURAL NETWORK WITH IMPROVED LONG SHORT TERM MEMORY BASED OFFLINE HANDWRITTEN TEXT RECOGNITION DESIGN MODEL**

This section explains the suggested approach in detail. The first stage is carried out as three processes; preprocessing is performed using Enhanced linear contrast stretching to enhance the input characters; then scanning and Skeletonization is performed to reduce the foreground regions in a binary image, and finally, the edge detection is computed using adaptive variance selection based canny edge detector method to increase visibility of the edge region. The second one is Statistical features extraction using improved GLCM features. The third one is mutation-based improved cuckoo search for feature selection. The fourth one is offline handwritten text recognition will be performed Using HCNILTM. The whole structure of the new model is shown in figure.1.

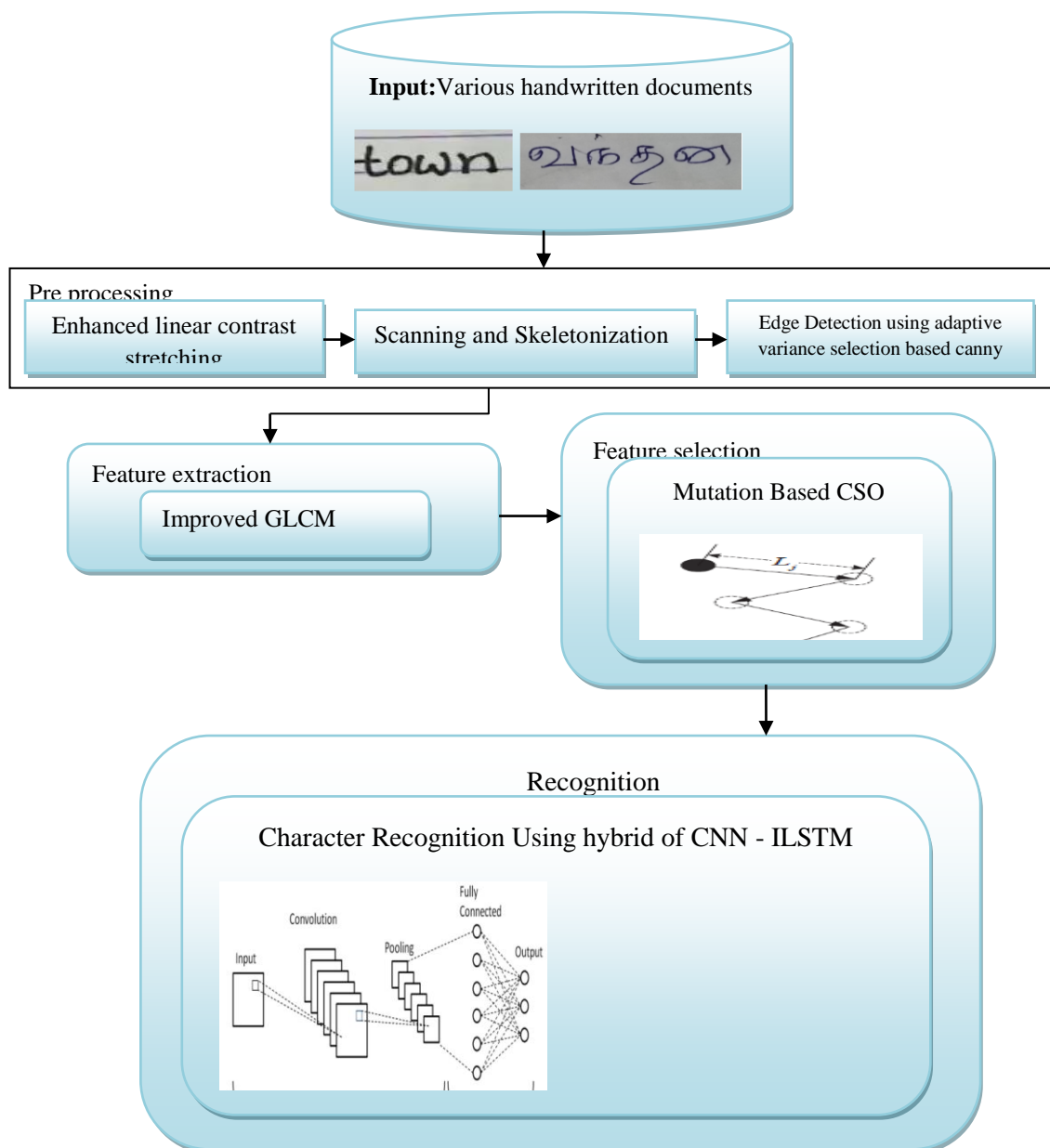


Figure 1 - Complete architecture of suggested mode

*Input data*

The data comprising 30 characters of Tamil and English from 12000 samples are gathered from various handwritten documents. For training, 9000 samples (300 samples \* 30 characters) are collected, and for testing purposes, the remaining samples 3000 samples (100 samples \* 30 characters) are used for handwritten text recognition.

*Image enhancement using Enhanced linear contrast stretching*

This study presented Enhanced linear contrast stretching based on a PLCSUM approach for image improvement. An image editing method known as "unsharp masking" (UM) is a fundamental concept. It plays a vital part in boosting the image's edge contrast's subtle enhancements in the process. Unsharp mask is the most used method for sharpening images, and it is beneficial for highlighting image details and texture. The typical unsharp masking process is described as,

$$z = n + \gamma(m - n) \tag{1}$$

here, m is input image, n is linear low-pas filter result, and U is gain which is >0, representing a real scaling factor. For improving sharpness, frequent amplification of signal  $d = m-n$  is carried out. But still, noises

are in the edge region to avoid these issues; this work presents an Adaptive Contrast Stretching Function-based unsharp masking algorithm for contrast enhancement.

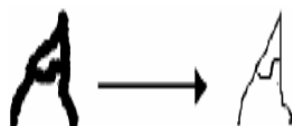
#### *Adaptive Contrast Stretching Function-based unsharp masking*

This framework for halo effect problems solved with edge preserve filter is built on a generalization of unsharp masking technique integrated with adaptive contrast stretching function. Another method called adaptive contrast stretching algorithm is applied for the sharpening and enhancement concept. The output is represented as  $w(y)$ . With  $g(d) = \hat{U}(d) \odot d$ , performed image details processing,  $d$  is adaptive control gain and an amplitude function of  $d$ 's detail signal. The algorithm's outcome is represented as,

$$u = w(y) + [\gamma(d) + d] \quad (2)$$

#### *Scanning and Skeletonization*

Images of handwritten characters are scanned and transformed into 1024 binary pixels after image enhancement. However, some extra pixels aren't part of the character's backbone. Thus the skeletonization method is employed to remove them and compress the broad strokes to small lines. Figure 2 depicts the skeletonization process.



**Figure 2 - Skeletonization of an English Character**

#### *Edge Detection using adaptive variance selection based canny edge detector*

After getting the Skeletonization of text, recognise the edges of text images using an adaptive variance selection-based canny edge detector.

#### *Traditional Canny Operator*

Rather than using the standard single threshold process, the Canny operator uses a gradient of the image histogram to determine a high and low threshold. It is the fundamental objective of every edge determination process to find the edge with no prior information. Its five essential phases are image processing and filtering, determining size and direction of gradients and non-maxima suppression, double thresholding, edge tracking using hysteresis. There are a variety of kernels that may be used to smooth out the image. Using the Canny algorithm, it is possible to identify those points in an image with a significant change in grey level intensity. Image gradients are used to identify these areas. To find gradient of every pixel, the Sobel operator is used. initial step is to estimate gradient directions of x and y via kernels below:

$$K(G_x) = \begin{pmatrix} -1 & 0 & 1 \\ -2 & 0 & 2 \\ -1 & 0 & 1 \end{pmatrix} \quad (3)$$

$$K(G_y) = \begin{pmatrix} 1 & 2 & 1 \\ 0 & 0 & 0 \\ -1 & -2 & -1 \end{pmatrix} \quad (4)$$

Also, gradient magnitude is calculated by:

$$|G| = \sqrt{G_x^2 + G_y^2} \quad (5)$$

In some cases, the edges are not identified precisely. So, it is essential to calculate the edge direction:

$$\theta = \arctan \frac{|G_x|}{G_y} \quad (6)$$

The blurry edges are transformed into bright by considering only local maxima. For every pixel, the below process is performed:

- Depending on the utilization of the eight immediate neighbors, the gradient direction is rounded to 45.
- Contrast edge strengths of current pixel with edge strengths of pixels in positive and negative gradient directions. Contrast it to pixels to south and north of present pixel, for example, when direction is north, or 90 degrees.



- while edge strength of current pixel is highest, value is maintained; else, it'll be restrained.

Intensity of the remaining pixels identifies the damaged ones. The Canny procedure employs higher and lower thresholds to detect and remove spurious edge pixels. A strong pixel exceeds the higher threshold, while a weak pixel falls below the lower threshold. Pixels having values in the middle of these two ranges are referred to as "weak" pixels. Fragile edges can only be included in the final result if connected to the firm edges, generally reliable.

It is impossible to do edge detection with a double threshold because the selected threshold is substantial for edges with low gradient magnitudes, resulting in the loss of detail at the image's borders. The adaptive variance selection based canny edge detector is a solution to these problems.

*Adaptive variance selection based canny edge detector*

Initially, ave E finds the average gradient magnitude of the entire image. Non-edge points are those pixels whose gradient magnitude is less than 15%–20% of the average E. This procedure helps to ensure that the enhanced algorithm will not add more noise in places with few edges. For each pixel I[i,j] in N×Nmatrix (N is an odd number > 20), threshold is computed based on its mean gradient magnitude and standard deviation as below,

$$T_h = E_{ave} + k \cdot \sigma \quad (7)$$

$$T_l = T_h / 2 \quad (8)$$

here  $E_{ave}$  is the gradient magnitude's mean,  $m, n$  show total pixels on image in width and height directions correspondingly,  $E[i, j]$  is magnitude of image gradient,  $T_h$  and  $T_l$  are high and low thresholds correspondingly,  $\sigma$  is SD of image, and  $k$  is its coefficient value represented ask  $\epsilon$  (1.2,1.6). value of  $\sigma$  will be greater whenever the image edge information is relatively rich and gradient magnitude distribution is dispersed; to maintain more edge information, the value of  $k$  must be reduced. If not, the value of  $k$  is lower and the value of  $\sigma$  is higher.

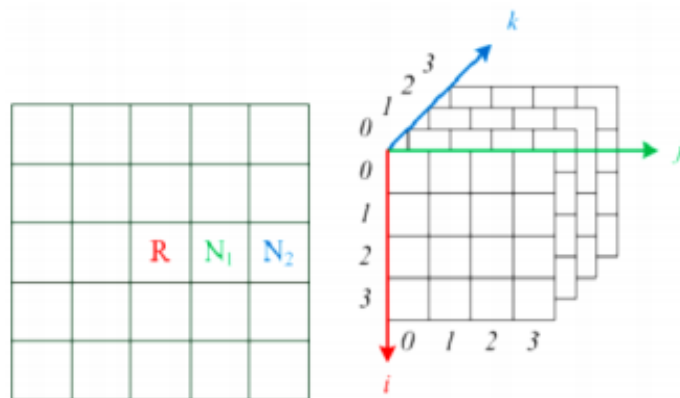
There are some pixels I [i, j] in an image's border region, and matrix below is N×N that have been set to null to calculate their mean and SD, which is used to determine threshold for determining whether or not a pixel falls inside that area.

*Feature extraction using Improved GLCM*

A texture analysis method called the GLCM was developed to determine the co-occurrence of paired pixels' brightness values at a specific distance and direction. As a result, 3D-GLCM, which expands on the original 2DGLCM in the manner described because 2D-GLCM cannot adequately express the texture elements of the images, has been suggested as a replacement.

*3D-GLCM*

Texture aspects of images can be emphasized and explained using this method. For example, it's depicted in Fig. 3.



**Figure 3 - The Structure of 3D GLCM**

In Fig 3, N1 and N2 represent first and second neighbors, and R denotes the referenced pixel. Here all angles are aligned at a distance =1. The five elements collected from 3D GLCM are as follows:

Energy: In the mammographic image, observed uniformity is indicated by energy. In general, from, the mean squared signal value computed energy, and it is done as,

$$\text{Energy} = \sum_{i=1}^Q \sum_{j=1}^Q \sum_{k=1}^Q P_{ijk}^2 \quad (9)$$

Contrast: A difference measure is provided in the vicinity using a discrepancy between the pixel set's large and small values. Local differences amount presents in an image are computed by this.

$$\text{Contrast} = \sum_{i=1}^Q \sum_{j=1}^Q \sum_{k=1}^Q P_{ijk} [(i-j)^2 + (i-k)^2 + (j-k)^2] \quad (10)$$

Correlation: Over the entire image, the correlation of a pixel with its neighbor is measured using correlation.

$$\text{Correlation} = \sum_{i=1}^Q \sum_{j=1}^Q \sum_{k=1}^Q P_{ijk} [(i-j)^2 + (i-k)^2 + (j-k)^2] \frac{(i \times j)P(i,j) - u_i u_j}{\sigma_i \sigma_j \sigma_k} \quad (11)$$

$\sigma_2$  represents the difference of intensities of all reference pixels in associations, which makes their contribution to GLCM,

Homogeneity, Angular Second Moment (ASM): To measure image homogeneity, ASM is used.

$$\text{Homogeneity} = \sum_{i=1}^Q \sum_{j=1}^Q \sum_{k=1}^Q \frac{P_{ijk}}{1+[(i-j)^2+(i-k)^2+(j-k)^2]} \quad (12)$$

Entropy: In an image, complexity or irregularity measure is specified using entropy. If P (i, j) are assigned evenly throughout the matrix, then a high value of entropy will be produced. Thus, energy and entropy are correlated highly in a reverse manner.

$$\text{Entropy} = -\sum_{i=1}^Q \sum_{j=1}^Q \sum_{k=1}^Q P_{ijk} (-\ln p_{ijk}) \quad (13)$$

GLCM matrix row is specified as 'i,' GLCM matrix columns are specified as 'j,' grey levels count are represented as 'n,' and cell defined using GLCM matrix's row and column is represented as P(i, j). Texture feature extraction is obtained based on these assessments.

#### *Feature selection using Mutation Based Cuckoo Search Optimization*

Classification time will be longer if the input database contains more characteristics. Hence, a feature selection model formed on adaptive Cuckoo Search (CS) method was utilized to reduce processing time while improving classification accuracy drastically. An entirely new meta-heuristic model, Cuckoo Search, has been developed. Some host nests are capable of engaging in direct contradiction [14,15].

Birds who find their eggs aren't their own will either discard them or quit their nest and construct a new nest elsewhere. Female parasitic cuckoos in some species have become quite skilled at mimicking the eggs' color and design of a select few host species. They have a better chance of reproducing if their eggs are less likely to be abandoned. Levy flight features can be seen in a variety of animals and insects, according to numerous research. The authors suggested the CS algorithm considering these breeding and flying behaviour.

The CS method follows the three idealized rules:

- 1) Every cuckoo lays one egg at a time in a nest that is chosen randomly.
- 2) best nests will be passed down to the next generation, with high-quality eggs;
- 3) amount of potential host nests is constant, host bird recognizes laid egg with a probability  $p_a \in [0, 1]$ .

Fitness of a solution might become the objective function for a gene selection issue (classification accuracy). Finally, every egg in a nest symbolizes an answer in this algorithm. cuckoo egg denotes a novel solution; goal is to replace a terrible solution with a practical and relatively decent option. The steps for finding a new bird's nest are:

$$h_i^{(t+1)} = h + \alpha \oplus \text{Levy}(\lambda); i = 1, 2, \dots, n \quad (14)$$

$h_i^{(t+1)}$  represents the  $i^{\text{th}}$  bird's nest position in the  $t$  generation,  $\alpha$  denotes step size control,  $\alpha > 0$ ; usually,  $\alpha = 1$  Levy( $\lambda$ ) is Levi's random search path, its Expression is as follows:

$$\text{Levy}(\lambda) = t^{-\lambda}; 1 < \lambda < 3 \quad (15)$$

The difficulty with traditional cuckoo search is that it is prone to settling on the optimal local solution. To address these concerns, we developed a new CS algorithm. A mutation factor is employed in the ICSO process to generate new global solutions by changing features 1 to 0 and 0 to 1. Once this new solution's fitness has been assessed, the most fitness-enhancing characteristics will be selected as output features [19,20].

#### Algorithm for ICSO

INPUT: Input handwritten database

OUTPUT: Optimal features

- 1: Develop initial population of N host nest  $x_i \forall i, i = 1, \dots, n$
- 2: while  $t < \text{Max Generation}$  or (stop criterion) do
- 3: Select a cuckoo randomly by Levy flights and compute its fitness  $F_i$ .
- 4: Select a nest  $j$  randomly among N.
- 5: if  $F_i > F_j$  then
- 6: Restore  $j$  with the fresh solution.
- 7: end if
- 8: Use mutation operator
- 9: If  $F_i > F_j$
- 10: Restore  $j$  by new solution
- 11: A fraction ( $p_a$ ) of bad nests are deserted, and fresh ones are constructed.
- 12: Preserve nest with quality solutions.
- 13: Rate solutions and identify present best.
- 11: end while

#### *Hybrid CNN with Improved LSTM based offline handwritten text recognition*

After feature selection, it requires recognizing the selected features to which text it belongs by using HCNILTM.

#### *Convolutional Neural Network*

FIGURE 3: Convolutional, max-pooling, and fully connected layers of ConvNet architecture are depicted as "conv," "mp," and "fc," respectively. Furthermore, misclassification errors are minimized via backpropagation across the training set as all parameters are jointly optimized. Similarly, ConvNet performs max-pooling operations in each convolutional layer; it summarises the feature responses, which helps ConvNet learn in the future [21,22]. Finally, layers that are fully interconnected are used to do the categorization task. For example, a softmax layer is employed as a ConvNetslast layer for each class probability calculation provided as input [23,24,25].

Set a training set to every participant.  $S = \{x^{(i)}, y^{(i)}\}$  has  $m$  inputs, with  $x^{(i)}$  denoting the  $i$ -th input and  $y^{(i)} \in \{0,1\}$  denoting the appropriate class label. If  $y^{(i)} = 1$ ,  $x^{(i)}$  is a single-class patch; otherwise,  $x^{(i)}$  is a different-class patch. Suppose that  $z_j^{(i)}$  is the last layer's output for  $x^{(i)}$ . Following that, the probability that label  $y^{(i)}$  of  $x^{(i)}$  is  $j$  is computed as follows:

$$p(y^{(i)} = j \mid z_j^{(i)}) = \frac{e^{z_j^{(i)}}}{\sum_{i=1}^k e^{z_i^{(i)}}} \quad (16)$$

#### *Improved LSTM*

In contrast to typical RNNs, the LSTM is specifically created to simulate temporal sequences and their long-range dependencies. Figure 3 depicts a specific LSTM cell consisting of the input, forget, and output gates and a cell activation component. They receive activation signals from a variety of sources and govern the cell's activation by multipliers. As a result, multiple time steps can be prevented from altering the contents of memory cells via LSTM gates. Thus, in comparison to traditional RNNs, LSTM networks maintain and propagate signals for substantially more prolonged periods.

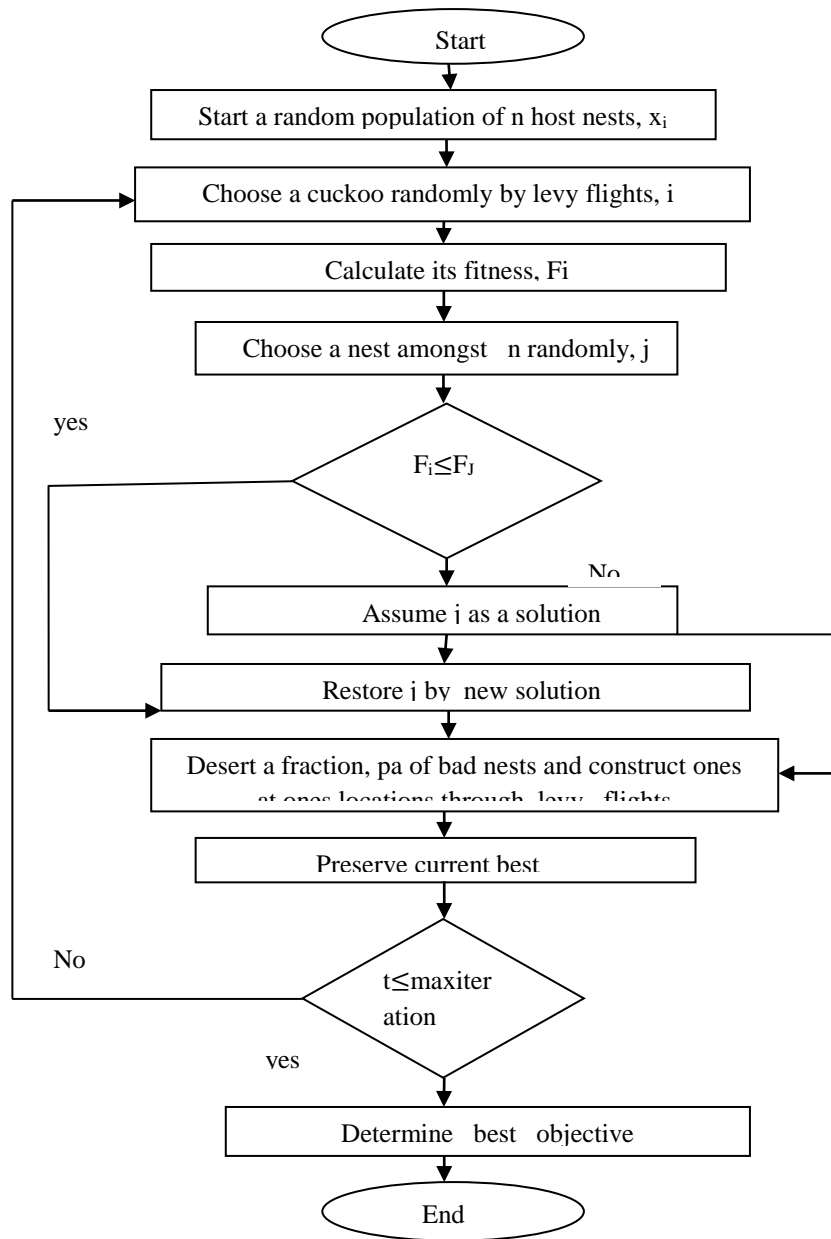


Figure 4 - Flow chart of cuckoo search optimization

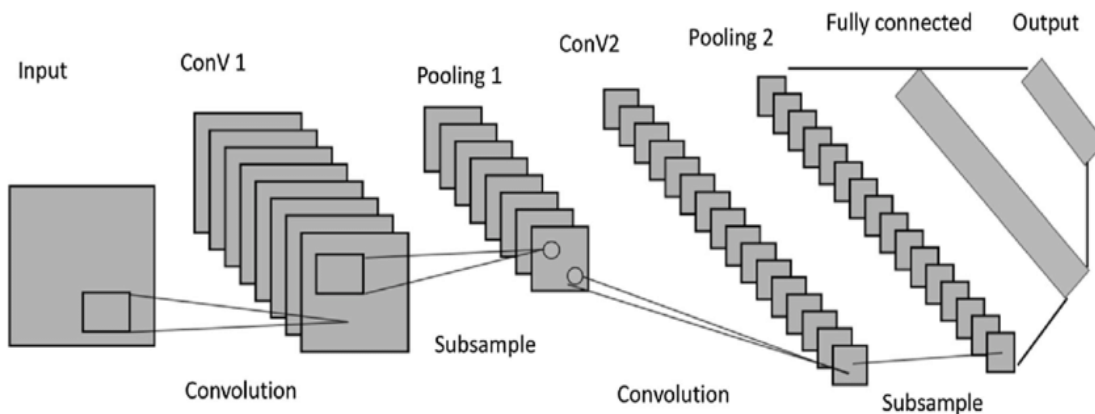


Figure 5 - The architecture of the ConvNet

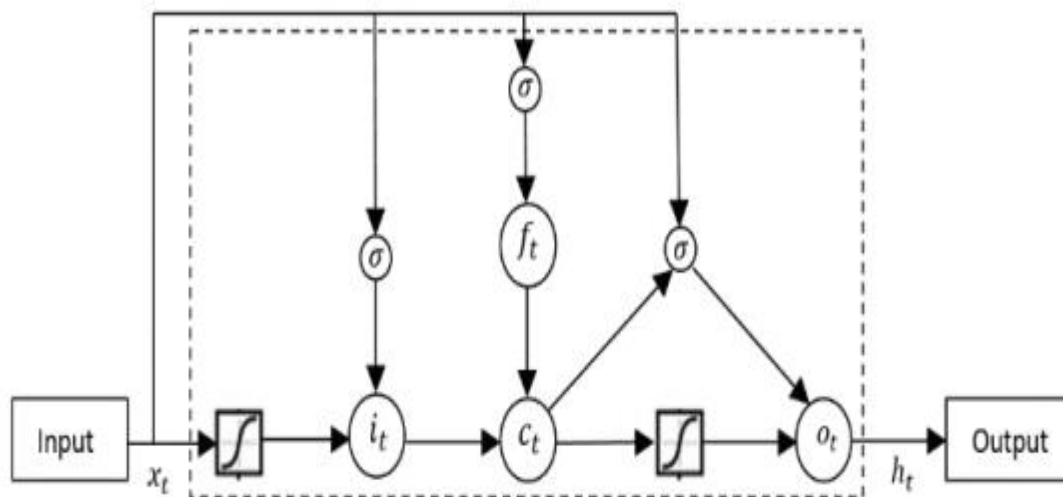


Figure 6 - Long Short Term Memory Cell

input gate of LSTM is expressed as

$$i_t = \sigma(W_{xi}x_t + W_{hi}h_{t-1} + W_{ci}c_{t-1} + b_i) \quad (17)$$

The forget gate is defined as

$$f_t = \sigma(W_{xf}x_t + W_{hf}h_{t-1} + W_{cf}c_{t-1} + b_f) \quad (18)$$

The cell gate is defined as

$$c_t = f_t c_{t-1} + i_t \tanh(W_{xc}x_t + W_{hc}h_{t-1} + b_c) \quad (19)$$

The output gate is defined as

$$o_t = \sigma(W_{xo}x_t + W_{ho}h_{t-1} + W_{co}c_t + b_o) \quad (20)$$

Finally, the hidden state is computed as

$$h_t = o_t \tanh(c_t) \quad (21)$$

$\tanh$  - hyperbolic tangent activation function

$x_t$ - input at time  $t$

$W$  and  $b$  - network parameters (Weights and Biases)

Weighted regression is used in this suggested study to overcome these problems, and each feature is weighted based on the observation's significance to the estimation point. A three-dimensional distance among observation and estimation point can assign a weight to each characteristic. As a result, the weight function has been formulated as below,

$$\omega = \begin{cases} (1 - (\frac{d}{h})^3)^3 \rightarrow \text{if } |d| \leq h \\ 0 \rightarrow \text{if } |d| > h \end{cases} \quad (22)$$

in which,

$w$ -shows the weight,

$d$ -denotes the distance between the observation and the estimation points

$h$ - shows the half window width.

$\sigma$  represents logistic sigmoid function, where  $i$ ,  $f$ ,  $o$ , and  $c$  are input, forget, output gate, and cell state, correspondingly. Weight matrices for peephole connections are  $W_{ci}$ ,  $W_{cf}$ ,  $W_{co}$ . Three gates ( $i$ ,  $f$ ,  $o$ ) in LSTM keep the data flowing. The input gate determines the input ratio that impacts the equation when computing cell state (19). Passing forget gate requires previous memory to be  $ht1$ . (Equation 18) determines the preceding memory's ratio, which is then used in (Equation 19). (19). Passing or rejecting data from the memory cells is regulated by this gate, which is depicted in equation (21). The LSTM cell replaces the recurrent hidden layer in LSTM-RNN architecture. output gate offers the DoS, Probe, R2L, and U2R attack categories.

### Hybrid CNN-ILSTM

Using CNN's convolution and pooling layers, it is possible to obtain log features containing the most relevant information from a sequence of logs by performing convolution and pooling operations. The neural network

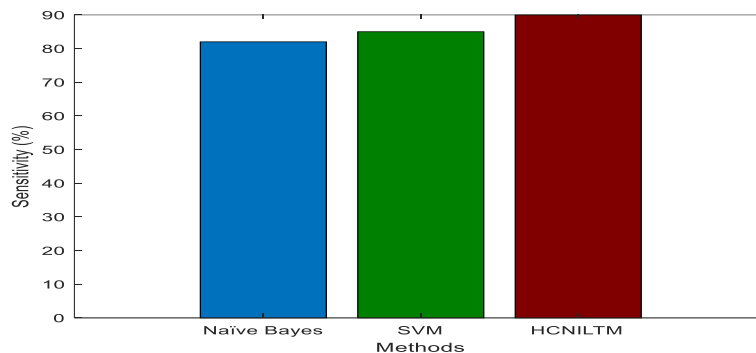
structure for handwritten text recognition is built using feature matrix recovered from CNN model and vector matrix generated from ILSTM model, which is fed into dropout layer to prevent data overfitting. The vector matrix is then fed into the fully linked layer, where it is reduced in dimension. Finally, a sigmoid function is used to the fully connected layer's output to provide a probability  $p$  that ranges from 0 to 1, and the threshold is adjusted to sort the predictions. The criterion used in this study is a value of 0.5. As long as  $p$  is more than 0.5, it's assumed that the input text falls into the category of type a; otherwise, it's assumed that type b.

#### 4. RESULTS AND DISCUSSION

Experiments conducted on suggested method are discussed in given paragraphs. Matlab 2013 b is used to execute suggested method. In this context, the new HCNILTM model is compared to the current Naive Bayes and SVM models with respect to sensitivity and specificity. As input, scanned photographs and other handwritten text documents are taken into consideration.

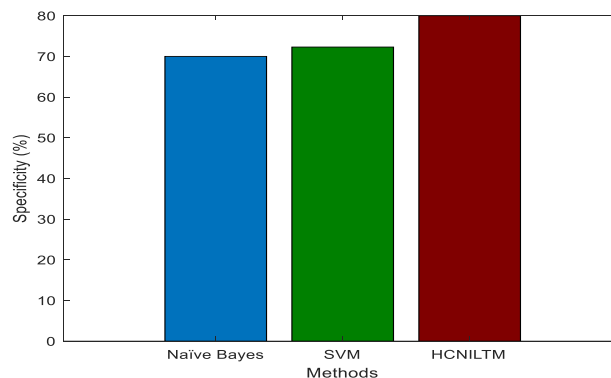
**Table 1 - Performance Measures Result**

Algorithm	Sensitivity (%)	Specificity (%)	Precision (%)	F-measure (%)	Accuracy (%)	Execution Time(Seconds)
Naïve Bayes	82	70	84	83	85.13	19
SVM	85	72.3	89	87	87.00	15
HCNILTM	90	80	91	90.5	91	10



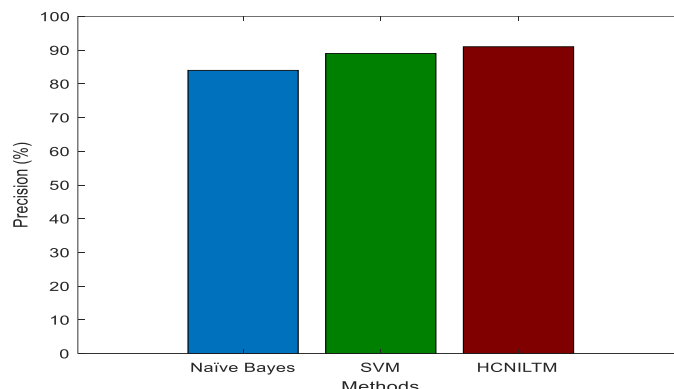
**Figure 7 - Sensitivity results vs classification methods**

In Fig.7, the sensitivity values of the new method HCNILTM and conventional Naive Bayes and SVM methods are compared. Again, different approaches are reflected in the X-axis, and sensitivity values are shown in the graph's Y-axis above. According to the findings, the HCNILTM method gave higher sensitivity results of 90%, whereas existing, Naive Bayes and SVM approaches produce only 82%, and 85%, respectively.



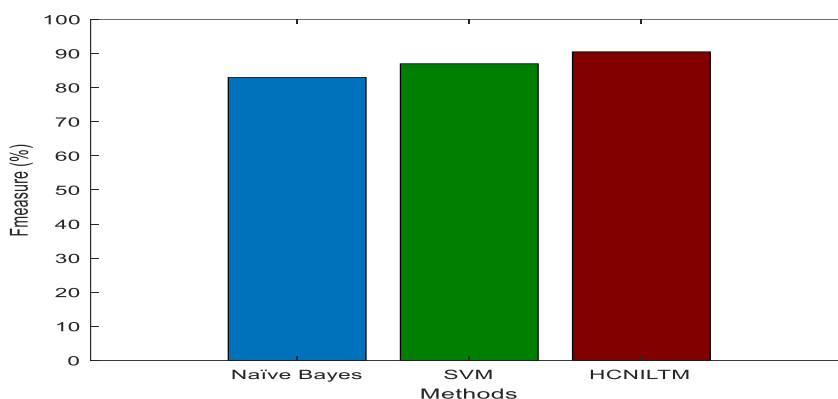
**Figure 8 - Specificity results vs classification methods**

In Fig.8, the specificity values of the new method HCNILTM and conventional Naive Bayes and SVM methods are compared. Again, different approaches are reflected in the X-axis, and specificity values are shown above the graph's Y-axis. According to the findings, the HCNILTM method gave higher specificity results of 80%, whereas existing, Naive Bayes and SVM approaches produce only 70%, and 72.3%, respectively.



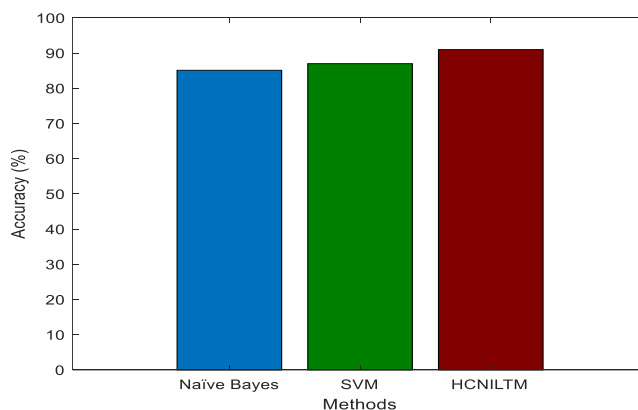
**Figure 9 - Precision results vs classification methods**

In Fig.9, the precision values of the new method HCNILTM and conventional Naive Bayes and SVM methods are compared. Again, different approaches are reflected in X-axis, and precision values are in graph's Y-axis. As per the findings, the HCNILTM method gave higher precision results of 91%, whereas existing, Naive Bayes and SVM approaches produce only 84%, and 89%, respectively.



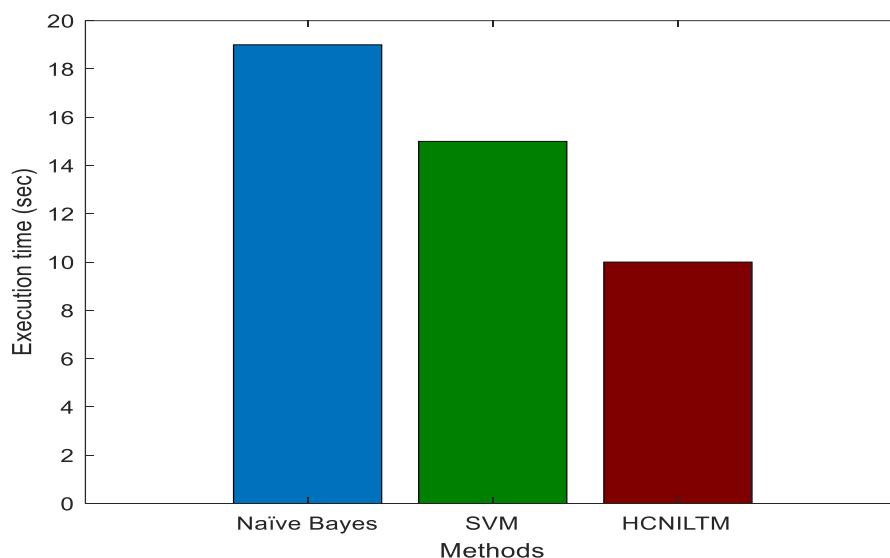
**Figure 10 - F-measure vs classifiers**

In Fig.10, F-measure values of the new method HCNILTM and conventional Naive Bayes and SVM methods are compared. Again, different approaches are reflected in the X-axis, and F-measure values are in the graph's Y-axis. According to the findings, the HCNILTM method gave higher F-measure results of 90.5%, whereas existing, Naive Bayes and SVM approaches produce only 84%, and 89%, respectively.



**Figure 11 - Accuracy Results Vs. classification methods**

In Fig.11, the accuracy values of the new method HCNILTM and conventional Naive Bayes and SVM methods are compared. Again, different approaches are reflected in the X-axis, and F-accuracy values are in the graph's Y-axis. According to the findings, the HCNILTM method gave higher accuracy results of 91%, whereas existing, Naive Bayes and SVM approaches produce only 85.13%, and 87%, respectively.



**Figure 12 - Execution Time results vs classification methods**

In Fig.12, the execution time of the new method, HCNILTM and conventional Naive Bayes and SVM methods are compared. Again, different approaches are reflected in the X-axis, and F-execution time values are in the graph's Y-axis. According to the findings, the HCNILTM method gave higher execution time results of 10(%), whereas existing, Naive Bayes and SVM approaches produce only 19(sec) and 15(sec), respectively.

## 5. CONCLUSION AND FUTURE WORK

Because of the enormous variety of writing styles, offline handwritten text recognition is among the most active study fields in computer science. This research aimed to create a better model for recognizing faces and, first, enhancing input text with Enhanced linear contrast stretching. Next, scan and skeletonize the image to remove the foreground regions and produce a binary image. The adaptive variance selection-based canny edge detector approach is then used to calculate edge detection, increasing the visibility of the edge region. Improved GLCM features are used to extract statistical features. For feature selection, a mutation-based improvement to cuckoo search was implemented. Lastly, HCNILTM will be used to accomplish handwritten text recognition. In terms of accuracy and recall, the suggested model outperforms the current model. However, we'll have to employ different models in the future because deep learning has a lot of computing overhead.

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## Reviving the Naga Culture of Pottery Making: A Sustainable Contribution

**Kevino Krose**

Assistant Professor, Dept of History, St. Joseph University, Nagaland

**Alaknaro**

Assistant Professor, Dept of History, St. Joseph University, Nagaland

### Abstract

*The sustainability of the environment is the prime concern in the global context today. From ecological point of view, Pottery making can contribute in various ways such as reduces the need for the use of plastics, less harmful to the environment, reusable and durable etc. Historically, pottery becomes the expression of Naga culture. The Nagas have partially practised the art of pottery making, this means not every Naga village carried out the art of pottery but there was a considerable specialization. Pottery wheel was not known to the Nagas but they had their own methods and techniques using their hands. The process of pottery making among the Nagas were primitive in nature yet eco-friendly. Traditionally it was restricted only to women but today men are correspondingly involved in the making process. With the impact of global changes worldwide, people are increasingly becoming aware of how their lifestyle and choices concerns the environment. In essence, standing up against environmentally harmful practices is becoming the norm. A product is considered sustainable if sourcing, making, distributing, and disposing of it has little negative impact on the environment. The study would explore on the need to revive the tangible culture of pottery making so that plastics and other products harmful to environment are replaced with traditional earthen pots.*

**Keywords:** Pottery, Culture, Sustainable

### 1. INTRODUCTION

Historical usage of 'Pottery' comes from the French word 'Poterie' and the latin word 'Potium' which means the drinking vessels (Frankfurt, 1978). It literally means pottery is all objects made of clay. Pottery is one of the oldest human inventions of craft and the role of pottery is quiet extensive, highly varied and often complex. The present study has been viewed from historical, ethno-archaeological and ecological context. Historically pottery plays an important role in studying the culture and reconstructing the past. It is the human invention of Neolithic age which left sufficient evidences of hand-made pottery and on which there has been continuous innovations. It is an important tangible source for archaeologist and historians to study the past from various aspects such as cultural, social, economic etc. Pottery is the alphabet of archaeology, as the archaeologist has to depend solely on pottery for his reading of the material culture of the site excavated, when no other datable evidences like coins etc. are found (Deo and Ansari, 1977). Pottery is the essential element of the form of a civilization as it can be studied from various perspectives (Pal, 1978). Pottery from ecological context is an age old eco-friendly and economically viable indigenous occupations of the primitive people. Likewise, the Nagas too, depended on this age old eco-friendly pottery culture then and now. Nevertheless, with the impact of globalisation and industrialisation, the primitive technology has been replaced by modern industrial technology which sometime may be hazardous to health.

Traditional pots which are found in Nagaland are rough and generally very simple because potter's wheel was unknown. Prominence was given to its functional usage rather than aesthetic look. Nevertheless, without potter's wheel they were able to make all pots with their own hands using indigenous methods like modelling and coiling (Jacobs, 1990). Not every Naga village carried out the art of pottery but there was considerable specialization. However, within a tribe, there are certain villages that relied on other village for pottery. Among the Rengma Nagas the only village that produces pots is Tseminyu, and there is pot-making season which dictates when pots can be made (Jacobs et al., 1990). The Ao Nagas of Ungma village was also well known for pottery. In the case of Angami tribe, pot making was prevalent in certain Angami villages like Khuzama and Viswema which are located in present southern Angami region (Hutton, 1968). Pots are usually round in shape with a rim. The Lotha tribe also made its own pots (Mills, 1980). They have pots for rice and curry respectively known as *Tsupfü* and *Hanpfü*. Among the Sema Nagas, Tokikehimi village made a form of cooking pot with a partition in the middle for cooking rice and meat at the same time (Hutton, 2007). However, to some extent the design and pattern may slightly vary from region to region.

## 2. OBJECTIVES

1. To explore the methods and techniques involves in pottery making.
2. To study the purpose and benefits of traditional pots towards sustainability.
3. To explore the changes and continuity in pottery making.

## 3. FINDINGS AND CONCLUSION

The nature of the present study is exploratory and empirical. The study is based on ethnographic and ecological approach. The field area for the present study is Changki village under Mokokchung district, Nagaland where pottery is significantly practiced. The techniques of data collection are employed through interview, discussion and questionnaire. This study has been guided from the following research question to find out the appropriate answers of the subject matter of the study. What are the basic primitive methods and techniques engaged in the process of pottery making?

1. How do we revive, revitalize and rehabilitate the traditional culture of pottery making?

In an attempt to answer the above question, the art of pottery is entirely done by women in Naga society. Pots were made in different shapes, sizes and designs serving as a functional purpose. They tend to be of a basic design, without varnishing or handles and rarely with ornamentation (Jacobs, 2012) We find pots with handles only in miniature pots which are exclusively used for ceremonial purposes. Women collected clay from nearby streams and mountains. Sometimes they fetched clay from nearby villages where clays are available. They then beat it with bamboo logs on a wooden slab and add water from bamboo containers. The pots are pinched into a basic shape and left to dry to leather hard. After this they fire in a pit with local wood. The study has also conclusively found that substitute industrial products such as plastic wares, aluminium and steel utensils becomes more practical in day to day life which is the prime reason behind the drastic decline of earthen wares today. Hence the study suggests effective measures such as spread of awareness on sustainable development with regard to pottery making. All these now require adequate protection, revival and promotion. It can be an effective remedy to climatic volatility and other environmental problems.

The study also finds that the current environmental issues demand for more renewable and recyclable products. The earthen pots derive its raw material from the earth and it decomposes back to nature without polluting the environment therefore earthen pots are sustainable. It is a well-known fact that not all the products are recyclable and therefore it is necessary to use products which are decomposable and recyclable. Earthen pots fall under such a category where they get easily decomposed back into the earth. It is said that the recyclability rate of clay is 95 percent. (Earthen Pots, N.D)

A product can be considered to be sustainable if the process used to source, manufacture, distribute and dispose of it gives very less negative impact on the environment. Some important factors that one should keep in mind with sustainable products are the type of resources used to prepare the product, the method of production, waste created in the process of production and its impact on the environment. The technique involved with producing earthen ware varies from region to region across the world. In the context of Nagaland, the traditional art of pottery is confined to a few villages. Among the Ao Nagas pottery was considered a taboo therefore hardly a few villages got engaged in this profession. Changki, Longsem dang and Japu villages in the Ao area had been the only Ao villages that made pots. For Changki villagers, the source of earth for pot making was at Lithu, on the banks of the river Tsumet 16 Km away from the village over a very steep terrain but over time the earth got depleted and recently a new source has been found at Empongtsung which is just 3 and half km away from the village (Longkumer, 2014). For Japu villagers the main source of earth is within the village itself called the Lichempok and for the Longjem dang villagers the main source of earth for pottery is from Achendang. This pot made of earth and shaped with sticks from the wood and bamboo found in the surrounding areas and baked in open fire is the biggest gift that has been bestowed on the people. The significant feature of pot making as a craft is that it is an activity exclusively confined to women. From digging, collection, transportation of the earth to the making of the pot, in fact every step of the process is performed by women only (Longkumer, 2014).

Before modern utensils like the aluminium pots and pans made inroads to the villages, the earthen pots were the only utensils used. The pot making cottage industry thrived during that period. In this type of cottage industry the implements used in pot making primarily involved a big wooden board which is flat bottomed to bound the earth, a long bamboo pestle for bounding the earth, spatula made of bamboo for mixing the earth, mushroom shaped stop made of baked clay which is held inside the pot as various shaping sticks are tapped from outside, some shaping and smoothing stick made of wood and a water receptacle made of baked clay shaped like a mug used for storing water used in the process of making the pots. All the implements used are locally available and

does not bring extreme environmental damage as the implements once made can be used for multiple times and it goes back to nature as these are decomposable.

The process of pot making involves digging of mud in a tunnel like fashion because it is said that mud deep inside the earth contains more clay and less of stones. The earth is spread out on the wide wooden tray and small stones are taken out by hand. The earth is mixed with water and then pounded with the bamboo pestle all the while adding more water to the earth so as to make a smooth paste. Once it is thoroughly pounded and made into dough, it is kept exposed to the sun. Shaping of pot starts here and after the rough pots become a little hardened in the sun, the first phase of shaping begins. The pots are then sun dried and transfer them to a shelf kept over the hearth. They pre-heat the pots in the fire place before the final process. At the final stage, the pots are fired in the open.

The final stage in pottery making is the biggest issue for potteries and ceramic manufacturers around the world. The main concern with this stage is with regard to the amount of energy needed to fire the kilns. The major type of kiln used today is electric and gas and these kiln run on energy derived from fossil fuels. This process leaves a considerable carbon footprint on the environment. However, in the case of Changki pottery making, they use a special kind of bamboo called Longmi bamboo and Anasung bamboo to fire the pots. As bamboo is one of the fastest growing plant on earth, the usage of bamboo for heating the pots can be considered as a better alternative. Moreover, even in the process of production we see zero waste in clay as clay can be re- moulded into different shapes. Earthen wares once created can be used for multiple purposes and comparatively its production process is found to be eco-friendlier than the modern industrial produce. Hence earthen ware can be placed under the category of renewable and recyclable product.

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## Impact of ICT on Teaching and Learning

**Dr. Rhonthunglo W Kithan**

Assistant Professor, Dept. of Education, St. Joseph University, Nagaland

**Mughakali A**

Assistant Professor, Dept. of Education, St. Joseph University, Nagaland

### Abstract

*ICTs tools are potentially powerful tool for extending educational opportunities. The field of education has been affected by ICTs and the impact of ICTs on Teaching and Learning has become relevant as it supports teaching and learning process. In the present day, Educational Systems around the world incorporates information and communication technology as it provides access to a variety of information sources to keep both the students and teachers up to date. This paper focuses on the use of ICT by college teachers to facilitate the processes of teaching and learning. The main objective of the study is to find out the most commonly used ICT tools to enhance teaching and learning and the ways in which teachers facilitate for student progress. The study was descriptive in nature. A sample of 10 college teachers and 20 college students in Dimapur Town were included in the study. The investigators employed Simple Random Sampling technique to select a sample for the study. For the collection of data both secondary and primary sources were used. Secondary sources were collected from published sources like books and journals. Self-constructed questionnaire was used to gather primary data. The findings of the study were presented objective wise. Some of the findings reveal that, the use of ICT has its share of both negative and positive impacts on teaching and learning. If teachers integrate ICT tools in right way and if it is managed and handled efficiently, it will enhance learning of the students but in the same way if it is managed inefficiently it will hamper the teaching learning process. Therefore, the study suggested training the teachers adequately to handle ICT Tools and Techniques appropriately and also to provide sufficient technical support in the private colleges of Dimapur Town.*

**Keywords:** *Information and Communication Technology, Impact, Teaching-Learning Process.*

### 1. INTRODUCTION

The most powerful instrument that opens the door to prosperity of a nation is education. It is one of the main key elements to the development and the improvement of mankind. Since education is regarded as the backbone for nation building, its quality management is necessary in all aspects of teaching and learning. Education is the acquisition of knowledge or information that empowers a person towards a better and higher way of life. In this modern world of science and technology, it is education that determines the level of prosperity, welfare, comfort and security. The process of education involves the transfer of communication of knowledge and skills from one person to another person. The source is the teacher and the receiver is the student. During the recent past, the teaching and learning process was dependent upon the chalk and talk method but now it has undergone a radical change as smart classrooms have been developed and made the education system more developed and easier for the students to acquire the knowledge and information according to their own demands and needs.

ICTs stand for Information and Communication Technologies. It is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information” which is widely used in the field of education nowadays to enhance teaching and learning. ICT is a Term that includes any communication device or application encompassing radio, television, cellular phones, computer and network hardware and software as well as the various services and applications associated with them such as video conferencing and distance learning etc. These ICT tools can best be utilized to improve the efficiency and effectiveness of teaching learning at all levels in both formal and non-formal settings.

ICTs tools are potentially powerful tool for extending educational opportunities. The field of education has been affected by ICTs and the impact of ICTs on Teaching and Learning has become relevant as it supports teaching and learning process. In the present day, Educational Systems around the world incorporates information and communication technology as it provides access to a variety of information sources to keep both the students and teachers up to date. ICT is capable of coming up with different tools and techniques for the students as well as teachers in order to help them in the teaching and learning in smooth manner. ICT can enhance the quality of education in several ways and thus, it has become an indispensable means of improving teaching and learning process in the present day.

## 2. STATEMENT OF THE PROBLEM

Technology has taken great strides now a day as also the whole educational system has seen an overhaul. The use of ICT in education increases the flexibility of delivery to learners. They can access anytime and from anywhere. It can influence the way students are taught and how it impacts the progress of students learning. With the help of ICT, students can have an easy access to learning resources. ICT allows both teacher and student to explore and discover new teaching learning experiences and engage in meaningful ways to enhance learning. In the information and communication technology age, the way the teachers and students engage in the pursuit of knowledge is different from the past. Unlike the conventional and traditional process of learning, we are now faced with new challenges of access where there is a need to find new ways of organizing teaching learning experiences. ICT in education is one of the new technology tools to revolutionize and improve the educational system of the students in this modern information age. ICT provide a window of opportunity for educational institutions to harness and use technology to complement and support the teaching and learning process. With the use of ICT the learning process of the students has developed as they get new ideas and information for better and easy learning. ICT not only assist the students but it also helps the teachers to administer new type of teaching style which would benefit in the students learning. Thus the study aimed to investigate how the teachers incorporate ICT in teaching learning process and how it Impact the students' progress.

## 3. OBJECTIVES OF THE STUDY

- To find out the most frequently used ICT to enhance teaching and learning.
- To find out the ways and means in which college teacher facilitates for students' progress.

## 4. RESEARCH METHODOLOGY

### *Introduction*

The procedures by which researchers do their works of explaining, describing and predicting phenomena are called methodology. Methodology is defined as the study of methods by which we gain knowledge. Different methods are used for generating, collecting and evaluating data. It helps to discover the truth and facts of a research work. It is also a systematic process to solve research problems.

### *Nature of the Study*

Descriptive type of research method was adopted for the present study. Descriptive research method includes surveys and fact-finding enquires of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present.

### *Population of the Study*

A population refers to any collections of specified groups of human beings and non-human beings entities from which the sample is drawn. The population of the study consists of all the private colleges in Dimapur Town.

### *Sample of the Study*

A sample is the process by which a relatively small number of individuals or objects are selected and analyzed to find out something about the entire population from which it was selected. For the present study, Simple Random Sampling was employed. The sample covers the selected private colleges in Dimapur town, where a total of 10 college teachers and 20 college students were included in the sample for the present study.

### *Tools Used in the Study*

Research tools may be defined as anything that becomes a means of collecting information for the study. The following tools was developed and used by the researcher in the present study.

- i. Questionnaire for college teachers.
- ii. Questionnaire for college students.

### *Collection of Data*

For collection of data, the researchers used both:

- i. Primary source- for the collection of primary data, questionnaire method was employed to collect relevant information
- ii. Secondary source- Secondary sources were collected from books and journals.

### *Analysis of Data*

Data collected through questionnaire were analyzed qualitatively and the findings of the study were presented objective wise.

## **5. FINDINGS OF THE STUDY**

The findings of the study are presented as per the objectives of the study.

### *Frequently used ICT to enhance teaching and learning*

The study revealed that the most frequently used ICT to enhance teaching and learning are:

- i. Desktop or Laptop: Desktop or Laptop is the most frequently used ICT for teaching and learning. Teaching process is done with the help of presentation or images.
- ii. Projector: Projector is also used mostly for teaching and learning purposes. Instead of writing with chalk and marker on the white board, teaching process is done by creating image through a laser.
- iii. Mobile Phone: Mobile phone is used as an ICT tool by both students and teachers to enhance teaching and learning. It is very flexible as it enables them to easily access teaching learning materials with the help of internet.
- iv. Tablet: Tablets are more accessible as it assists the students and teachers for interactive reading, learning and creating, reading e-books etc.

### *Ways and means in which college teacher facilitates for Students Progress*

The study found out that, in lessons teachers use tools such as PowerPoint, digital recording and online quizzes, online tests and upload contents to YouTube. The study also found out that software interactive tools are also utilized by the teacher. They are: (i) Google Meet; (ii) Zoom Meet, (iii) PDF; (iv) Google Classroom; (v) E-Mails; (vi) WhatsApp. The study revealed that, the use of ICT in learning is helpful and easy to understand and it is a necessity for learning process.

It was also found out that, using ICT in teaching and learning has a positive impact on students learning. They are:

- i. The use of software application like WhatsApp helps the students and teachers to share and exchange knowledge and information easily.
- ii. The use of Internet has made accessibility of learning materials easier which has increased student knowledge and learning. It helps the student in preparation of assignment, project work, seminars/presentation etc.
- iii. The use of ICT like video conferencing, collective social media sites for exchange of knowledge has made teaching and learning more relevant.
- iv. The use of ICT tools by the teacher in the classroom with the help of desktop/laptop, PowerPoint Presentation, projector etc. helps the learner to learn and understand better as they can listen and visualize at the same time. Teachers use this as stimulus variations in the classrooms.
- v. The use of ICT enables the students/learners to improve their knowledge, comprehension, practical and presentation skills. It helps the students to be creative and innovative.
- vi. ICT enhance students and teacher's ability and helps in the progress of students and teachers in teaching and learning.

The study also found out that, if Information Technology are not used or handled effectively it will do more harm than good.

## **6. DISCUSSION OF THE FINDINGS**

In today's generation, Information Communication Technology plays a vital role in all walks of life. It has occupied an important place in educational sector as well. Now institutions all over the world integrate Information Communication Technology to enhance teaching and learning process. In the study, it can be seen



that, private colleges in Dimapur Town use ICT one or the other in teaching and learning. It is evident that, the private college teachers in Dimapur Town use both hardware and software to empower and enhance learning among the students. They use various ways and means to facilitate students learning progress. The study also revealed that. Integration of ICT has positive impact on the learners/ students but if it is not used effectively, it will also hamper the teaching learning process thereby resulting in poor learning outcome from the students.

## 7. CONCLUSION AND SUGGESTIONS

Educational Institutions all over the world is getting benefitted by the use of ICT. It is gaining more and more importance these days. Due to COVID 19 pandemic, Information Communication Technology were being started to overcome the problems of teaching students by all educational institutions in Nagaland. With the help of ICT, Online classes were started and the education got boosted again. With the tools and techniques of ICT, It helped the teachers as well as students to continue teaching-learning in a smooth manner. Even after the pandemic and with resumption of normal classes, ICT is continually used to provide the students and teachers the platform to share knowledge and information in a better and easier way. We can say that; ICT has made classrooms to become more digital. Some of the apps that were started and earned much focus till now are Zoom, Google Meet, Google Classroom etc. The use of ICT can have positive as well as negative impact on teaching and learning. If ICT is not handled and managed effectively and efficiently, it can do more harm than good. Thus, the main focus of the study was to find out how ICT is used by teachers to enhance the progress of students learning. In this study, some major hindrances to ICT use were also found out. Therefore, there is a need for more training opportunities to college teachers. Private Colleges in Dimapur Town should ensure that all teachers receive adequate training for integrating ICT in teaching and learning. To promote more ICT usage, the college should provide proper technical support to assure teachers during their lessons that their flow will not be interrupted. Modern ICT tools should be upgraded by the college according to the needs of the curriculum. There is a need to provide proper facilities to the teachers and students to help them in their learning. Sufficient equipments of computers and projectors should be provided for a successful teaching and learning process in the classroom. Teachers should adapt different style of teaching with the help of newer ICT tools to create a better teaching learning environment. If ICT Tools are managed efficiently, teaching learning process will be more effective which in turn will enhance students learning progress.

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## **An Analysis of Various Methods used in English Language Teaching in China, Japan and South Korea**

**K. Kumari**

Assistant Professor, St. Thomas College of Arts and Science, Chennai

### **Abstract**

*Asia with 60 percent of population is considered to be a larger continent in the world. English plays a dominant role in Asian countries as a lingua franca of the professionals and the business community. So, it is more important for the children in Asian countries who will later become a part of professional and business community to acquire English skill for the purpose of widening their professional territory. The students of Asian countries who learn English language need the materials that help them to acquire some knowledge of the culture of the people whom they are dealing with in their professional and business life. Many Asian countries have included English as a part of their academic curriculum concerning students' personal linguistic, social and cultural evolvement. The aim of this paper is to compare, analyze and present the various methods and approaches used in English Language Teaching in Asian countries. The outcome of the analysis will reveal how far the various methods and approaches are successful in enhancing the language proficiency of the learners in Asian countries. The secondary data has been collected to identify the various tools or patterns used in teaching English. Qualitative research method is carried out. This research is based on the videos, authentic materials and journals on ELT.*

**Keywords:** *lingua franca, professional territory, academic curriculum, English Language Teaching (ELT), language proficiency.*

### **1. INTRODUCTION**

Asia, the largest and most populated continent, inhabits the eastern portion of the Eurasian supercontinent. Asian people are the inhabitants of mixed culture. Asia is classified as Western Asia, Central Asia, Southern Asia, Eastern Asia, South-eastern Asia and Northern Asia. East Asia which includes China, Japan, North Korea, South Korea, Mongolia and Taiwan is the eastern region of Asia.

### **2. ENGLISH: THE RESOURCEFUL LANGUAGE**

English is considered as the richest and the most resourceful language in the world. It is needed in almost all fields, like education, business, law, healthcare and so on. It is considered as the language of the educated and a necessity for jobs. It is important for the people who are professionals and businessmen to be proficient in English in order to grow and survive in the commercial market.

### **3. ROLE OF ENGLISH IN ASIAN COUNTRIES**

The prominent role of English language education in Asian countries like China, Japan and Korea is to recognize the importance of interactions in the global market. The more fluent they are, the more they will be able to deliver the message orally and communicate with people from all over the world. Based on these reasons, it is clear that English is an influential channel that aids to connect multi-cultured people in these countries in the room of communication.

### **4. REVIEW OF LITERATURE**

L. Morita, a socio-linguist in her research paper "Why Japan needs English?" has addressed the problems in Japan on various grounds, especially health care, science and technology, higher education and territorial disputes due to communication barriers. Not only Japanese people, but also the foreign residents face a lot of problems. She argues that Japan needs English to have a good bond with other foreign countries to receive their perspectives regarding international political issues. Abd Rajab (2021), in his paper "Comparing ELT Policies in Japan and South Korea: Do they still need English?" suggests that Japan and Korea need to learn English from elementary to have a better communication to the world. He also insists that the options should be given to the students to choose English according to their needs. Li Xiaojun (2022) in his paper "A study on Integrating Chinese Culture into ELT Classroom-Based on the Latest English Syllabuses in China" proposes to go for further research to fix a standard study material to teach Chinese students English to express their culture and learn and understand other cultures in the world. These reviews also advocate the need for English language learning in Asian countries to build a bridge with the other foreign countries of diverse cultures and languages. This will lead to the exchange

of knowledge about cultures, to share information, to grow economically through foreign trade and business, to advance in science and technology so as to travel along with the world.

## 5. APPROACHES OF TEACHING-LEARNING ENGLISH

The ways of learning English are highly flexible and changeable from learners to learners. The level of English proficiency and the manner and background in which they are taught are also accountable. The learners measure the efficacy of their second language skill grounded on how far they are confident enough to speak fluently in English. The spoken language proficiency determines the result of the methods applied to develop their speaking skill in English. There are differences in teaching English in each English as a Foreign Language (EFL) country. Some of the East Asian countries were hiring Native English-Speaking Teachers (NESTs) for a particular period of time.

Nailing the above reasons as the focal point of interest, the discussion probes three EFL countries such as China, Japan and South Korea to compare their similar and distinct ways of teaching English. Therefore, I attempt to compare the ELT in each country to intensify student's language proficiency. Qualitative research method is carried out. The research is mainly based on the assortment of journals which showed the comparison and the result of the various teaching methods used by these three countries to teach English.

## 6. ELT IN CHINA

China, an East Asian country, is the most populated country in the world. It is one of the rising wealthiest nations and is considered to be one of the global forces due to its growth in economy; control in large markets, revolution in innovation, threatening military power and ascendancy in global matters.

English is described as 'the language of competition' as it is the medium in international business transactions and it is popular in the business world. This caused the Chinese government to realize the importance of the language and its major role in international communications. Learning the English language has become so important in China because the country wants to promote internationalism successfully and open up international trade and business by breaking the communication barrier.

Another reason for learning English is based on the observations by several scholars in China. Some of Chinese academics stated the importance of learning English in order to propagate their culture. Cong Cong, one of the Chinese scholars who quoted *Aphasia of Chinese culture*, reported that some Chinese people who have learnt English are proficient in speaking, but they have failed in the attempt of expressing their culture in English with foreigners. Because previously the language teachers in China used grammar-translation methods to teach English. In order to achieve proficiency in expressing their thoughts well, the Chinese educational system paid special attention in framing a specific curriculum to teach English to their native learners.

The universities in Mainland China used two English textbooks namely *Contemporary College English* and *A New English Course*. The book *Contemporary College English* is a compulsory course book for undergraduate students. Its objective is to develop students' fundamental language skills which will help them to understand the resemblances and disparities between Chinese and Western languages and cultures and also to build their linguistic skills for communication. The second book *A New English Course* has 20 units and it aims to lift the students to reach new goals and fulfill the necessities of higher education. Each unit in the book contains word-list, texts, dialogues, grammar exercises, drills to practice pronunciation, etc. It attempts to equip the students with English linguistic knowledge and cross-cultural awareness.

The *Contemporary College English* is successful in satisfying the students' language needs as it has its own vocabulary list. But most of the teachers focus only on translation instead of using audio and video materials to teach vocabulary and grammar. Lengthy passages and more translation exercises are the other downsides in this book.

The book *A New English Course* is also successful in satisfying the students' language needs. It poises all aspects of language skills like English vocabulary; grammar; and translations. The latest revised English syllabus in China provides guidelines to the English teachers concerning the inclusion of Chinese culture in English language teaching.

## 7. ELT APPROACHES IN JAPAN

Japan, an island country in East Asia. It is the eleventh most populated country in the world. It is a well-developed nation, and has a great power in universal politics. Japan needs better English to connect with the foreign residents. The MEXT (the Ministry of Education, Culture, Sports, Science and Technology) is one of the Eleven Ministries of Japan formed in January 2001. Its goal is to improve the development of Japan in relation with the international community. MEXT started including the introduction of English language teaching from the low level that is from the first year of Junior high school to the top level. Previously, ELT in Japan was grammar-oriented and examination-focused on. Later, it became the use of a more communicative teaching approach.

In the process of preparing for these reforms, MEXT steered experimental initiatives in English and science education from 2002. MEXT had approved Super English High School and Super Science High School (English for Science course). These new programs proved that innovative approaches to English teaching can be effective in the Japanese EFL environment. Since 2011, it became mandatory to include “English activities” as a part of the elementary curricular beginning in fifth grade. In 2020, the age of elementary English was lowered to grade. The JET (Japan Exchange and Teaching) program was introduced in Japan. The Program was initiated by the Japanese government. The Assistant Language Teachers (ALTs) and the Coordinators for International Relations (CIR) in Japanese schools and regional government and panels of education are the graduates of native speakers of English respectively. This program’s main objective is to assist the local teachers who teach English in Japan by employing cultural ambassadors. The teachers who worked with the ALTs criticized that they did not have complete understanding of Japanese culture and were lacking professionalism.

## 8. ELT IN SOUTH KOREA

South Korea, an East Asian country is growing in culture, economy, entertainment, and technology with other developing countries. English, a universal language, is not widely used by South Koreans. Over the last decade, Korean society struggled with globalization. So, it has become necessary for people to be fluent in English. Not only for that reason, but any Korean student who dreams to join the top universities in Korea needs to have good command in English also as it is the medium in the entrance exams and the classroom lectures. Therefore, English Language education has seen more changes, aiming at more effective and globalized English language teaching. English is necessary for job success, social mobility and international competitiveness. Being proficient in English, in Korea today, is a mark of prestige, modernity, and socioeconomic status.

Formerly, the Korean government wanted translators of English. So, in 1883, the government established an English language school in Korea. The Common Basic Curriculum of English was introduced from Elementary school (Grade 3) to high school (Grade 10). The students take the same English courses which comprise four skills in one syllabus.

The Elective Curriculum of English was introduced from High school (Grade 11) to Grade 12. The choice is left to the students to take more specialized courses such as English conversations, English reading, English writing, etc.

The “Communicative skills” was added and the sample sentences with as many basic words as possible are used to reinforce practical English study by learning and adapting more national and real expressions.

The actual English vocabulary from British or the US was included in the Korean language. But mostly US English words were given much importance.

Though South Koreans have a strong accent while speaking, they are not so confident in using English for speaking purposes due to their focus on grammar and pronunciation. So, Korean’s fluency in English still remains average. Many Koreans need to improve their communicative skills in English. The formal approach of the grammar-translation method is not suitable for English language teaching in Korea because the students play only a passive role in this method that cannot help with communicative skills. On the one hand, English is becoming popular in Korea and the teaching material of English is used in different phases of Korean life like trade, tourism, media, etc. On the other hand, English proficiency is not up to the par. Teaching English through the English medium is strongly mandatory. Hiring Native English speakers to teach communicative English is one of the approaches of ELT in Korea.

**Table 1 - Year-wise global rankings & English proficiency level**

Year	China	Japan	South Korea
2018	47 (Low)	49 (Low)	31 (Moderate)
2019	40 (Moderate)	53 (Low)	37 (Moderate)
2020	38 (Moderate)	55 (Low)	32 (Moderate)
2021	38 (Moderate)	55 (Low)	32 (Moderate)
2022	62 (Low)	80 (Low)	36 (Moderate)

Table 1 shows the global rankings of China, Japan and South Korea in English proficiency from the year 2018 to 2022. The rankings are based on the English Proficiency Index (EF EPI) which is published yearly by 'Education First'. The table on the right shows the year wise global rankings and proficiency brand of each country. In 2018, English proficiency level in China was low. In 2019, it rose slightly to the moderate level and it sustained in the next two years. Then there is a fall from moderate level to low level in the year 2022. From 2018 to the present year 2022, the English proficiency brand is always low in Japan. South Korea remained at the moderate level in the English proficiency from 2018 to 2022.

## 9. CONCLUSION

The above analysis confirms that all these three countries need English in order to cope up with the international revolutions in the business world. The people in China, Japan and South Korea failed to attain proficiency in English since all these countries used grammar translation methods previously. During the interview conducted in China by the research scholars Xiaofei Tang and Diyang Zheng, the interviewees reported that they could not get any chance to share their ideas because the teachers were in a circumstance to ignore the speaking exercises in order to complete the syllabus. The students had to be passive without interaction. Later, the educational systems in these countries brought some reformations in their educational policies and introduced teaching materials useful and needed for Foreign Language Learning. In some occasions, their teaching approaches reached a specific point but they are not considered to be up to the par. Mostly, the learners remained passive throughout their entire learning process and the teachers played the active role. This approach did not help the learners when they faced real communication situations.

### *Common methodologies followed by China, Japan and South Korea*

Some of the best approaches these three countries tried out is hiring native English speakers to teach English and using only the target language as a medium of instruction to train them to practice it effectively in actual situations. The teachers need to pay much care on the class room communication. The language teaching materials should be chosen in such a way that it meets the speakers' actual requirements. Moreover, ELT materials must offer more drills to develop speaking skills. In order to use English effectively and confidently in real life situations, the teachers need to encourage learners' interactions in daily life and to create the environment to activate their real-life conversations. The above suggestions may help to improve English language teaching in Asian countries.

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## Two-way Crossover Study to Examine the Efficacy of Smart & Swallowing Exercise on Senses and Swallowing Function among Patients admitted in Neurocritical Care Unit in Selected Hospitals at Erode

**Dr. Sampornam W**

Annai JKK Sampoorani Ammal College of Nursing, Komarapalayam, Namakkal 638183.

### Abstract

**Context:** Physicians and Nurses care for acutely ill patients with diseases of the brain, spinal cord and nerves that often have associated medical problems complicating their care. **Methods:** After obtaining written informed assent, patients admitted in Neurocritical Care Unit who fulfilled the inclusion criteria was recruited and enrolled in this study at selected hospitals, Erode. The design used for the present study was open label two-way crossover design. The total sample size was 100 patients. Study subjects were randomly allocated to either experimental group I (n=50), or experimental group II (n=50). Total 100 subjects were interviewed before intervention by assessing demographic variables. Senses were assessed by using SMART sensory assessment scale & Modified Mann Assessment of swallowing ability (MMASA) was used to measure the level of swallowing function. Experimental group I received crossover efficacy treatment in sequence of SMART, Swallowing Exercise. Experimental group II received crossover efficacy treatment in sequence of swallowing exercise & SMART. SMART technique was rendered for the duration of 40 – 45 minutes, swallowing exercise was rendered for the total duration of 20-30 minutes. Experimental group I & II received treatment twice a day for the period of 2 weeks. Between 2-period times of treatment administration, 1-day washout period was accustomed for each treatment in experimental group I & II. Complete Counterbalancing was carried out in this study. Posttest was conducted at the end of 4<sup>th</sup> week, and 8<sup>th</sup> week by using the same assessment techniques in experimental group I & II. **Results:** The crossover efficacy in sequence of SMART, swallowing exercise was quite effective for improving senses and swallowing function among patients admitted in Neurocritical care unit.

**Keywords:** SMART, swallowing exercise, Senses, Swallowing function, Neurocritical care unit

### 1. INTRODUCTION

Neurocritical care provides comprehensive medical and specialized neurological support for patients with life-threatening neurological diseases by integrating and balancing the management of both the brain and the body (Rincon F, Mayer SA, 2007). In a neuro-ICU Neurocritical care trained Physicians and Nurses care for acutely ill patients with diseases of the brain, spinal cord and nerves that often have associated medical problems complicating their care. Neurocritical care is a pioneering subspecialty dedicated to the treatment of patients with life-threatening neurological illnesses, postoperative neurosurgical complications, and neurological manifestations of systemic disease. The care of these patients requires specialized neurological monitoring and specific clinical expertise and has generated a body of literature commensurate with the expansion of the field (Diana J. Goodman, etal, 2014).

In India neurocritical care discipline has developed in the major cities. However, elsewhere it is found wanting. The high incidence of head trauma and stroke and advances in neurosurgical techniques clearly warrant the need for neurocritical care units. The morbidity and mortality associated with head trauma and stroke will certainly reduce if state of the art neurocritical care centres are established across the country (Pravin Amin, 2014). Sensory Modality Assessment and Rehabilitation Technique (SMART) are used for the assessment and rehabilitation of people with prolonged disorders of consciousness following severe brain injury. Is built on evidence-based practice and enables the patient to have the opportunity to demonstrate meaningful responses and potentially any evidence of awareness. SMART is designed to be both an assessment and treatment tool for patients in vegetative and minimally responsive states (Gill-Thwaites, H., & Munday, R. (2004).

Bedside exercise program showed an improvement of swallowing function and exhibited a positive secondary effect, such as mood state and quality of life, on subacute stroke patients with dysphagia. For improvement of rehabilitation results on subacute stroke patients with dysphagia, this study suggests that additional intensive bedside exercise would be necessary (Jung-Ho Kang, etal, 2012). Hitherto paucity of nursing literatures abounded on interventions like SMART & Swallowing Exercise on Senses and Swallowing function. This study focus on hypothetical testing by operating two-way crossover study to examine the efficacy of SMART & swallowing exercise on senses and swallowing function among patients admitted in Neurocritical care unit.

## 2. PURPOSE /OBJECTIVES

- To examine and compare the crossover efficacy in sequence of SMART, swallowing exercise on senses and swallowing function in experimental group I
- To examine and compare the crossover efficacy in sequence of Swallowing exercise & SMART on Senses and Swallowing function in experimental group II

## 3. REVIEW OF LITERATURE

### *Studies related to the Senses among patients admitted in Neurocritical Care Unit*

Early identification of patients at risk of life threatening neurological illness in order to manage them properly and to prevent further deterioration is the role of general assessment of new patients in a neurological emergency. For rapid assessment of the sensory system, pain and light touch sensations should be done. Testing for other sensory modalities is reserved for patients with suspected neuropathies or for further evaluation of sensory complaints (Kitchener, 2012).

### *Studies related to Swallowing function among patients admitted in Neurocritical Care Unit*

In a cohort of critically ill patients with neurologic impairment, longer duration of mechanical ventilation is independently associated with post-extubation dysphagia, and the development of post-extubation dysphagia is independently associated with a longer hospital length of stay after the initial BSE. A BSE was performed after mechanical ventilation in 25% (630/2,484) of all patients. The presence of moderate/severe dysphagia was also significantly associated with prolonged hospital length of stay, discharge status and surgical placement of feeding tubes (Madison Macht, etal, 2013). A prospective study conducted in a tertiary care teaching hospital to find the late-onset speech and swallowing complications of tracheostomy in neurotrauma cases. Study results suggested that though, majority of neurotrauma patients require tracheostomy for long term ventilator support and associated speech and swallowing problems are expected. Evaluation of late-onset speech and swallowing complications of tracheostomy on neurotrauma cases, as the most common intensive care unit procedure, need to be evaluated (ValluriAnil Kumar, 2018).

### *Studies related to the efficacy of SMART among patients admitted in Neurocritical Care Unit*

An analysis of data from 30 subjects diagnosed as being in vegetative state (VS) on admission to a specialized Brain Injury Unit was carried out. Scores were obtained from the Sensory Modality Assessment Technique (SMART) and the Western Neuro Sensory Stimulation Profile (WNSSP) on admission and at 2 monthly intervals and converted to Rancho Level ratings to allow comparison. This initial validation study shows that the SMART is a useful tool in discriminating awareness and more sensitive at detecting the higher cognitive functions than both the WNSPP and referring physician, thus indicating the need to conduct a specifically designed prospective study to validate and further evaluate the SMART (H. Gill-Thwaites, 2009).

### *Studies related to the efficacy of Swallowing Exercise among patients admitted in Neurocritical Care Unit*

A study was carried out to assess the effectiveness of swallowing exercises on swallowing ability among patients with cerebrovascular accident. The study results revealed that the pretest mean swallowing ability score was 50.46 with standard deviation 12.045 among the cerebrovascular accident patient. The posttest means swallowing ability score 77.06% with standard deviation 9.54 among the cerebrovascular accident patient. Swallowing exercises were effective among the cerebrovascular accident patients regarding their swallowing ability (D. Maria Diana, S.S Sharmila Jansi Rani, 2014).

## 4. METHODOLOGY

After obtaining written informed assent, patients admitted in Neurocritical Care Unit who fulfilled the inclusion criteria was recruited and enrolled in this study at selected hospitals, Erode. The design used for the present study was open label two-way crossover design. Non probability purposive sampling technique was used to recruit the study subjects. The total sample size was 100 patients. Study subjects were randomly allocated to either experimental group I (n=50), or experimental group II (n=50). Patients in Neurocritical Care Unit with Glasgow coma scale score between 9 -12 (moderate) was selected in all the experimental groups.



*Pretest*

All 100 subjects were interviewed before intervention by assessing demographic variables like age, gender, occupation, personal habits, onset of stroke, duration of illness and comorbid condition. Senses were assessed by using SMART sensory assessment scale & Modified Mann Assessment of swallowing ability (MMASA) was used to measure the level of swallowing function.

*Intervention*

- ❖ Experimental group I received crossover efficacy treatment in sequence of SMART, Swallowing Exercise.
- ❖ Experimental group II received crossover efficacy treatment in sequence of swallowing, exercise & SMART.

**Table 1 – Post-test scores**

Senses in experimental group I and II with pre and posttest scores					
Variable	Experimental group I & II	Mean $\pm$ SE	Significance Paired 't' test		
			Experimental group I Pre – Post	Experimental group II Pre– Post	
Senses	Experimental group I– Pretest	15.3 $\pm$ 2.0	t =9.48 P =0.001 Significant	t =6.45 P =0.03 Significant	
	Experimental group I- Posttest	19.1 $\pm$ 3.3			
	Experimental group II - Pretest	14.4 $\pm$ 2.6			
	Experimental group II - Posttest	17.2 $\pm$ 2.8			
	Repeated measures ANOVA				
	Experimental group I-Posttest			F ratio=5.006, Significant	
	Experimental group II-Posttest			F ratio=4.005, Significant	
N = 100 (n <sub>1</sub> =50, n <sub>2</sub> =50)					

SMART technique was rendered for the duration of 40 – 45 minutes, swallowing exercise was rendered for the total duration of 20-30 minutes. Experimental group I & II received treatment twice a day for the period of 2 weeks. Between 2-period times of treatment administration, 1-day washout period was accustomed for each treatment in experimental group I & II. Complete Counterbalancing was carried out in this study. In order to prevent carryover effects washout periods are ratified.

*Posttest*

Posttest was conducted at the end of 4<sup>th</sup> week, and 8<sup>th</sup> week by using the same assessment techniques in experimental group I & II.

**5. ANALYSIS AND DISCUSSION**

Comparison of mean, standard error of pretest senses scores in experimental group I showed 15.3  $\pm$  2.0 and posttest showed 19.1  $\pm$  3.3. The mean score in experimental group I increased in the posttest and showed significant improvement in the level of senses among patients admitted in Neurocritical care unit. The Paired't' test value of senses scores showed statistical significance in experimental group I (t=9.48). Repeated measures ANOVA posttest scores in experimental group I showed statistical significance (5.006). Comparison of mean, standard error of pretest senses scores in experimental group II showed 14.4  $\pm$  2.6 and posttest showed 17.2 $\pm$  2.8. The mean score in experimental group II increased in the posttest and showed significant improvement in the level of senses among patients admitted in Neurocritical care unit. The Paired't' test value of senses scores showed statistical significance in experimental group II (t =6.45). Repeated measures ANOVA posttest scores in experimental group II showed statistical significance (4.005). Posttest mean scores on senses between groups depicted improvement in experimental group I compared to experimental group II (table 1).

**Table 2 – Post-test scores**

<b>Swallowing function in experimental group I and II with pre and posttest scores</b>					
<b>Variable</b>	<b>Experimental group I &amp; II</b>	<b>Mean ± SE</b>	<b>Significance Paired 't' test</b>		
			<b>Experimental group I Pre – Post</b>	<b>Experimental group II Pre– Post</b>	
Swallowing function	Experimental group I– Pretest	35.1 ±6.0	t =17.48 P =0.001 Significant	t =14.55 P =0.001 Significant	
	Experimental group I- Posttest	42.3 ±8.3			
	Experimental group II - Pretest	36.4 ±6.6			
	Experimental group II - Posttest	40.3 ±7.7			
	Repeated measures ANOVA				
	Experimental group I-Posttest			F ratio=10.007, Significant	
	Experimental group II-Posttest			F ratio=9.003, Significant	
N = 100 (n <sub>1</sub> =50, n <sub>2</sub> =50)					

Comparison of mean, standard error of pretest swallowing function scores in experimental group I showed 35.1 ± 6.0 and posttest showed 42.3 ±8.3. The mean score in experimental group I increased in the posttest and showed significant improvement in the level of swallowing function among patients admitted in Neurocritical care unit. The Paired't' test value of swallowing function scores showed statistical significance in experimental group I (t=17.48). Repeated measures ANOVA posttest scores in experimental group I showed statistical significance (10.007). Comparison of mean, standard error of pretest swallowing function scores in experimental group II showed 36.4 ±6.6 and posttest showed 40.3 ±7.7. The mean score in experimental group II increased in the posttest and showed significant improvement in the level of swallowing function among patients admitted in Neurocritical care unit. The Paired't' test value of swallowing function scores showed statistical significance in experimental group II (t=14.55). Repeated measures ANOVA posttest scores in experimental group II showed statistical significance (9.003). Posttest mean scores on swallowing function between groups depicted improvement in experimental group I compared to experimental group II (table 2).

Henceforth, examination and comparison of the crossover efficacy in sequence of SMART, swallowing exercise on senses and swallowing function in experimental group I was statistically significant compared to the crossover efficacy in sequence of swallowing exercise, SMART in experimental group II. This result is consistent with the study analysis of data from 30 subjects diagnosed as being in vegetative state (VS) on admission to a specialized Brain Injury Unit. Scores were obtained from the Sensory Modality Assessment Technique (SMART) and the Western Neuro Sensory Stimulation Profile (WNSSP) on admission and at 2 monthly intervals and converted to Rancho Level ratings to allow comparison. The Rancho scores derived from the SMART were significantly different from the physicians and the WNSSP (P < 0.01), with the SMART rating the patient at a higher level of cognitive functioning. This initial validation study shows that the SMART is a useful tool in discriminating awareness and more sensitive at detecting the higher cognitive functions than both the WNSPP and referring physician, thus indicating the need to conduct a specifically designed prospective study to validate and further evaluate the SMART (H. Gill-Thwaites, 2009).

## 6. CONCLUSION

The crossover efficacy in sequence of SMART, swallowing exercise was quite effective for improving senses and swallowing function among patients admitted in Neurocritical care unit.

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## Socially Responsible Investment with Respect to Carbonex Index in India

**Kaleeshwari. S**

Ph.D. Research Scholar, Department of Commerce, Bharathiar University, Coimbatore.

**Dr. M. Jegadeeshwaran**

Assistant Professor, Department of Commerce, Bharathiar University, Coimbatore.

### Abstract

*India has witnessed a significant impact on its economic growth during this pandemic growth. The Indian government is unveiling one of the largest stimulus packages in the world. This stimulus package mainly supports the industries to have a large negative impact on the environment through the unsustainable use of resources. Additional announcements have been made toward the deeper target for the contribution of industries in the renewable power sector. Significant investments have been made in energy efficiency programs and mass rapid transport. Which will pave the way toward a reduction in GHG emissions in near future. India's report entitled 'India's turning point: how climate action can drive our economic future' also states how a country could gain US\$ 11 trillion in economic value instead of limiting rising global temperature and realizing its potential to export decarbonization to the world. Carbon markets have a long and controversial legacy in India and abroad. India hugely benefited financially from the Clean Development Mechanism (CDM) that allowed countries and their businesses to buy credits from projects that reduced GHG (greenhouse gas) emissions in India to 'offset' their domestic emissions. Other countries have also established carbon markets linked to compulsory schemes that limit or put a cap on the emissions allowed by high-polluting entities such as factories and power plants. If these entities cannot make the emission cuts required to meet this cap, they can buy credit from those that emit less than their allowance. All the experts agree that carbon markets can be effective, particularly in allowing the private sector to use a market-based logic to invest in green technologies that will deliver emission cuts most cost-effectively. India is relatively late in embracing a domestic carbon market, but this means we can learn and avoid some of the early mistakes of these schemes.*

**Keywords:** Carbon Markets, Emission, Clean Development mission, role, performance.

### 1.INTRODUCTION

India has an opportunity to lead the way and show climate action is for sustainable economic growth. so accelerated decarbonization could bring significant benefits to India and the world.so India can also use the transition to a low emission footing to restructure the economy towards growth in the advanced industrial sector, leveraging lower-cost clean energy export as it experiences a rapid increase in coming years. This will delicately balance the need for sustained economic development and the energy demand and investing in and transitioning to emerging low-emission technologies. India is yet to submit the 2030 updated target for nationally determined contribution to UNFCCC. Since India missed the UN deadline of oct 12,2021. So, this updated NDC may further a deeper reduction in the emission intensity through Glasgow COP 26.

Even though there found a low per capita carbon emission found is found among India. indie is highly vulnerable to the impact of climatic change. Where India is in place of creating jobs and mitigating poverty, and improving health which paves way for raise in the emission in the business as a usual scenario, this creates a curse to developing a low carbon pathway for its growth and economic development. So, in this scenario, a carbon market can play a very important role in incentivizing low-carbon technologies and practices along with flexibility and cost-effectiveness. Though there are multiple priorities in accommodating the markets through active engagement with various stakeholders, building on existing experiences with market mechanisms, and integrating them to bring out greater efficiencies while providing long-term incentives to move towards low carbon economic activities.

This carbon market would help create synergies across different policy measures for climate change mitigation by creating a common marketplace for emissions trading through the development of meta- registry in India and thus help India enhance its ambition, in line with the Paris agreement. Developing a domestic carbon market that aligns with global best practices can enable India to link the domestic market with reputed global markets thus giving the flexibility to reduce emissions and giving access to low cost-effective credits to satisfy their emission. Furthermore, a development focused to allow credit to be purchased from emission reduction activities undertaken by MSMEs would not only incentivize these but improve the energy sector. So, implementing a carbon market has the potential to boost finance and low carbon technology inflows by increasing the demand for low-cost

reduction opportunities. The end of the year, 2020 marks a fundamental change in the global governance of greenhouse gas emissions. The new context of the Paris agreement has important implications for the voluntary carbon market.

## 2. STATEMENT OF THE PROBLEM

Carbon emission act like a blanket in the air, which traps the heat and warms up the earth. Which will raise the global temperature. Which in turn global warming would affect environmental conditions. A carbon market is a key tool in helping to drive emissions from the economy by effectively putting a price on pollution .so it forms mandatory trading of carbon permits, to the voluntary project which can help to cut emissions “carbon offsets”. Provided it sends an adequate, predictable, and long-term signal for GHG emissions, the carbon market can effectively encourage less carbon-intensive lifestyles, technology choices, and investment decisions. This market is a key tool for countries to cut their greenhouse gases and meet their Paris agreement commitments. They turn emission reduction and removal into tradeable assets. These credits are generated from emission reduction projects or pollution allowance by the government. Such a market related to sustainable development is one important market for future development. The study focuses on the Carbonex indices, along with other select indices of the Bombay Stock Exchange concerning energy and carbon emission. An analysis has been made of how these indices related to Carbonex and how they play a major role in price level changes of Carbonex concerning increase or decrease in the price level of particular indices due to reduction in carbon emission or increase in carbon emission or any other factors.

- The above problem is discussed with the research problem:
- What is the cause and effect of select indices of the Bombay stock exchange on Carbonex indices?
- Whether these indices play a major role in price level changes of the Carbonex index?

### *The objective of the study*

- To examine the cause and effect of Carbonex Indices and select indices of Bombay Stock Exchange in India.
- To analyze the relationship between Carbonex Indices and select indices of Bombay Stock Exchange in India
- To study the short- and long-term volatility between Carbonex Indices and select indices of the Bombay stock exchange in India.

### *The hypothesis of the study*

- There is no significant cause and effect of Carbonex Indices on select indices of the Bombay Stock Exchange in India.
- There is no significant relationship between Carbonex Indices and select indices of the Bombay Stock Exchange in India.
- There is no significant cause of volatility among Carbonex Indices and select indices of Bombay Stock Exchange in India.

### *Research Methodology*

The study is analytical

### *Source of Data*

The data are a secondary source of information and are collected from the official websites of Bombay Stock exchange, MCX the data are taken on monthly bases. other related information is taken from news articles, ministry publications, journals, etc.

### *Period of the study*

The period of study covers from 2012-2021.

### *Tools used for the study*

The study uses statistical tools for the analysis such as pairwise granger causality, covariance analysis, arch, and Garch model has been used.

### 3. ANALYSIS AND INTERPRETATION

There is no significant cause and effect of Carbonex Indices on select indices of the Bombay Stock Exchange in India.

**Table 1 - Pairwise Granger Causality Test for Carbonex Indices and select indices of Bombay Stock Exchange in India**

Null Hypothesis:	Obs	F-Statistic	Prob.
BSE_ENERGY does not Granger Cause BSE_CARBONEX	127	2.88993	<b>0.0594</b>
BSE_CARBONEX does not Granger Cause BSE_ENERGY		0.07009	0.9323
BSE_GREENEX does not Granger Cause BSE_CARBONEX	127	0.57353	0.5650
BSE_CARBONEX does not Granger Cause BSE_GREENEX		0.04672	0.9544
BSE_INDUSTRIAL_PRODUCTIO does not Granger Cause BSE_CARBONEX	127	0.45417	0.6360
BSE_CARBONEX does not Granger Cause BSE_INDUSTRIAL_PRODUCTIO		7.20029	<b>0.0011</b>
BSE_POWER does not Granger Cause BSE_CARBONEX	127	0.41240	0.6630
BSE_CARBONEX does not Granger Cause BSE_POWER		4.48429	<b>0.0132</b>
BSE_GREENEX does not Granger Cause BSE_ENERGY	127	0.30836	0.7352
BSE_ENERGY does not Granger Cause BSE_GREENEX		2.11435	0.1251
BSE_INDUSTRIAL_PRODUCTIO does not Granger Cause BSE_ENERGY	127	0.54162	0.5832
BSE_ENERGY does not Granger Cause BSE_INDUSTRIAL_PRODUCTIO		2.05462	0.1326
BSE_POWER does not Granger Cause BSE_ENERGY	127	0.46098	0.6318
BSE_ENERGY does not Granger Cause BSE_POWER		2.85907	0.0612
BSE_INDUSTRIAL_PRODUCTIO does not Granger Cause BSE_GREENEX	127	0.43551	0.6479
BSE_GREENEX does not Granger Cause BSE_INDUSTRIAL_PRODUCTIO		7.86934	<b>0.0006</b>
BSE_POWER does not Granger Cause BSE_GREENEX	127	0.52551	0.5926
BSE_GREENEX does not Granger Cause BSE_POWER		5.94902	<b>0.0034</b>
BSE_POWER does not Granger Cause BSE_INDUSTRIAL_PRODUCTIO	127	1.74463	0.1790
BSE_INDUSTRIAL_PRODUCTIO does not Granger Cause BSE_POWER		1.45771	0.2368

*Source: computed from Eviews*

Table 1 indicates the pairwise granger causality for Carbonex Indices and select indices of the Bombay Stock Exchange in India. the analysis helps us to know the cause, effect, and forecast of select indices and Carbonex indices. BSE-Energy granger causes the BSE- Carbonex. And BSE-Carbonex does granger cause the BSE-Industrial Production. Apart from that BSE-Greenex granger cause the BSE-Industrial Production and BSE-Greenex Granger Cause the BSE-Power. Since the significant value is below 0.05, hence it can be concluded that there is a cause, and effect and these indices help in forecasting one another. Hence, we reject the null hypothesis.

There is no significant relationship between Carbonex Indices and select indices of the Bombay Stock Exchange in India.

**Table 2 - Covariance analysis for the Carbonex Indices and select indices of Bombay Stock Exchange in India**

Probability	BSE_Carbone x	BSE_Energy	BSE_Greenex	BSE_Industrial _Production	BSE_Power
<b>BSE_Carbonex</b>	344497.1				
	1.000000				
	-----				
	-----				
<b>BSE_Energy</b>	1066251.	3537559.			
	0.965862	1.000000			

	42.01639	----			
	<b>0.0000</b>	----			
<b>BSE_Greenex</b>	511536.4	1563052.	777625.3		
	0.988322	0.942403	1.000000		
	73.09276	31.75174	----		
	NA	<b>0.0000</b>	----		
<b>BSE_Industrial_Pro duction</b>	11728241	34039301	18245354	5.08E+08	
	0.886826	0.803206	0.918259	1.000000	
	21.62719	15.19498	26.13327	----	
	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	----	
<b>BSE_Power</b>	318246.7	1008518.	515917.9	13007809	520047.8
	0.751882	0.743550	0.811286	0.800536	1.000000
	12.85197	12.53123	15.63794	15.05390	----
	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	----

Source: computed from Eviews

Table 2 shows the Carbonex Indices and select indices of the Bombay Stock Exchange in India. the BSE-Energy has a direct positive relationship with BSE-Carbonex at .965. BSE-Greenex has a strong positive relationship with BSE-Energy at .942, apart from that BSE-Industrial Production has a strong positive relationship with BSE-Carbonex, Energy, and Greenex. And BSE-Power has a strong positive relationship with BSE-Carbonex, Energy, Green, and Industrial production. Hence the significant value is below 0.05 and hence the null hypothesis is rejected concluding there is a relationship and variance among the select indices.

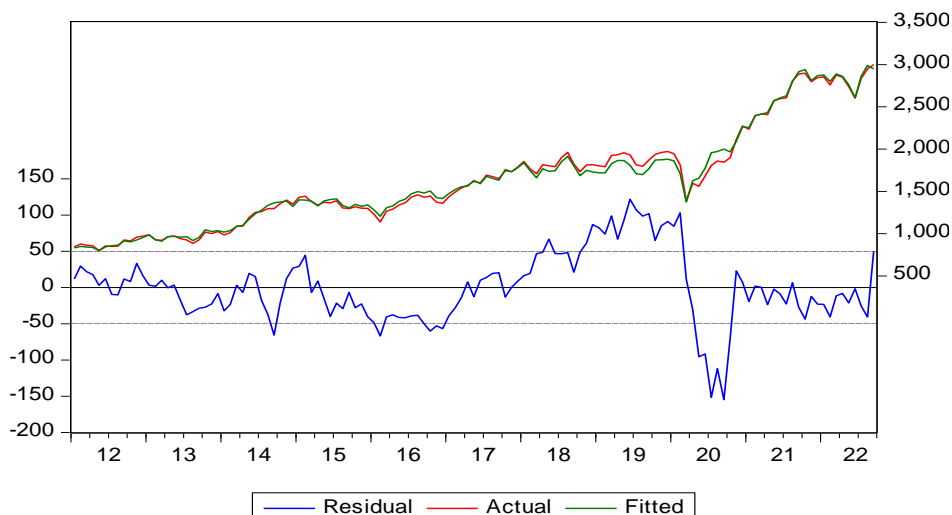
There is no significant cause of volatility among Carbonex Indices and select indices of Bombay Stock Exchange in India.

**Table 3 - least square analysis for the Carbonex Indices and select indices of Bombay Stock Exchange in India**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	84.43315	17.16355	4.919328	0.0000
<b>BSE_Energy</b>	0.094406	0.007864	12.00414	0.0000
<b>BSE_Greenex</b>	0.518552	0.025566	20.28298	0.0000
<b>BSE_Industrial_Production</b>	0.000913	0.000568	1.607681	0.1104
<b>BSE_Power</b>	-0.108393	0.010674	-10.15495	0.0000
<b>R-squared</b>	0.993130	<b>Mean dependent var</b>		1641.810
<b>Adjusted R-squared</b>	0.992909	<b>S.D. dependent var</b>		589.2271
<b>S.E. of regression</b>	49.61855	<b>Akaike info criterion</b>		10.68460
<b>Sum squared resid</b>	305288.1	<b>Schwarz criterion</b>		10.79544
<b>Log-likelihood</b>	-684.1564	<b>Hannan-Quinn criteria.</b>		10.72963
<b>F-statistic</b>	4481.603	<b>Durbin-Watson stat</b>		0.282473
<b>Prob(F-statistic)</b>	0.000000			

Source: computed from Eviews

Table 3 depicts the simple least square for the Carbonex Indices and select indices of the Bombay Stock Exchange in India. the coefficient value which indicates a positive relationship between Carbonex Indices and select indices of Bombay Stock Exchange in India. and the T-statistics which are above 2 found satisfactory. P value is less than the significant value of 0.05. Hence the null hypothesis is rejected. It is concluded that there is a positive relationship between Carbonex Indices and select indices of the Bombay Stock Exchange in India.



**Figure 1 - Residual representing the clustering volatility for the period 2012-2021**

The above chart 1 shows the clustering volatility which elucidates that low volatility is followed by high volatility and high volatility is followed by low volatility which fulfills the condition for the ARCH effect test further. There is low volatility in the first 50 months and high volatility is found between 50-90 months.

H0 = There is no ARCH effect between Carbonex Indices and select indices of Bombay Stock Exchange in India.

**Table 4 - Testing for ARCH effect using Heteroskedasticity test**

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
<b>F-statistic</b>	20.50657	Prob. F(4,124)		0.0000
<b>Obs*R-squared</b>	51.35942	Prob. Chi-Square(4)		0.0000
<b>Scaled explained SS</b>	68.81709	Prob. Chi-Square(4)		0.0000
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6952.695	1103.159	6.302534	0.0000
BSE_Energy	2.810099	0.505473	5.559347	0.0000
BSE_Greenex	-2.617113	1.643202	-1.592691	0.1138
BSE_Industrial_Productio	-0.016658	0.036501	-0.456367	0.6489
BSE_Power	-3.628727	0.686048	-5.289323	0.0000
<b>R-squared</b>	0.398135	Mean dependent var		2366.575
<b>Adjusted R-squared</b>	0.378720	S.D. dependent var		4046.050
<b>S.E. of regression</b>	3189.150	Akaike info criterion		19.01088
<b>Sum squared resid</b>	1.26E+09	Schwarz criterion		19.12173
<b>Log-likelihood</b>	-1221.202	Hannan-Quinn criteria.		19.05592
<b>F-statistic</b>	20.50657	Durbin-Watson stat		0.993249
<b>Prob(F-statistic)</b>	0.000000			

Source: computed from Eviews

Table 4 explains the ARCH effect using the heteroskedasticity test, the observed R -square value is .398 and the P chi-square value is 0.000 which is below the significant value of 0.05, hence we fail to accept the null hypothesis concluding that there is an ARCH effect in the model.

**Table 5 - Test for ARCH Model of Carbonex Indices and select indices of Bombay Stock Exchange in India**

Dependent Variable: BSE_CARBONEX				
$Q = C(6) + C(7)*(Q(-1) - C(6)) + C(8)*(RESID(-1)^2 - GARCH(-1))$				
$GARCH = Q + C(9) * (RESID(-1)^2 - Q(-1)) + C(10)*(GARCH(-1) - Q(-1))$				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	105.3368	10.14455	10.38358	0.0000



<b>BSE_Energy</b>	0.112982	0.004803	23.52085	0.0000
<b>BSE_Greenex</b>	0.478042	0.013786	34.67573	0.0000
<b>BSE_Industrial_Productio</b>	0.000804	0.000340	2.369239	0.0178
<b>BSE_Power</b>	-0.103610	0.005378	-19.26682	0.0000
<b>Variance Equation</b>				
<b>C(6)</b>	2367.263	6612.428	0.358002	0.7203
<b>C(7)</b>	0.908209	0.273690	3.318383	0.0009
<b>C(8)</b>	0.899889	0.386589	2.327764	0.0199
<b>C(9)</b>	-0.077982	0.351018	-0.222161	0.8242
<b>C(10)</b>	0.696596	1.432054	0.486431	0.6267
<b>R-squared</b>	0.992563	Mean dependent var		1641.810
<b>Adjusted R-squared</b>	0.992323	S.D. dependent var		589.2271
<b>S.E. of regression</b>	51.62710	Akaike info criterion		9.875221
<b>Sum squared resid</b>	330504.3	Schwarz criterion		10.09691
<b>Log-likelihood</b>	-626.9517	Hannan-Quinn criteria.		9.965298
<b>Durbin-Watson stat</b>	0.281352			

Source: computed from Eviews

Table 5 examines the ARCH model for Carbonex Indices and select indices of the Bombay Stock Exchange in India. the standard deviation of the model is 589.22 and the P value of 0.000 which is below the significant value of 0.05 indicates the risk and volatility in the variable which shows that it is highly risky and highly volatile among the price of select indices. so when the standard deviation is a high-risk factor is also high. Hence the p-value is below 0.05 there is a high effect on the arch of volatility on Carbonex Indices and select indices of the Bombay Stock Exchange in India.

**Table 6 - Test for Garch Model of Carbonex Indices and select indices of Bombay Stock Exchange in India**

Dependent Variable: BSE_CARBOXEX				
GARCH = C(6) + C(7)*RESID(-1)^2 + C(8)*GARCH(-1)				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>z-Statistic</b>	<b>Prob.</b>
<b>C</b>	109.1093	10.31737	10.57530	0.0000
<b>BSE_Energy</b>	0.113131	0.005374	21.05303	0.0000
<b>BSE_Greenex</b>	0.478772	0.013213	36.23537	0.0000
<b>BSE_Industrial_Productio</b>	0.000761	0.000326	2.336005	0.0195
<b>BSE_Power</b>	-0.105364	0.006073	-17.34994	0.0000
<b>Variance Equation</b>				
<b>C</b>	187.6223	76.91080	2.439480	0.0147
<b>RESID(-1)^2</b>	0.873967	0.307182	2.845108	0.0044
<b>GARCH(-1)</b>	0.091105	0.133081	0.684581	0.4936
<b>R-squared</b>	0.992512	Mean dependent var		1641.810
<b>Adjusted R-squared</b>	0.992270	S.D. dependent var		589.2271
<b>S.E. of regression</b>	51.80497	Akaike info criterion		9.861373
<b>Sum squared resid</b>	332785.6	Schwarz criterion		10.03873
<b>Log-likelihood</b>	-628.0585	Hannan-Quinn criteria.		9.933435
<b>Durbin-Watson stat</b>	0.280205			

Table 6 reveals the GARCH model for the Carbonex Indices and select indices of the Bombay Stock Exchange in India. Where GARCH has a positive coefficient value and the P value is above the significant value of 0.05 which indicates that there is no internal cause of volatility of select indices on BSE-Carbonex. That it can be concluded that the GARCH effect doesn't exist.

#### 4. FINDINGS OF THE STUDY

- BSE-Carbonex does granger cause the BSE-Industrial Production.
- Apart from that BSE-Greenex granger cause the BSE-Industrial Production and BSE-Greenex Granger Cause the BSE-Power.
- The BSE-Energy has a direct positive relationship with BSE-Carbonex at .965.
- BSE-Greenex has a strong positive relationship with BSE-Energy at .942,

- BSE-Industrial Production has a strong positive relationship with BSE- Carbonex, Energy, and Greenex.
- And BSE-Power has a strong positive relationship with BSE-Carbonex, Energy, Green, and Industrial production.
- there is a positive relationship between Carbonex Indices and select indices of the Bombay Stock Exchange in India
- low volatility is followed by high volatility and high volatility is followed by low volatility which fulfills the condition for the ARCH effect test further.
- There is low volatility in the first 50 months and high volatility is found between 50-90 months.
- There is an ARCH effect in the model.
- The risk and volatility in the variable show that it is highly risky and highly volatile among the price of select indices.
- So, when the standard deviation is a high-risk factor is also high. there is a high effect on the arch of volatility on Carbonex Indices and select indices of the Bombay Stock Exchange in India.
- There is no internal cause of volatility of select indices on BSE-Carbonex. That it can be concluded that the GARCH effect doesn't exist.

## 5. CONCLUSION

Carbon markets are working towards the sustainable and holistic growth of the environment and economy, the Carbonex indices are one such index that helps in sustainable development and motivates investors in sustainable financing and development. More investors are attracted to such development projects and investments. Through this paper, we can conclude that the Carbonex indices of the Bombay stock exchange are one such index involved in controlling carbon emissions through the concept of carbon credits. The selected indices related to renewable energy, and sustainable growth are directly correlated with the Carbonex indices and they play a major role in short-term volatility rather than a long-term change in the price level of the indices. So this becomes evident that all the indices related to sustainability are related to one another in developing the economy altogether.

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## Factors influencing Purchase of Gold Ornaments among IT Professionals in Bangalore city

**Lakshmi Eshwar**

Research Scholar, Periyar University, Salem  
Assistant Professor, Mount Carmel College Autonomous, Bengaluru – 52

**Dr. G. Selvalakshmi**

Research Guide, Assistant Professor and Head, PG & Research Department of Commerce  
Trinity College for Women, Namakkal, Tamilnadu

### Abstract

*Gold has always been of great cultural and monetary significance in India; it can be found there in abundance, from the humblest of houses to the most lavish of jewellery collections and savings accounts. Buyers of gold, however, are looking elsewhere due to the current political climate. The study's goal is to discover what factors are responsible for IT workers' growing fondness for gold purchases. The research revealed that external influences, investment motives, investment attitudes, and investment utilities all have a role in the decision to put money into gold. The main objective of the study is to identify the factors influencing gold purchases and also examine the impact of each variable on the gold purchase decision. The study's objectives are met by utilizing both primary and secondary sources of information. There was a total of 26 questions on the survey. We assessed the validity and reliability of the questionnaire's scales using the master validity series and found them to be adequate. When conducting their research, the team employed a convenient sample of IT employees. The Cochran method for estimating an unknown population with 95% confidence and a 5% margin of error led to the selection of a sample size of 100. To make up for any dropouts, we polled 150 IT employees as opposed to 100. After removing outlying information, 132 IT Employees remained for the statistical examination. The statistical analysis was performed using SPSS version 25 and AMOS version 22. According to the results, IT professionals are most interested in purchasing gold ornaments, followed by gold bars and coins. Online programs are second only to Gold EFTs and Gold Bonds in terms of popularity when it comes to acquiring gold. At the p0.05 level, our model of the factors impacting gold investment returns demonstrates robust associations between all of these components. Motivation and Investment value are two of the biggest influences on Gold investors' opinions (46% and 41%, respectively). A mere six percent of IT employees have their choice to buy gold impacted by external factors. There is a statistically significant relationship between Attitude and the choice to purchase gold (31% of the variation).*

**Keywords:** Gold investments, Factors, Utility, attitude, external factors, Motivation

### 1. INTRODUCTION

Published in January 2022 by the World Gold Council, this figure represents a five-year high for India's annual gold consumption of 797.3 tonnes. Weddings and festival seasons caused the demand for gold jewellery to skyrocket in 2021, driving it to grow by a factor of two years over year to a six year high of 610.9 tonnes. Most of the spending was generated by consumers in urban regions. The total quantity of gold imported in 2025 was 1,924.6 tonnes, up from 349.5 tonnes the previous year. Because of pent-up demand, gold consumption surged by 78% in 2021. According to the World Gold Council, greater consumer spending and investment were evident during Dussehra and Dhanteras due to the improving economic situation that followed the relaxation of lockdown restrictions in the second half of the year and the success of the vaccination effort.

"Gold business in India experienced various structural changes and compliance rules throughout 2016-2019," said Somasundaram PR, regional CEO, India, World Gold Council, reducing average consumption to 720 tonnes from the previous five-year average of 908 tonnes.

There have been major shifts and more streamlined operations in India's gold market in recent years. In the years following 2022, consumption of 800 to 850 tonnes of gold will be the average. Council forecasts that rural India's rising incomes would be the key driver of consumption in 2022.

The 4th quarter's 343 tonne demand blew over our most optimistic Q3 forecast and proved to be the greatest quarter in our historical data series, which explains India's 79 percent growth in gold demand in 2021. A combination of lower prices in November 2021 and a more bullish outlook on future prices gave retail investments a boost, pushing fourth-quarter demand for gold as an investment to an eight-year high of 79 tonnes. This change in people's attitudes on long-term internet savings might be good news for gold.

Keeping a watch on the price of gold is vital in 2022 since inflation, interest rates, and geopolitical turmoil will still be key challenges across the world. The fourth-quarter pent-up demand that contributed to last year's demand increase is less likely to resurface this year. But the upswing will keep on, creating a new average higher than it was before the outbreak.

Given this context, it's important to learn what drives IT workers in Bangalore's IT industry to purchase gold. The city of Bangalore is often referred to as the "Silicon Valley of India" or the "IT capital of India" due to its status as India's leading IT exporter (IT). Indian Space Research Organization (ISRO), Infosys, Wipro, and Hindustan Aeronautics Limited are just a few of the well-known Indian IT firms headquartered there (HAL). Bangalore is home to a huge and diverse population, making it the second-most populated city in India after New Delhi. The statistics revealed that in 2021-22, the average national income was predicted to be \$1,50,326 per person, with the per capita income rising by 17.9% to \$278,726 (at current prices). Times of Hindustan, March 8, 2022) The present research region is taken into consideration the elements impacting the Gold Purchases since a higher per capita income leads to more savings and investments.

## 2. REVIEW OF LITERATURE

Following is a list of works that were examined using the systematic literature review method: Scholarly articles published in the recent decade have been analysed, and the foundational works are addressed here. The authors B. Thapa and A. K. Shah (2020) The writers look at the many factors that influence people's decisions to put their money in gold. Gold price, secured investment, liquidity requirement, social status, advertising and impacts, and demand were among the six factors examined in connection to gold investment decision. The study's quantitative analysis relies on primary data obtained using a structured questionnaire, which was developed using a descriptive research approach. The authors used a simple sampling method to choose their pool of 160 Kathmandu valley residents. The study's main findings on the crucial components and their links to the investment decision-making process are depicted through descriptive statistics, a t-test, and a correlation. Average agreement about the reasons to invest in gold is highest for liquidity needs and social status and lowest for advertising and outside pressures. A secured investment, however, has the highest connection value with people's propensity to buy gold when all other factors are taken into account. What's more, a favourable and statistically significant relationship was discovered between each of the contextual aspects and the final investment decision.

Bahadur, Pandey, Pandit, Kandel, and Thakur (2019). Given the importance of the gold industry to the economy and culture of the United States. Understanding consumer behaviour and the factors that affect it can help the gold and silver markets. A descriptive cross-sectional quantitative investigation was necessary to discover the typical purchasing process. Place of Study and Number of Years Spent in Class: Four hundred thirty-one samples were collected from forty different jewellery stores in western Nepal between June and December of 2017. Forty jewellery stores were selected at random from a list of all jewellery stores in western Nepal between June 2017 and December 2017. The 431 participants in the study were recruited at random, with 10 customers chosen at each location. The data was collected through in-depth interviews with individuals and the use of a piloted, standardized questionnaire. In SPSS-20, we used measures of central tendency and dispersion, as well as descriptive statistics like frequency and percentage, and hypothesis testing using chi-squared. Women accounted for 65.8 percent of respondents, while males made for 34.2% of those who participated in the study. When compared to a woman's normal jewellery-buying behaviour, a woman's typical jewellery-wearing behaviour differs greatly. Therefore, a p-value of 0.010 indicates significance. The advertising and jewellery-buying impulses of both sexes are quite comparable (p-values = 0.419 and 0.658, respectively). Consumers' decisions to buy jewellery, where they buy jewellery, and their reactions to advertising all have minimal bearing on their final purchases. Researchers found that most women would rather go jewellery shopping by themselves.

Ms. R. Sundari (2018) Gold is both a tangible and highly liquid asset. You may invest in gold without ever talking to a professional. Gold may be bought and sold by anybody, anywhere, at any time, whether they are individual investors with a few dollars or a huge bank with billions. In addition to its monetary and monetary symbol significance, gold is frequently purchased. The price of gold has increased by about 900% during the past 20 years. Analysis of the Data from a Different Angle: This research set out to better understand gold purchasers' perceptions of risk, as well as the variables that contribute to their final purchasing decisions and how satisfied they are with those choices. Various types of data, including primary and secondary sources, are used in the study. A total of 310 employed individuals in Chennai were polled using a pre-made survey. IBM SPSS is used to conduct analyses on the Primary Data. AMOS is utilized prior to doing a Path Analysis. Findings The Gold Buying Behaviour Satisfaction Structural Equation Model (SEM) reveals the interrelationship between Risk Perception, Influencing Factors, and Satisfaction with the Purchasing Experience. Customers are just 48% satisfied based on

their behaviour while purchasing gold. There is a 37% influence on gold buying behavior and a 2% impact on satisfaction due to the perception of risk. That's why the gold market is so sensitive to speculation.

Mubeen R. (2017) Gold has always been the preferred medium of long-term investment for Indians. The country still ranks high among the world's leading markets for this commodity. India's unquenchable need for gold has resulted in a historic flood of the precious metal to the country. The purpose of this essay was to look at the factors that prompt people to start collecting gold. Principal component factor analysis revealed that investment options, liquidity, status quo, safety, quality conscious, and conventions and traditions were the most significant predictors of gold buying behavior. Extensive analysis shows that there is a big gap between people's demographics and the factors that influence their decisions to acquire gold. Sellers and buyers of gold can both benefit from this study's findings.

Punnakitikashem and Chaisuriyathavikun (2016) Gold jewellery has become increasingly popular in Thailand as the effects of the global economic crisis have faded. This trend began in the latter half of 2013. The objective of this study was to determine what factors were most important to customers when making decorative gold jewellery purchases. We used factor analysis and multiple regression to examine data from 370 persons in the Bangkok area. Consumers' intentions to buy gold jewellery are most strongly influenced by the items' perceived desirability and the expected rate of appreciation. Important implications for gold merchants' marketing strategies are drawn from these results.

Pongyeela (2012) The purpose of this survey was to investigate how Thai and foreign buyers of jewellery make their purchasing decisions. In all, 2,504 Thai and 804 international customers were drawn from around the country for this survey. The collected data was analyzed using both descriptive and inferential statistics. This study examines the variations in the decision-making processes of Thai diamond buyers based in their own country and those based in other countries.

N. M. N. Muhammad (2011) The goal of this research project was to better understand why the Kelantanian gold dinar has been met with such enthusiastic support from the population. To accomplish this, a survey with a purposive sample of 220 people who had just made a purchase of Kelantan gold dinar at arrahnu was conducted (the distribution hub for Kelantan gold dinar). One hundred and one of the 201 surveys handed in were usable. The information was then put through a battery of statistical tests and analyses in SPSS, including a frequency analysis, a factor analysis, a reliability test, and a descriptive analysis. We conducted a factor analysis and found that economics, politics, investments, and society were the four main determinants of public perception towards the Kelantan gold dinar. Economic variables were shown to be the most important via descriptive analysis, followed by social, political, and investment factors. Given the present study's descriptive nature, it is recommended that future research take a more prescriptive approach to analysing the effect of the gold dinar on economic development and stability. It may be worthwhile to investigate whether or not the gold dinar investing strategy is effective and how its application may contribute to improved economic stability.

### 3. RESEARCH GAP

After doing a literature search, the authors discovered that there is relatively few research pertaining to the use of gold in jewellery. There are no studies that are specifically focused on Bangalore, particularly the IT Employees, and very few researchers have employed advanced statistical methods to investigate the factors that influence gold acquisition. The purpose of this study is to make an attempt to comprehend the factors that led IT investors in Bangalore city to buy gold.

### 4. CONCEPTUAL FRAMEWORK

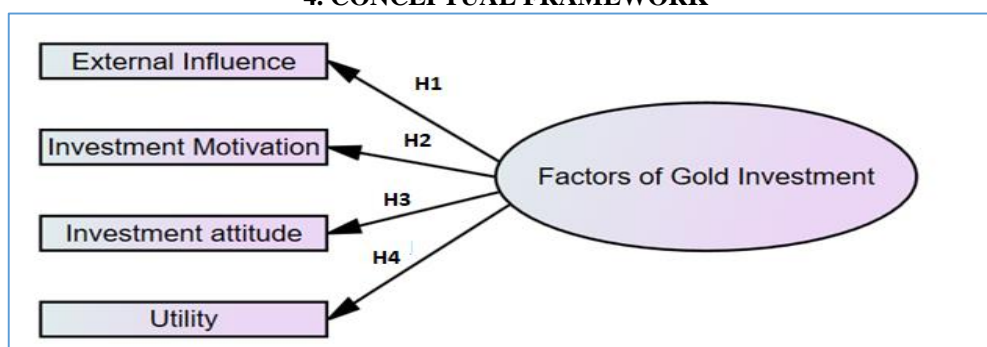


Figure 1- Conceptual Framework

The Current study identifies 4 important factors which influence the purchase of Gold as investments. External influence, investment motivation, investment attitude and utility of the investments are considered the factors influencing gold investments.

#### *Research Objectives*

- To understand the Gold Purchase patterns of Bangalore IT employees towards various forms of Gold
- To identify the factors influencing gold purchases by IT employees in Bangalore
- To analyse the impact of each of the above factors on the decision to make gold Purchase

#### *Research Methods*

The goal of this descriptive study is to find out how external factors, investment motivation, investment attitude, and the usefulness of investments affect a person's decision to invest in gold. To reach its goals, the study uses both first-hand and second-hand information. Questions from the studies of B. Thapa and A. K. Shah (2020), Bahadur, Pandey, Pandit, Kandel, and Thakur were used to make the questionnaire (2019). And R. Sundari (2018) . The questionnaire had a total of 26 items. Four of the items were about external factors, five were about investment motivation, seven were about investment attitude, five were about utility, and five were about demographics. The master validity series was used to check the scale validity and reliability of the questionnaire, and it met the acceptable criteria. The sample for the study was made up of IT investors who were chosen because they were easy to find. Using the Cochran formula for an unknown population with 95% confidence and a 5% error margin, a sample of 100 people was chosen. To account for people who didn't answer, the number of IT investors in the sample was increased to 150. For the study, 132 IT investors were chosen after the outliers were taken out. The SPSS Ver 25 and AMOS Ver 22 programs were used to do the statistical analysis.

## 5. DISCUSSION AND RESULTS

#### *Demographic variables of the IT Investors*

Over half of all IT workers (55%) are between the ages of 26 and 45, while another 27.9% are between the ages of 36 and 45. The few replies are either older than 45 or between the ages of 18 or 25. Men make up 68.2% of respondents overall, while women make up 31.8%. The percentage of women employed in the IT industry, which is 26%, is consistent with the percentage given by the survey respondents in the current study. A slight majority (58%) of respondents have completed post-graduate studies, and slightly more than half (51%) have completed their undergraduate degrees. Given that this is a thorough survey of the IT industry; it is safe to assume that the great majority of respondents are experts in their disciplines. 46.5% of individuals surveyed are still single, compared to 51.2% who are married. Nearly 40% of those questioned had yearly salaries of Rs. 10 lakhs or more, compared to the 50% who have incomes between Rs. 2 and Rs. 6 lakhs.

#### *Gold Buying Patterns*

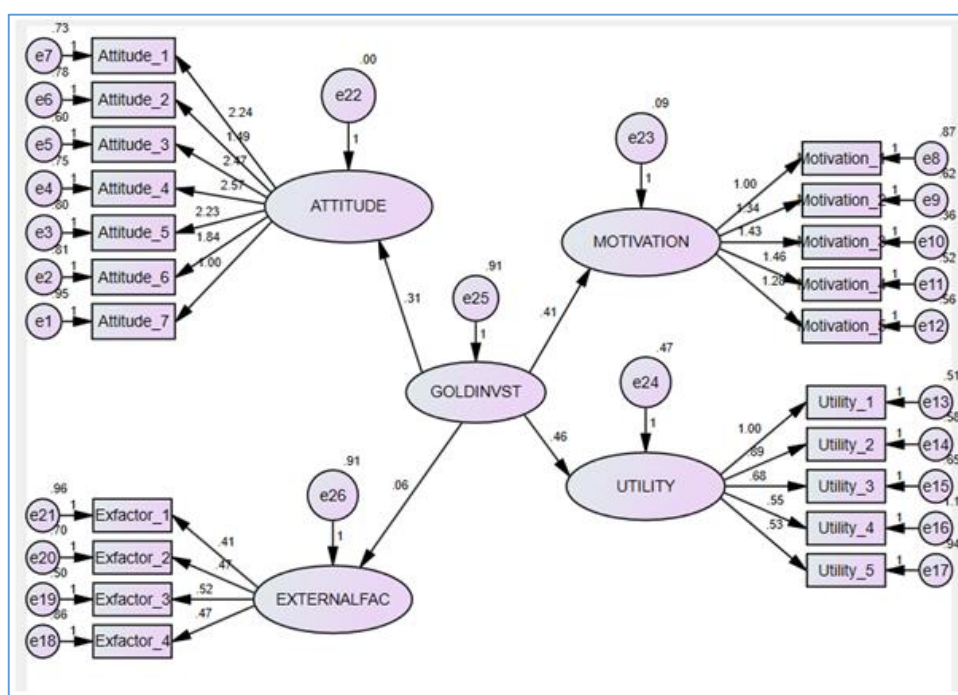
**Table 1 – Gold buying patterns and Its equivalents**

	Mean Ranks	Rank
Ornaments	1.21	1
Bars/ coins	2.68	2
Gold deposit schemes	3.73	3
Gold ETFs	3.61	4
Gold Bonds	3.73	5

According to the rating, IT professionals prefer investing in ornaments over bars and coins. Online gold investment plans are in third place, followed by gold bonds and gold electronic funds transfers. The results of the present investigation are consistent with those of the other studies. In the study by Sudindra, Nishad, and Nawaz. (2013) Gold mutual fund, e gold, and ETF are only very marginally preferred methods of investment, and 36% of investors prefer investing in gold through jewelry. Only 2% of investors are aware of gold certificates, futures, and options.

*Hypothesis – Factors influencing Gold Purchases*

The results of the exploratory factor analysis showed that 21 items were taken from four components, with a KMO Bartlett statistic of 0.8771 with 95% confidence. Low factor loading did not lead to the deletion of any study items, and the study's total variance explained, which is a great indicator in social science research, was 65.89%. The basic model fit statistics indicate that the Chi-square/df (2/df) value is within the acceptable range of 3. (2.955). The Goodness of Fit scores higher when measured against the suggested characteristics (0.871). On the boundary, RMR is determined to be 0.071. The model is widely acknowledged and has about acceptable levels of fit.



**Figure 2- Factors influencing Gold Purchases**

**Table 2 – Hypothesis results – Unstandardised and standardised regression estimates for the structural relationships**

				Unstd Estimate	Std Estimate	P
<b>H1</b>	Gold Purchases	<---	External Factors	0.063	0.012	***
<b>H2</b>	Gold Purchases	<---	Motivation	0.414	0.191	***
<b>H3</b>	Gold Purchases	<---	Attitude	0.311	0.182	***
<b>H4</b>	Gold Purchases	<---	Utility	0.462	0.322	***

All relationships in the factors influencing gold purchases model are statistically significant at  $p \leq 0.05$ . Utility ( $B = 0.462$ ,  $b = 0.322$ ,  $p = 0.000$ ) and Motivation ( $B = 0.414$ ,  $b = 0.191$ ,  $p = 0.000$ ) have the highest impact on the Gold purchase decisions by 46% and 41% respectively. External factors affect the gold Purchase decision only by 6%. Attitude influences gold purchases by 31%, which is statistically significant.

*Why People Buy Gold: An Emotional Perspective*

"A desire that comes from stimulation from inside and without that drives a person to want to adjust his or her behavior or activities in order to obtain a more desirable outcome than is already experienced," Amhalmad (2019) writes in his definition of motivation. The motivations of gold buyers have a significant impact on their investment preferences. The people who are most likely to encourage a gold purchaser to become more invested and take the required actions toward those goals are the ones the investor should focus on to maintain their drive.

Based on the findings of this research, it appears that Gold Buyers' interest in Gold and its equivalents may benefit from some positive reinforcement. Investors with a lot of both internal and external drive are always interested in learning more and keeping up with the current trends. Numerous researchers have concluded that intrinsic motivation makes gold buyers more enthusiastic, including Marlin (2020), Amrul and Wardah (2020), Bakhrie (2020), Darmawan and Japar (2019), and Saputra (2018).

#### *Indicators of Gold's Practicality*

Gold has always been seen as a safe haven investment for times of economic uncertainty. As a further precaution against inflation and the probable depreciation of fiat currencies, gold is sometimes kept in reserve. It is not closely linked to other asset types, notably equities. Therefore, most financial consultants would advise their customers to diversify their holdings by purchasing gold. (May 2022) Economic Time. The current study's findings corroborate the conventional wisdom that gold investments are useful. Investors in the information technology industry place a premium on practicality.

#### *The Role of Optimism in Gold Investing*

Precious metals investments are a smart and effective approach to diversify portfolio risk. To use them effectively, you must first determine your goals and level of risk tolerance. One can acquire a fortune by taking advantage of the speculative value of precious metals. If it is ignored, it can have catastrophic results. When it comes to money, gold is the most desired precious metal. When the global economy, government, or society is in a state of flux, gold becomes a haven for investors who fear the devaluation of paper money. There are several methods to invest in gold, including coins, bars, ETFs, gold certificates, derivatives, and mining companies. Many smaller investors have moved their money away from the stock market and equity mutual funds into more secure, low-risk assets like gold and real estate, which may also yield better returns. More Indian gold has been invested than utilized for jewellery. According to the findings of the present research, a more bullish investing mindset is associated with a 31% rise in gold holdings.

## 6. CONCLUSION

Indians have long given the precious metal a high value, and this is reflected not only in their devotion to it but also in the importance it has in their homes, their wardrobes, and their bank accounts. Their dependence on this invaluable asset, however, is dynamic. Gold has a long history of use as a hedge against inflation and a store of wealth security. Gold investment alternatives, which were previously restricted to bars, coins, and jewelry, are now available in the digital arena as well. On the other hand, Indians believe that gold shows status, thus they commonly buy and give gold jewelry, bars, and coins as presents for significant occasions. Given the current political context, however, investors are looking elsewhere to buy gold. The purpose of this research is to identify the most significant drivers of Gold investment demand. The study uncovered four major factors—external influence, investment motive, investment attitude, and investment utility—that affect the choice to put money into gold. According to the findings, Ornaments are the most popular form of investment among IT professionals, followed by gold in the form of bars and coins. The most common way to invest in gold now is through an internet program, surpassing even Gold EFTs and Gold Bonds in popularity. All of the correlations between the factors affecting gold investment performance in our model are statistically significant at the  $p=0.05$  level. Almost half (46%) and almost four in ten (41%) Gold investors are motivated by the investment's usefulness and attractiveness. An investor's decision to purchase gold is only 6% likely to be influenced by factors outside the investor's control. One's temperament significantly predicts whether or not they invest in gold (31% of the variance).

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## **A Study on Social Media Marketing's Impact on Customer Intention to Purchase Luxury Brands**

**Dr. S. Jayalakshmi**

Assistant Professor & Head, Research Supervisor, Department of Commerce & PG Research, Chellammal Women's College, Chennai

**I Amathullah Thusneem**

Ph.D. Research Scholar, Department of Commerce & PG Research, Chellammal Women's College & Assistant Professor, Department of Commerce, JBAS College for Women's College, Chennai

### **Abstract**

*This research aims to determine the effect social media marketing has on customers' propensity to buy high-end products. Five years ago, just a fraction of the current two-billion global population used social media. As the fad gained momentum, companies started using social media sites like Facebook and Twitter for promotional reasons. The same holds in India, which is a significant income source for clothes shops. The study's findings are helpful because they shed light on why businesses must raise brand recognition by focusing on growing influencers like social media marketing. The primary data, collected via surveys of social media users aged 25–45, will be analyzed using SPSS. The main goal of this study was to help luxury clothing companies develop a social media marketing plan for their clothing divisions. One of the main parts of this goal was to study how social media advertising affects Indian consumers' willingness to buy high-end products.*

**Keywords:** *Social Media Marketing, Customer Purchase Intention, Luxury brands Luxury Brand*

### **1. INTRODUCTION**

The prices of smartphones, computers, and other internet-connected devices have dropped dramatically since the turn of the century due to information and electronic technology advancements. Because of the circumstances, more and more individuals have access to this technology and the internet/global network at any moment. According to data from Global Internet Statistics 2019, over half of the world's population (or 4 billion people) has access to the Internet, and the vast majority of those individuals (80%) use social networking sites like Facebook, Twitter, LinkedIn, Whatsapp, Line, and Instagram. Approximately 50% of India's population is now active on social media. The culture and government of a nation heavily influence which social media sites its citizens utilize. In India, for instance, Facebook is more popular than the Whatsapp intelligent phone application. "Social media" refers to a wide range of computer-mediated technologies that enable users to build and participate in virtual communities and networks to share and disseminate content, ideas, and interests (Jan, 2011). While social media is commonplace among internet users, businesses are beginning to utilize it more aggressively because it provides advantages over more conventional channels of advertising.

- First, businesses can now make chatbots that can answer questions and concerns about their products and services 24 hours a day, 7 days a week. This helps them serve their customers better.
- Second, companies can easily measure the efficacy of their marketing campaigns by the number of individuals who see their advertisements and the number of people who interact with the content they provide.
- Use the "follow" option to build a list of potential customers to whom you can send updates about your company's products and services.

The vast majority of studies found that social media does influence consumers' propensity to buy and, ultimately, their purchases (Powers & Advincula, 2012). As a result, many businesses nowadays use various social media sites to communicate with their customers and reach out to new and existing clientele. As stated by Xie & Lee (2015), the evolution of the Internet has created serious problems for conventional businesses and stores. This trend indicates that consumers are more comfortable using digital channels to research and purchase. Companies must adapt their marketing strategies and broaden their sales channels through social media to keep up with the ever-evolving marketplace.

*Social media and Luxury brands*

Due to its quick growth, social media has become a new avenue for luxury businesses. In the 2010s, Sina Weibo became China's most important social media platform for luxury purchases; luxury firms still use it as a major marketing strategy. Louis Vuitton opened its account in 2010. Givenchy, Gucci, Burberry, Valentino, Bottega Veneta, Dior, Chanel, and other luxury labels began using in early 2011. This study used Sina Weibo to find out how social media marketing affects Chinese people's purchases of high-end fashion brands.

## 2. REVIEW OF LITERATURE

*Social Media*

Masuda, H., Han, S. H., & Lee, J. (2022). The research indicated that P.S.R. had a favourable influence on purchasing intentions and was connected to three personal qualities. Perceived influencer types also impacted P.S.R. formation. The poll found that social media influencer marketing techniques should be focused on personal traits, characterizations, and influencer kinds.

Ibrahim, B., Aljarah, A., & Sawaftah, D. (2021). This study revealed that Brand executives on social media platforms (in this example, Facebook) could push S.M.M.A. for their companies to build trust and loyalty. These studies examine the association between S.M.M.A. and revisit intention by adding brand loyalty and trust as mediators.

Wijayaa, O., Sulistiyani, S., Pudjowati, J., Kurniasih, N., & Purwanto, A. (2021). The study helps organizations increase brand recognition via social media marketing and word of mouth. Interaction, Word-of-Mouth, Social Media Marketing, Entertainment, and Trendiness have little influence on Smartphone purchase intentions, but Customization does.

Aji, P., Nadhila, V., & Sanny, L. (2020). Structural equation modelling validated the proposed model and showed S.M.M.A.'s (Social Media Marketing Activity) beneficial influence on brand equity. Brand equity positively impacted e-WOM, which influenced consumers' purchasing intentions. S.M.M.A. also affects consumers' buying intent.

Maria, S., Pusriadi, T., Hakim, Y. P., & Darma, D. C. (2019). This study shows that social media marketing and advertising efficacy significantly affect brand awareness. Substructure 2 shows that advertising and brand recognition directly affect buying intent. Social media marketing and advertising efficacy indirectly affect purchase intent via brand awareness. By using Web 2.0 technologies, social media enable users to share and collaborate on original content (Heng, 2012). Social media, as defined by Picazo-Vela (2013), is a kind of online communication that allows users to efficiently and effectively share and discuss their experiences with others. According to Tiago (2014), it is the publication of digital information accompanied by the collection and distribution of instantaneous responses in the form of reviews, conversations, and comments on the source material. Marketing campaigns rely heavily on social media to raise brand awareness and spread product information (Trainor, 2014). Research has shown that customers' confidence in brands and their propensity to make purchases improves when they use social media (Wang, 2012). Social media marketing efforts in the insurance industry have been determined to consist of word-of-mouth communication, customizability, knowledge, trendiness, and engagement, all of which were defined as critical social media components by Ashley and Tuten (2015).

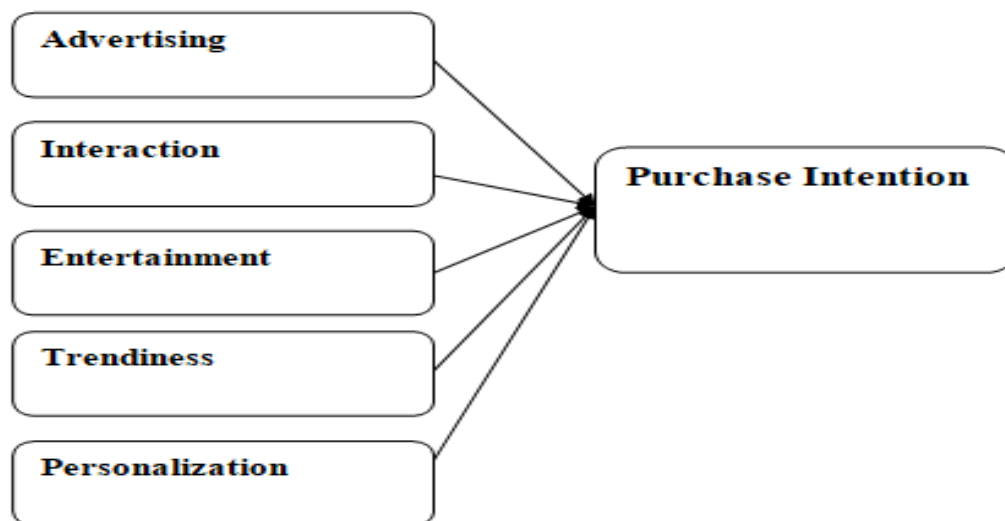
1. Advertising: Marketing Efforts That Aim to Raise Brand Recognition and Product Purchase Intention James (2011)
2. Interaction opens the door to real-time customer feedback about what they want and how you may improve your products and services based on what they say. Balton (2008).
3. Entertainment: material that makes people feel good about the product or service and excellent entertainment content of goods have more people talking about and loving such things. Harmony (2012).
4. Trendiness: Providing up-to-date details about Chekustor's goods and services (2009)
5. Personalization, or the practice of making direct contact with consumers in order to maintain or boost their level of happiness. Damerson (2007).

*Purchase Intentions*

The term “purchase intention” refers to a customer’s propensity to make a future purchase of a product or service that is currently on the market. In other words, intent refers to a customer’s propensity to make a repeat purchase based on their positive past encounter with a product or service (Tariq, 2013). As stated by Mirabi (2015), to reduce ambiguity, consumers constantly strive to obtain information about a product or service before making a purchase. Consumers will desire a product or service if their research and experiences make them conclude favourably about it. For consumers, social media provides the quickest and most convenient means to learn relevant details about a product or service, including reviews, advertisements, prices, and practical features. Customers increasingly rely on product reviews to help them make purchases because they believe that these evaluations are based on honest opinions from buyers (Mauri, 2013). The quality of the images, texts, and videos companies publish online about their products and services is crucial to influencing consumers to make purchases. It has been shown by Kim and Galliers (2012) that a more significant favourable influence on consumer purchase intention is seen when information is both valuable and credible. Access to a product’s social media page may pique a customer’s curiosity in doing a test run, which in turn can influence their propensity to purchase (Lin, 2014). As a sort of advertising, social media marketing has a more efficient method of informing consumers and influencing their buying decisions (Hsu & Chang, 2012).

### 3. CONCEPTUAL MODEL AND HYPOTHESIS

Simply said, a conceptual framework is a handy analytical tool that may be employed in various situations. Diagrams and visuals illustrate the process. The study’s framework was developed using the literature review results, which makes the study’s hypotheses much simpler to grasp. Five hypotheses on the relationship between social media features and intent to buy make up the framework. The hypothesized framework is shown in Figure 1.



**Fig.1. Conceptual model**

- H1: Social Media Advertising have a positive influence on Purchase Intention
- H2: Social Media Interaction have a positive influence on Purchase Intention
- H3: Social Media Entertainment have a positive influence on Purchase Intention
- H4: Social Media Trendiness has a positive influence on Purchase Intention
- H5: Social Media Personalization has a positive influence on Purchase Intention

### 4. RESEARCH METHODOLOGY

Primary data collection through social media and electronic mail has become more common among academics in recent years since it is a cheap, efficient, and reliable way to conduct surveys and interviews. As a result, a Google Forms-based survey was created for the research and sent to 300 social media users. One hundred and two participants between the ages of 25 and 45 completed the survey. Although three hundred is the number generally accepted as the bare minimum for a research sample, we only polled 120 people to keep costs down.

## 5. DATA ANALYSIS AND DISCUSSION

Classification is based on demographic characteristics such as sex, age, marital status, and degree of education. The customer's attitude may impact by the demographic characteristic that prompted the researcher to categorize the respondents according to their demographics, as shown in the table below.

**Table 1 - Demographic Profile of the respondents**

<b>Variables</b>	<b>Particular</b>	<b>No. of Respondents</b>	<b>Percentage</b>
<b>Gender</b>	Male	65	54.17
	Female	55	45.83
<b>Age</b>	Below 25	25	20.83
	25-35	35	29.17
	35-45	40	33.33
	Above 45	20	16.67
<b>Education</b>	Up to S.S.L.C.	25	20.83
	Under Graduate	45	37.50
	Post Graduate	50	41.67
<b>Income</b>	Below -20,000	20	16.67
	20,000 – 30,000	40	33.33
	30,000- 40,000	35	29.17
	Above – 40,000	25	20.83
<b>Occupation</b>	Govt. Employee	25	20.83
	Private Employee	40	33.33
	Businessman	30	25.00
	Others	25	20.83
<b>Mode of Payment</b>	Credit Card	15	12.50
	Debit Card	25	20.83
	Online Transaction	40	33.33
	Cash on Delivery	30	25.00
	Others	10	8.33

\*\*\*Source: Primary data

In terms of the respondents' demographics, table 1 reveals that 54.17 % are male, 33.33 % are the ages of above 45, and 41.67 % have at least a master's degree. Moreover, four in ten respondents (33.33 %) reported an income between Rs.20,000 - 30,000; 33.33 % were private employee; and 33.33 % paid through online transaction.

### *Reliability Test*

Measure the correlation between test results from various administrations to estimate the degree of systematic variation in a scale. It is used before more advanced statistical procedures like correlation and regression analysis to ensure the data is fit for use. Cronbach's alpha conveys the analytical outcome, and experts agree it should be more than 0.5. Results from the reliability test are shown in table 2.

**Table 2 - Tests of Variable Reliability**

Sl.No	Variable	Cronbach's value
1	Advertising	0.647
2	Interaction	0.721
3	Entertainment	0.684
4	Trendiness	0.741
5	Personalization	0.654
6	Purchase Intention	0.689

The results show that all of the Cronbach's alpha values for the variables we gathered are more than 0.5, indicating that our data has good internal consistency and can be used confidently in further analyses.

#### Correlation Analysis

The analysis determines the linearity of the connection between the two variables, and the outcome is Pearson's R coefficient, which ranges from -1 to 1. If the value is 1, then the correlation is unquestionably vital. In addition, if the value is zero, then there is no correlation between the factors. Therefore, Table 3. displays the interrelationships between several factors like advertising (A.D.V.), Entertainment (E.N.T.), Trendiness (T.R.E.), Personalization (PER), and Intent to Purchase (PURCHASE) (P.I.P.I.).

**Table 3 - Correlation Analysis**

	ADV	INT	ENT	TRE	PER
INT	0.327*				
ENT	0.278**	0.632**			
TRE	0.423**	0.458*	0.256*		
PER	0.316*	0.342**	0.368**	0.432**	
PI	0.382*	0.467**	0.512**	0.285*	0.634*

\*\**. Correlation is significant at the 0.01 level (2-tailed)*

- A positive correlation between ad exposure and intent to purchase ( $r=0.382$ ,  $p0.05$ ).
- Positive effects of interactions on purchase intent ( $r=0.467$ ,  $p0.01$ )
- The influence of fun activities on consumers' intent to buy is positive ( $r=0.512$ ,  $p0.01$ ).
- Positive correlation between Trendiness and Purchase Intention ( $r=0.285$ ,  $p0.01$ )
- A positive correlation between personalization and buying intent ( $r=0.634$ ,  $p0.05$ ).

Results from the literature review support the hypotheses, which state a positive linear connection between the independent and dependent variables.

#### Regression Analysis

Essential for any data study, this analysis quantifies the impact of a given independent variable on a target dependent variable. In addition, it provides data analysis based on measures of dispersion such as the coefficient of determination (beta) and statistical significance (alpha). The Analysis of Variance (ANOVA) is a set of statistical procedures used to determine the significance of differences between groups and learn more about the variability in regression models. If the model can explain 27.2% of the variation in the data, the variance value is 27.2. The Beta value quantifies positive and negative correlations. It is to reject the null hypothesis when correct, and the significance threshold must be less than 0.05. The regression results are shown in Tables 4 and 5; these tables will determine whether or not our hypotheses are correct.

**Table 4 - Summary of Model**

Model	R	R Square	Adjusted RSquare	Std. Error
1	0.418 <sup>a</sup>	0.372	0.365	0.2671

a. Predictor (Constant), ADV, INT, ENT, TRE, PER b. Dependent Variable: PI

Table 4 summarizes the regression model, and the Adjusted R square value turns out to be.365. A more straightforward interpretation of the number is that the regression model can account for 36.5 percentage points of the observed variation.

**Table 5 - Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.286	0.178		2.341	0.008
ADV	0.156	0.089	0.142	1.795	0.012
INT	0.329	0.067	0.298	1.279	0.000
ENT	0.402	0.078	0.386	1.878	0.023
TRE	0.122	0.081	0.097	0.766	0.031
PER	0.087	0.056	0.67	2.568	0.000

a. Dependent Variable: P.I.

Table 6 shows that the suggested hypotheses were accepted, consistent with the regression result.

**Table 6 - Results of summary**

H	Proposed Hypotheses	Beta	Sig	Status
H1	Advertisement positive effect on purchase intention	0.156	0.012	Supported
H2	Interaction has a positive effect on purchase intention	0.329	0.000	Supported
H3	Entertainment's positive effect on purchase intention	0.402	0.023	Supported
H4	Trendiness has a positive effect on purchase intention	0.122	0.031	Supported
H5	Personalization has a positive effect on purchase intention	0.347	0.000	Supported

## 6. CONCLUSION

Today, it is increasing the effectiveness of a company's marketing efforts via social media that is a priority for many businesses. It offers various benefits over more conventional forms of advertising, including television, radio, and billboards. First, marketing effectiveness may be gauged by how users respond to ads. Additionally, it facilitates communication between the business and the client. Thirdly, businesses may use Facebook pages and groups as marketing outlets. Based on the evaluation of the relevant literature above, our assumptions were confirmed by statistical examination. One such luxury brand is a well-known Indian fashion label that frequently uses the Internet to promote its wares. According to the findings, there is a good correlation between the presence of interaction, entertainment, and trendiness and the likelihood that a customer will make a purchase. Retailers of trendy apparel would do well to disseminate relevant videos and images, as well as to be prepared to answer questions from curious consumers. The companies will benefit from the steps taken because they will help them improve their marketing and sales.

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## Role of Education Towards Empowerment of Rural Women

**Dr. P. Anbuoli**

Assistant Professor, Department of Business Administration, Mannar Thirumalai Naicker College  
Pasumalai, Madurai

### Abstract

*Education for women is essential to the overall growth of any nation. Even though gender equality in education is given a lot of attention in India, there is still inequality in access to education. Women have different levels of access to education in rural and urban areas. Formal education and informal education are the two categories that define education. Informal education refers to learning that occurs in daily life as opposed to formal education, which is the acquisition of skills via schools and other institutions. Naturally, those with informal education learned from their families, communities, and friends, but formal education is necessary to provide a person with unique abilities that set them apart in society. Therefore, the present study made an effort to test the role of education towards empowerment of rural women in Madurai district, Tamilnadu.*

**Key words:** Role of Education, Women, Rural Areas, Empowerment, Economic empowerment.

### 1. INTRODUCTION

India has a wealth of human resources that may be informed and empowered by making the best use of education. Inequalities and poverty can be reduced with the help of education. It possesses a unique trait that serves society as a whole. It guarantees fair economic growth. Because of globalization, knowledge gained through quality education is essential for upholding our standards around the world. A higher degree of quality education is required for the development of human capacities and skills. A nation gains from investing in education through consistent economic growth, advancement in technology, and economic stability. The two most fundamental parts of knowledge - technology and human capital - are necessary for a competitive economy. The advancement of technology and the development of human resource capabilities are made possible by higher education (Palanivelu and Jahan, 2013). Numerous factors, including social traits, family income, parental education and occupation, parental abilities, personal interests, and higher education, may have an impact on the decision to choose a career or lifelong occupation.

The main factors in achieving the empowerment of women are educational attainment and economic involvement. Women's political rights are a major topic of discussion in many formal and unofficial campaigns around the world since women's empowerment is a global problem. The key to women's empowerment is education since it gives them the tools to take on difficulties, question their traditional roles, and transform their lives. Only when the nation's women have achieved true empowerment can India realistically expect to become a developed nation. All around the world, prejudice against women and gender inequality are enduring problems. As a result, women's struggle for male equality is an international phenomenon (Ojha, 2016). Women should be treated equally to men in all spheres, including politics, the workplace, inheritance, marriage, and education. In response to their struggle for equality, numerous women's groups and movements have been established. Although our nation's Constitution does not discriminate against men and women, our society has denied women some fundamental rights that were granted to them by our Constitution. Individuals who feel empowered are better able to realize their full potential, participate more actively in politics and society, and have faith in their own talents.

### 2. STATEMENT OF THE PROBLEM

Developing nations view education as being crucial in alleviating poverty. The extent of the changes in the global environment have led to a knowledge-based society. The crucial components of the cultural and socioeconomic growth of people and society are higher education and research. Three dimensions are used to assess a nation's level of human development. The average educational achievement, a healthy lifestyle, and a respectable level of living are some of these dimensions. Per capita income, gross domestic product, and purchasing power are used to gauge how well people are living and what their standards of living are. Education spending raises the level of human capital, which is essential to the expansion of the economy. The State, Central, Local Authorities, and Private Institutions all provide education in India. The government has taken numerous actions to guarantee that all kids receive an education. Additionally, rural women are sufficiently empowered by ongoing employment (Chamuah, 2021). The study made an effort to theoretically check the role of education in women empowerment in rural areas, especially in Madurai district, Tamilnadu.

### **3. OBJECTIVES OF THE STUDY**

The study proposed to test the following objectives.

1. To examine the role of education in women empowerment.
2. To measure the process of women empowerment in rural areas.
3. To ascertain the impact of education on empowerment of rural women.

### **4. ROLE OF EDUCATION**

Enhancing an individual's or a social community's spiritual, political, social, or economic strength is referred to as empowerment. The extension of one's freedom to act and make decisions in all spheres like, social, political, and economic in order to empower is a multidimensional process. Nowadays, it's more common to think of empowerment as a method for giving the weaker people more influence over their own life. Controls over tangible assets, knowledge resources, and ideologies are meant by this. Women are frequently subjected to discrimination in communities, societies, and countries across time and place. When compared to men, they are clearly divided into different categories. Women's empowerment has been acknowledged in recent years as the key factor in defining their status. The role of women in society cannot be overstated. Without equal advancement for men and women, society cannot advance. India is mostly a rural nation, and most of its women reside there. Rural India's overall social, economic, and political issues can be considered as being closely related to the issues facing rural women. In India, women typically have less prestige than their male counterparts. Indian women suffer greatly as a result of the lack of acceptability they receive from the male-dominated society (Bhat, 2015).

Women are in charge of childbearing, but they are undernourished and unhealthy. One of the fundamental issues for India's rural women's inferior status is illiteracy. Due to their lack of education, they are unable to hold any distinguished employment and must instead accept the physically demanding and unattractive jobs. Rural women are mostly assigned to domestic chores and low-wage labor since they are typically not seen as having any significant capacity to generate revenue (Thirumal and Andrew, 2020). Education has long been seen as the most effective tool for bringing about social change. It is an effective instrument for empowering and emancipating women. Economic opportunity, social equality, and personal liberties are all part of empowering women. Women are frequently denied human rights due to cultural practices. They are unable to appreciate their rights due to illiteracy, notwithstanding government efforts to raise the level of education for all citizens.

The most important factor in every society's progress is the active participation of women. Rural women are empowered by education in social, economic, and political spheres of society and are made aware of their rights. In this context, research on the concept of women's empowerment, the importance of education for rural women's empowerment, the core causes of women's illiteracy, and government policies in India for rural women's empowerment are all necessary. In India, there are significant differences between the economic, social, and political opportunities open to men and women. Gender discrimination started early in life and persists as a kid becomes older, first in the form of a lower food and nutrition allotment, then in the form of fewer educational chances for girls compared to males. The tool for fostering social change and advancement is education. Higher education strengthens women's capacities and allows them to pursue any sector or profession, while elementary education gives them access to fundamental knowledge and skills.

### **5. PROCESS OF EMPOWERMENT**

In contemporary society, women's empowerment has become a crucial problem. Women's empowerment is a life cycle process; hence policies must be developed at each step to meet their unique demands. Women must be empowered at every stage of their lives if they are to contribute to the economic and social growth of society. The self-help group serves only as a portal for the interaction and growth of rural women folk through the process of women's empowerment. Women's knowledge needs to be spread nowadays through higher education and training. The need of the hour is to further develop awareness campaigns on loan accessibility, certification procedures for funding agencies, motivational skills development, and the value of support from family and other groups. Since competency development is a component of empowerment, an effort must be made to foster a culture of continual learning. Beyond programs for training and development, there is ongoing learning.

One of the most important prerequisites for the improvement of women's social status is the economic empowerment of women. Women cannot be on an equal footing with men in the decision-making process until they achieve economic independence or contribute almost equal amounts of money to the family's maintenance.

The issue of gender-based subordination or discrimination against women has a strong connection to men's economic dependency. A country must economically empower women if it wants to see rapid growth. Economic empowerment of women strengthens their capacity to improve society (Reddy, 2014). An important step toward empowering women is their engagement in politics. Since its establishment, the Indian Constitution has vowed to bring about political and socioeconomic change. The past ten years of experience have demonstrated that women who have been given access to panchayats and municipalities have done well. Some of them have already built up exemplary service histories and have even received prestigious accolades for their accomplishments. Since they are largely illiterate, many of them have made learning to read and write a top priority in order to improve their ability to do their jobs. A sizable number of teachers, attorneys, and other community leaders have been successful in winning elections and joining the panchayats.

## **6. IMPACT OF EDUCATION OF WOMEN EMPOWERMENT**

Women have historically been the most vulnerable group in society and make up a sizable portion of the population that live in poverty. To obtain education, health care, empowerment, and other opportunities, women must overcome gender-specific obstacles. This group of women receives all microloans. The most economically and socially disadvantaged category are poor women, who lack money and access to education both necessary conditions for lifting people out of poverty. Despite the fact that women's labor is an essential part of the economy, this issue is exacerbated in emerging nations like India. This occurs as a result of the low social standing and restricted access to important resources. It has been discovered that lending to women increases the likelihood that the advantages will be shared more widely. Lack of education particularly affects rural women. Understanding the role of women in education is essential for creating programs and policies that will meet their needs as well as for determining the causes of their social and economic position. Many people, especially women, still choose their education based on religious beliefs and traditions. Even though it is legal for women to possess property and other resources, due to societal and religious pressures, many women choose not to use this privilege in order to avoid upsetting their families. In India, there is a strong preference for having sons, which sets the bar for girls and women throughout their lives. This preference is present in all social groups and communities.

Government and civil society in India have both placed a high priority on the education of women. Given that they made up half of the population, women can be crucial to the country's development. It is thought that gender inequality, social norms that act as barriers to women getting an education, and the consequent rise in poverty and backwardness of the nation have an impact on female education. Due to a lack of education, women in India are currently dealing with a number of issues, including domestic abuse, men's brutality, gender discrimination in the workplace and power structures, economic and sexual exploitation, and others. Women's empowerment, economic success, social advancement, and communal welfare are all reliant on education. Women need to be empowered since they are oppressed in every aspect of life. Women must swim against the current that demands more strength in order to combat socially built gender inequalities. Such power results from the empowerment process, which can only happen through education (Singh, 2016). There is a great demand for education because rural areas are less developed in terms of amenities, income generating, food delivery, and health. As a generalization, it may be claimed that women's education and empowerment lead to rural development because men in the community tend to engage in physical labor jobs while women do not engage in any type of income-generating activity.

## **7. CONCLUSION**

Creating a social context in which one can make decisions and choices, either individually or collectively, for social transformation can be seen as a sort of empowerment. By gaining knowledge, power, and experience, empowerment improves the intrinsic talent. Empowerment is the process of allowing or approving someone to think, act, and manage their work independently. It is the method by which one can take charge of their life' circumstances and futures. Every culture, state, and country has a number of people who lack access to their fundamental rights, although these people are often unaware of their rights. No one is prepared to accept this fact, despite the fact that everyone is aware of it. As a result, women are no longer afforded the prominence they formerly did in our culture. The necessity for empowering women was recognized as a result of this growing trend of underestimating women to the point that they occupy a secondary place in society and are denied their fundamental rights. The topic of empowering women has drawn a lot of discussion and interest on a global scale.

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## **An Assessment of Service Quality in Motor Insurance of Royal Insurance Corporation of Bhutan Limited**

**Madan Gurung**

Lecturer Gedu College of Business Studies, Royal University of Bhutan.

**Elangbam Haridev Singh**

Associate Professor, HOD, School of Business Management, St. Joseph University, Nagaland

### **Abstract**

*It is impossible to exaggerate the role that insurance plays in a country's system of risk management. Since Bhutan only has two insurance companies operating, there is less competition in the motor insurance sectors. Each service provider is trying to provide at its optimum level to satisfy their customers by matching customers' expectations with various service offerings. This study analyses the relationship between customers' perception and customers' expectations in determining the service quality and customer satisfaction of RICBL. The perception of service quality by customers is crucial for long-term economic viability. The study discovered a statistically significant negative association between customer satisfaction and perception, showing a failure to provide clients with high-quality services.*

**Keywords:** Service; Quality; Expectation; Perception; Customer; Satisfaction; Motor; Insurance; Bhutan

### **1. INTRODUCTION**

The output of service delivery transitioned to the consumers is referred to as service quality (Gupta et al., 2005). It is a medium of business processes to ensure a higher level of satisfaction which will in return help enhancing the competitiveness and effectiveness of the service industry. As per Hüttinger, Schiele and Veldman (2012), service quality is an essential factor for the growth and expansion of the service sectors. SERVQUAL is a well-established research instrument for evaluating service quality in any service sector which covers dimensions considered by customers while evaluating service quality in any service sector (Parasuraman et al., 1985). Furthermore, this study will highlight the important aspects and relation between service quality and customer satisfaction in the Bhutanese service industry. The insurance industry is a big opportunity in Bhutan for the investors. According to Staib et al. (2020), the United States of America tops the list in terms of insurance density and People's Republic of China and Japan are ranked second and third respectively.

### **2. PROBLEM STATEMENT**

The starting point to this research is that there are hardly no studies conducted in customer satisfaction and service quality within the Bhutanese context in motor insurance sectors. Liata et al., (2017) found out that service quality actions and their performance are essential in maintaining a level of satisfaction and customer loyalty base. Moreover, the study elaborates that high-quality services and service performance quality has a significant impact on results. Thus, the study can assume that there is scientific evidence that quality services and customer satisfaction are related. Moreover, this study concerns whether these foreign insights remain in the Bhutanese insurance industries or not. The insurance industry has been focused on quality and positive measures taken in terms of service quality, but there was no significant work done for the insurance field in Bhutan.

Parasuraman et al. (1985) defines service quality as the degree and direction of disagreement between the customer's perception and expectation of service delivery. Several studies have been conducted to assess the difference between customer perception and expectation regarding the services provided by the services industry. According to Gebremichael and Singh (2019), there is a significant gap between customers' expectation and perception in determining the service quality with respect to the dimensions as prescribed by the SERVQUAL model. In contrast, Islam et al., (2015) claims that there is no significant difference between customer expectations and perceptions in determining the service quality of service sectors. However, the studies conducted have different views and results regarding the gap of customers' expectation and perception on service quality. Therefore, the current study mainly focuses on displaying a clear understanding of the differences or gap between these two constructs on the service quality of one of the insurance companies in Bhutan, Royal Insurance Corporation of Bhutan (RICBL).

### *Research Questions*

What are the perceptions and expectations of the customers of RICBL in motor insurance?

1. What is the relationship between customer's perception and expectations of RICBL?
2. What is the level of customers' satisfaction with the quality of services offered by RICBL?

### *The first set of hypotheses*

To test the difference between customer perception and expectation, the following null hypotheses has been generated:

H<sub>1,1</sub> There is no significant difference between customers' perception and customers' expectation with respect to empathy attributes of RICBL.

H<sub>1,2</sub> There is no significant difference between customers' perception and customers' expectation with respect to reliability attributes of RICBL.

H<sub>1,3</sub> There is no significant difference between customers' perception and customers' expectation with respect to assurance attributes of RICBL.

H<sub>1,4</sub> There is no significant difference between customers' perception and customers' expectation with respect to tangible attributes of RICBL.

H<sub>1,5</sub> There is no significant difference between customers' perception and customers' expectation with respect to responsiveness attributes of RICBL.

H<sub>1,6</sub> There is no significant difference between customers' perception and customers' expectation with respect to credibility attributes of RICBL.

H<sub>1,7</sub> There is no significant difference between customers' perception and customers' expectation with respect to competency attributes of RICBL.

### *The second set of hypotheses*

To test the strength of the relationship between customers' perception and expectation, the following hypotheses have been generated:

H<sub>2,1</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the empathy dimension of service quality in RICBL.

H<sub>2,2</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the reliability dimension of service quality in RICBL.

H<sub>2,3</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the assurance dimension of service quality in RICBL.

H<sub>2,4</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the tangible dimension of service quality in RICBL.

H<sub>2,5</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the responsiveness dimension of service quality in RICBL.

H<sub>2,6</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the credibility dimension of service quality in RICBL.

H<sub>2,7</sub> There is no significant correlation between customers' perception and customers' expectation with respect to the competency dimension of service quality in RICBL.

## **3. LITERATURE REVIEW**

### *The relationship between service quality and customer satisfaction*

Many studies which were published around the world shows a strong link between customer satisfaction and perceptions of service quality (Brady & Robertson, 2001; Ogiemwonyi, 2020; Khan et al., 2014). The satisfaction level was determined by the service quality encounter and comparison of that encounter (Sureshchandar et al., 2002; Bloemer et al., 1998; Taylor & Baker, 1994).

Joseph et al. (2003) elaborately describes customer satisfaction in the services literature as a conceptualized idea which is consistent with Khurana's (2012) arguments, where customer satisfaction was understood as customer and service responsiveness and assurance. However, Khurana (2012) further argue that customer satisfaction can be also achieved through (1) developing a personal relationship with the customer. (2) Keeping customers constantly informed of new products/services to ensure the customer that the agent is looking after the customer's welfare. Khurana (2012) extends his arguments further by presenting and validating the arguments via comparative analysis which further elucidates the reasoning of the satisfaction construct in the recent services literature. Service quality, on the other hand, refers to a continuous process of ongoing interaction between customers and service providers comprising several intangible activities provided as premium solutions to the

problems of customers including the physical and financial resources and any other useful elements of the system involved on providing these services (Khan et al., 2014).

Further explanations and evidence have recently surfaced which supports for distinction in conceptual dimensions of service quality and customer satisfaction. For instance, based on Brady and Robertson (2001), the study identified several key features which distinguish service quality from customer satisfaction: expectations for service quality are based on perceptions, whereas an enormous number of factors can influence satisfaction levels. Service quality perceptions do not require experience, whereas satisfaction judgments require adequate experience. Furthermore, it is said that quality has fewer variables than satisfaction (Kandampully et al., 2009). Therefore, the value of the evidence portrayed for the service sector related literature support the stand that service quality and customer satisfaction are understood clearly and is best conceptualized as a unique linkage that is not to be treated as equivalents in customer decision making for purchase intention (Haemoun, 1999).

#### *Determinants of customer-perceived service quality*

Exploratory research as suggested by Parasuraman et al. (1985) elaborates that customer in measuring the service quality fits ten potential dimensions namely reliability, tangibility, responsiveness, credibility, security, courtesy, competency, communication, understanding customer and access. These dimensions were the basis for the service quality zone from which five dimensions were derived for the latest SERVQUAL scale. The SERVQUAL instrument is a 22-item scale that measures service quality with five dimensions namely reliability, responsiveness, assurance, empathy, and tangibles. Despite disapproval on the efficacy of the SERVQUAL instrument across service settings, there is a consensus that the 22 items are a reasonably better predictor of service quality (Rod et al., 2009). Despite SERVQUAL instrument having subjection to severe criticisms for its conceptualization, dimensionality, and operationally. Parasuraman et al. (1985) conceptualizes service quality with five dimensions of service quality which are critical from the customers' perception.

These factors are:

1. Reliability
2. Responsiveness
3. Assurance
4. Empathy
5. Tangibles

Westbrook and Peterson (1998) elaborated that SERVQUAL's service quality dimensions can be used in assessing the quality of insurance service in the retailing environment as well as business to the business environment due to similarity in the evaluation of customers. However, in another research Khurana (2012), empirically validated proposed service quality factors through a survey instrument consisting of 24 items. A five-point Likert scale, with 1 denoting very poor and 5 denoting very good which was used to measure level of service quality. The standardization of the instrument has been carried out by the exploratory factor analysis (EFA) approach.

**Table 1 - Dimensions of service quality**

SI. No	Critical Factors	Elaboration of critical factors
1	Reliability	Refers to the firm's ability to perform promises of service accurately.
2	Responsiveness	Willingness to help customers and provide prompt service.
3	Assurance	Refers to knowledge and courtesy of employees and their ability to inspire trust and confidence.
4	Empathy	Refers to care and individualized attention paid to customers.
5	Tangibles	Refers to physical facilities, equipment's, and appearance of personnel.
6	Credibility	Refers to the trustworthiness of the service provider.
7	Competency	Refers to the actual technical expertise of the service provider.

*Source: Khurana, 2012, Parasuraman et al. (1985)*

#### *Customer Perception*

Customers' perception of service quality has been defined in many ways, the concept is multi-faceted and complicated by vast numbers of interpretations and emphases (Sureshchandar et al., 2002). According to Zeithaml (1998), it is the customer's judgment or the perception of the excellence of services given by the provider. Also, the customers' perception is defined in terms of service quality delivered and the level of satisfaction attained by the customer (Awoke, 2015). However, Zeithaml (1998) argues that customer perceptions may change over time which makes it a necessity for companies to assess perceptions continuously.

### *Customer Expectation*

Customers' expectation is the pretrial speculation of service delivery which acts as a reference against the perceived-service quality to assess the business performance Zeithaml (1998). Moreover, customer satisfaction is derived by delivering in considerations to customer anticipation and expectations. Most research conducted on the service industry considers customers' expectation a central key to assess service quality and customer satisfaction (Parasuraman et al., 1985).

### *The SERVQUAL Gap Model*

The gap model of service quality, which was proposed by Parasuraman et al. (1985), has been one of the most cited and universally used frameworks for research in service marketing. The model suggests finding a gap between customers' perceptions and customers' expectations. The study portrays that SERVQUAL is based on the perception gap between the service quality delivered by the provider and the expected service quality. In another study, Khurana (2013) states that service quality studies have been highly influenced by the SERVQUAL instrument. Thus, the studies conducted by Parasuraman et al. (1985) derived SERVQUAL, a two-part instrument. The first part of the SERVQUAL measures customers' expectations and the second part measures customers' perceptions. However, due to numerous publications on service quality, the dimensionality is diverse across different studies.

The overall quality is achieved by the gap (difference of customers' perception and customers' expectation) which is calculated by subtracting the customers' expectations from customers' perception. Parasuraman et al. (1985) states that when customers' expectations are greater than the customers' perception, the perceived quality is less satisfactory and will lead to dissatisfaction and when the customers' perception is greater than the customers' expectation, the perceived service quality is more than satisfactory.

## **4. RESEARCH METHODOLOGY**

### *Research Design*

Quantitative research focuses primarily on the construction of quantitative data following a quantitative method Awoke (1025). The study mainly focuses on investigating the relationship between customer satisfaction and service quality through SERVQUAL analysis.

### *Sample and Sampling Procedure*

A convenience sampling method was employed to conduct this study. As per Taherdoost (2016), the convenience sampling method is a favoured sampling technique that is used to help overcome limitations associated with the research. The target population for the study was 41,020 listed policyholders for motor insurance of RICBL, as reflected in their report (RICBL, 2020). Out of 41,020 listed policyholders, a sample of 396 was selected for the study which was calculated (Appendix 2) and a total of 385 valid responses were obtained with a response rate of 97.2%.

### *Research instrument*

RICBL's insurance service quality was determined from customers' comparison of expectations of RICBL's service delivery before services are delivered. Consequently, the objective of the study was to measure the gap between expectations and perception of the customers in determining service quality in motor insurance of RICBL based on service quality attributes which are grouped into seven dimensions Khurana (2013). The questionnaire survey is the main form of data collection. SERVQUAL instrument consisting of 24 items which was employed to measure perceived service quality as was proposed by Khurana (2012) with slight changes and modifications to address it to the research service industry. The SERVQUAL instrument can be adapted to measure any service sector irrespective of the characteristics Khurana (2012). A five-point Likert scale (1 strongly disagree to 5 strongly agree) was used to measure the respondent's agreements with the given statements. The Final SERVQUAL scores were obtained by finding the difference after subtracting the expectation score from the perception score.



*Tools Used for Analysis*

*Paired T-test*

A t-test is a statistical test that shows the significant difference between two variables. It's mostly used in hypothesis testing to see whether a method or procedure has an impact on the population of interest, or whether two groups differ from one another (Bevans, 2020). To test the hypotheses, paired sample t-tests were used in this study to determine the gap or difference between customers' perception and customers' expectation of perceived-service quality in relation to the seven dimensions and whether the difference is significant in relation to the seven dimensions.

*Correlation Analysis*

Correlation analysis is a statistical method for determining the significant relationship between two variables (Cohen, 1988). A high correlation indicates that two or more variables have a strong relationship whereas, a low correlation indicates that the variables are barely related. Therefore, to test the hypotheses, correlation analysis was used to demonstrate the strength (high or low) of the significant relationship between the customers' perception and customers' expectation with respect to dimensions of service quality.

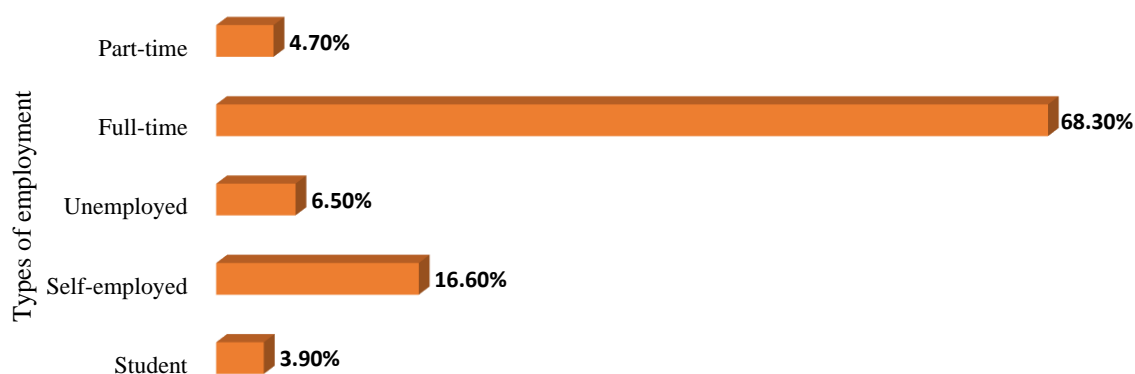
**5. DATA ANALYSIS AND RESULTS**

*Descriptive Analysis*

**Table 2 - Details of gender, age, and income categories**

Gender	Male	70.1%
	Female	29.9%
Age	Under 24	5.5%
	25-34	53.8%
	35-44	30.7%
	45-54	9.9%
	Above 54	0.3%
Income	Less than Nu.20,000	32.5%
	Nu.21,000-Nu.30,000	31.2%
	Nu.31,000-Nu.40,000	20.8%
	Nu.41,000-Nu.50,000	9.1%
	Above Nu.51,000	6.5%

Source: Survey



Source: Survey

**Figure 1 - Types of employment**

**Table 3 - Types of motor insurance**

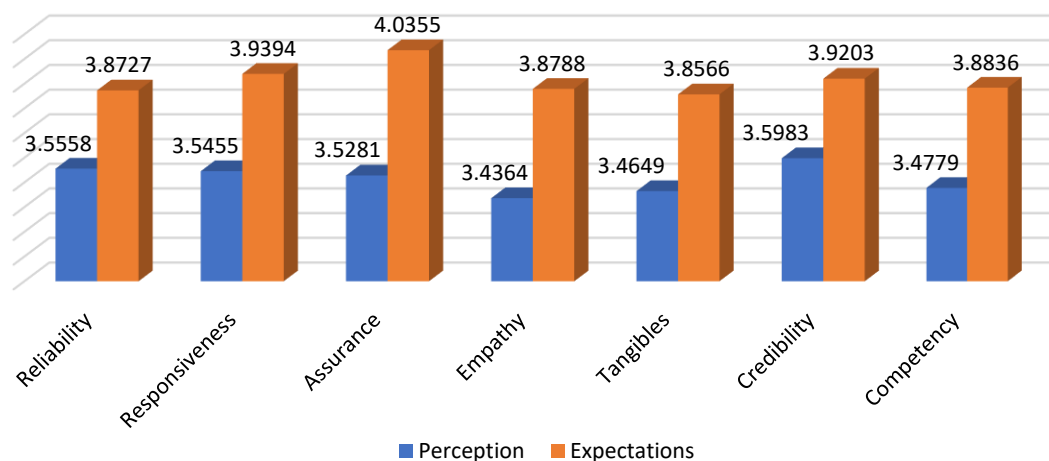
Types of Motor Insurance	
Private car insurance	89.4%
Commercial vehicle insurance	6.0%
Two-wheeler insurance	4.7%

Source: Survey

The total number of motor insurance policy holders who responded to the questionnaire was 385 with the majority participants of male which constitutes 70.1% and female respondents of 29.9%. The maximum number of respondents were in the age range of 25-34 and least were from the age group of more than 54 years of age, as shown in Table.2. Among the respondents, the majority (32.5%) of the respondents earned an annual income of less than Nu. 20,000, followed by 31.2% of respondents earning income between Nu. 21,000 and Nu. 30,000. Most of the respondents were full-time employees, followed by self-employed respondents. Moreover, most motor insurance clients have private car policies, as compared to commercial vehicle and two-wheeler.

## 6. GAP ANALYSIS

### Mean Comparison



Source: Survey

**Figure 2 - Results of Gap Analysis**

Study shows that the RICBL policy holders have high level of expectations for the services quality provided (figure 2). RICBL has a moderate level of service quality, and there is a room for improvement to meet the customers' expectations. In this study, the lowest average mean for customers' perception is seen in empathy (3.4364) and the highest average mean is seen in credibility (3.5983). The lowest average mean for customers' expectation is seen in tangible (3.8566) and the highest average mean is seen in assurance (4.0355). The lowest difference in the mean is seen in reliability (-0.31688) and the highest mean difference is in assurance (-0.50736). The high mean difference in assurance tells that the customers are expecting a high quality of service and perceiving a very low quality of services. However, most of the research conducted have shown there is a significant difference between these two constructs (expectation and perception), hence the study rejects the null hypotheses.

### Paired Sample T-test

**Table 4 - Result of paired "t" tests to the difference of customers' perception and customers' expectation**

Pair	Pair	Paired Differences		t-value	Sig. (2-tailed)
		Mean	Std. Deviation		
Pair 1	Reliability	-0.3169	0.90548	-6.867	0
Pair 2	Responsiveness	-0.3939	0.9555	-8.09	0
Pair 3	Assurance	-0.5074	0.80652	-12.34	0

Pair 4	Empathy	-0.4424	0.95178	-9.121	0
Pair 5	Tangibles	-0.3917	0.81531	-9.427	0
Pair 6	Credibility	-0.3221	0.87872	-7.192	0
Pair 7	Competency	-0.4057	0.77827	-10.23	0

Source: Survey

The first set of hypotheses were tested using the paired sample t-test to see whether there is significant gap in the customers' expectation and perception of the quality of services provided by RICBL in motor insurance sectors. The result of paired sample t-test showed that there is negative gap or negative paired difference in all the seven dimensions of service quality (reliability, responsiveness, assurance, empathy, tangibility, credibility, and competency). This shows that the expectations of clients for the services provided by motor insurance have not been satisfied. The result of this study is similar to the studies conducted by Mahmoodi et al., (2015), Shammari and Kanina (2014), Khurana (2013), and Kidanemariam (2018), in which it was concluded that there is a significant gap between the two constructs (expectation and perception).

The failure to deliver quality services to customers is indicated by a negative gap in expectation and perception comparison, which is why the service is deemed to be less than satisfactory and will result in the customers' dissatisfaction, according to Khurana (2013) and Parasuraman et al. (1985). Also, Kidanemariam (2018) argued that customers are not satisfied with any dimensions of service quality if perceived service quality is poor as compared to customers' expectation. The study found that the service sector must improve in service quality to narrow the gap which will lead to increased customer satisfaction. From the results obtained in table 3, it is seen that customers perceived service quality is poor in all the dimensions as compared to the customers' expectation, resulting in a negative mean difference, which shows that services delivered by RICBL do not match the customers' expectation, thus indicating that customers are not satisfied with the services provided by RICBL in motor insurance sector. The mean difference of this study ranges from -0.31688 (reliability) to -0.50736 (assurance), which portrays that the mean difference is unequal to zero and all the differences between expectation and perception are significant at 0.000 level. Hence the null hypotheses are rejected. Therefore, the findings of the study generate and accepts the following hypotheses:

- There is a significant gap or difference between customers' perception and expectation with respect to the reliability dimension of service quality of RICBL (t-value, -6.867, n-385, p-0.000).
- There is a significant gap or difference between customers' perception and expectation with respect to the responsiveness dimension of service quality of RICBL (t-value, -8.090, n-385, p-0.000).
- There is a significant gap or difference between customers' perception and expectation with respect to the assurance dimension of service quality of RICBL (t-value, -12.343, n-385, p-0.000).
- There is a significant gap or difference between customers' perception and expectation with respect to the empathy dimension of service quality of RICBL (t-value, -9.121, n-385, p-0.000).
- There is a significant gap or difference between customers' perception and expectation with respect to tangibles dimension of service quality of RICBL (t-value, -9.427, n-385, p-0.000).
- There is a significant gap or difference between customers' perception and expectation with respect to the credibility dimension of service quality of RICBL (t-value, -7.192, n-385, p-0.000).
- There is a significant gap or difference between customers' perception and expectation with respect to the competency dimension of service quality of RICBL (t-value, -10.229, n-385, p-0.000).

#### Correlation Analysis

**Table 5 - Correlation between Customers' perception and customers' expectation.**

Pair	Dimensions	Correlation	Sig.(2-tailed)	Rank
Pair 1	Reliability	0.301	0	5
Pair 2	Responsiveness	0.287	0	6
Pair 3	Assurance	0.422	0	1
Pair 4	Empathy	0.286	0	7
Pair 5	Tangible	0.352	0	3
Pair 6	Credibility	0.31	0	4
Pair 7	Competency	0.396	0	2

Source: Survey

According to Cohen (1988), the Pearson correlation coefficient can range the values from +1 to -1, and 0 indicating no correlation between the variables. The +1 or -1 coefficient shows whether two variables have a strong or weak

relationship, on the other hand, the sign indicates the negative or positive relationship. The coefficient between -0.3 and +0.3 indicates a weak correlation, a coefficient less than -0.7 or greater than +0.7 indicates a strong correlation and the coefficient between -0.3 and -0.7 or between +0.3 and +0.7 indicates the moderate correlation. Furthermore, several studies have also used the above rule of thumb study to support the statements and is found reliable (example: Hagan et al., 2019).

Table 5 shows the correlation between the customers' perception and customers' expectation with respect to seven dimensions. The result shows, all the correlations are statistically significant at the 0.000 level. Moreover, there is a weak and moderate positive correlation, which shows the weak and moderate positive relationship between the customers' perception and customers' expectation with respect to seven dimensions. To tests the second set of hypotheses, Pearson correlation was used to assess whether null hypotheses are accepted or rejected. The result in table 4 shows that the correlation is significant at 0.000 level (Sig. (2-tailed) = 0.000). Moreover, the result indicates that there is moderate positive correlation which states that there is statistically moderate relationship between customers' perception and customers' expectation with respect to reliability ( $r = 0.301$ ), assurance ( $r = 0.422$ ), tangible ( $r = 0.352$ ), credibility ( $r = 0.31$ ) and competency ( $r = 0.396$ ). Therefore, the null hypotheses are rejected, and alternate hypotheses will be accepted. The following alternate hypotheses are evident:

- There is significant relationship between customers' perception and customers' expectation with respect to reliability of RICBL ( $r = 0.301$ ,  $n = 385$ ,  $p = 0.000$ ).
- There is significant relationship between customers' perception and customers' expectation with respect to assurance of RICBL ( $r = 0.422$ ,  $n = 385$ ,  $p = 0.000$ ).
- There is significant relationship between customers' perception and customers' expectation with respect to tangible of RICBL ( $r = 0.352$ ,  $n = 385$ ,  $p = 0.000$ ).
- There is significant relationship between customers' perception and customers' expectation with respect to credibility of RICBL ( $r = 0.31$ ,  $n = 385$ ,  $p = 0.000$ ).
- There is significant relationship between customers' perception and customers' expectation with respect to competency of RICBL ( $r = 0.396$ ,  $n = 385$ ,  $p = 0.000$ ).

Also, the result shows a weak positive correlation indicating there is a weak positive relationship between customers' perception and customers' expectation with respect to responsiveness ( $r = 0.287$ ) and empathy ( $r = 0.286$ ). Here, the null hypotheses are rejected, and alternate hypotheses are accepted. The following alternate hypotheses are evident:

- There is significant relationship between customers' perception and customers' expectation with respect to responsiveness of RICBL ( $r = 0.2871$ ,  $n = 385$ ,  $p = 0.000$ ).
- There is significant relationship between customers' perception and customers' expectation with respect to empathy of RICBL ( $r = 0.286$ ,  $n = 385$ ,  $p = 0.000$ ).

## 7. CONCLUSION

Customers' perception of service quality is an important element for business sustainability, and hence adapting to the expectations continuously. The dimensions of service quality used for the study was adopted where it was validated and tested using exploratory factor analysis (Khurana, 2012). The questionnaire used for the study with different attributes gave importance to the compatibility of perceptions to the service quality of the customers. The SERVQUAL gap model was used to measure the gap or difference between customers' perceptions and customers' expectations of service quality. The findings point out that the level of customers' perception for all the service quality dimensions was not as the customers expected. Accordingly, a negative mean difference was found between customers' perception and customers' expectations of service quality. According to Parasuraman et al. (1985), in this scenario, the negative mean difference indicates that the service delivered by the provider did not meet the customers' expectations suggesting dissatisfaction with the service provided thus, the study shows that the customers of RICBL are dissatisfied with the services provided. Analogous findings were found by other studies (for example Khurana, 2013; Gebremichael & Singh, 2019). Some of the possible factors which might have contributed to the negative differences include, but not exclusively, management's failure to adapt to customers' expectations, lack of trained employees and high expectations of customers.

The findings of the study supported that there is a significant mean difference and relationship between customers' perception and customers' expectations. The significant difference implies that RICBL needs to deliver and be more attentive to customers' expectations to enhance the quality of service. Therefore, the negative difference found in the study indicates that there is a lack in the quality of service delivered or given to the customers.

### *Limitations of the research work*

1. Despite using the same instruments for the service sector (to measure customers' perception and customers' expectation in determining service quality), the instruments were designed to examine the issues of the insurance industry only.
2. The responses have been asked from the motor insurance policyholders of RICBL in a developing economy i.e., Bhutan but the expectations and perceptions of customers may vary in an under-developed and developed economy.

### *Avenues for future research*

Service quality and customer satisfaction can be assessed in other service sectors of the country. Also, to enhance the issue studied, global studies across different economies are essential.

### *Recommendations*

The study attempted to find out customers' perception and customers' expectations of service quality by using the SERVQUAL model. The study focuses on seven dimensions of service quality which are empathy, reliability, assurance, responsiveness, tangibles, credibility, and competency that RICBL should focus on for enhancing its customers' satisfaction. With underlying support from the findings and analysis, the study proposes the following recommendations to improve service quality and boost customers' satisfaction level of RICBL.

1. Performance evaluation: The first evaluation provides a basis for comparisons with future assessments. However, service quality must be re-assessed at regular intervals. Parasuraman et al. (1985), proclaims that the SERVQUAL model is very effective to mark service quality trends at a regular interval of the organization. This will allow RICBL to habitually assess its quality of service and check on the level of customer satisfaction. Therefore, to adapt to changes in customers' expectations and enhance service quality, performance evaluation serves as a basis to check on the performance frequently.
2. RICBL should primarily focus on the assurance dimension because the widest gap appeared in this dimension (-12.343). To improve the service quality and to meet the customers' expectations, the managerial body should train its employees to deliver better service. The management should focus on training employees to improve assurance (knowledge and courtesy of employees and their ability to inspire trust and confidence) such as customers' service seminar.
3. As per the study's finding, the assurance dimension was found with the highest negative mean difference and is also found to be an important factor to customers while evaluating service quality. The study found a discrepancy in all seven dimensions of service quality therefore, the managers must focus on the dimensions having higher mean differences (negative) to taper the gap and improve the quality of service (Gebremichael & Singh, 2019).

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## Appendix

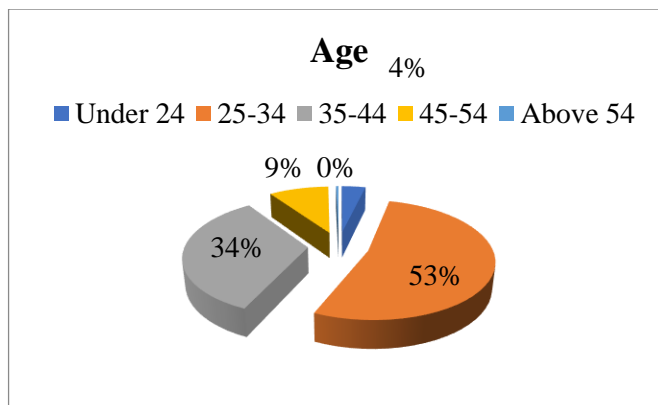
## Additional findings

**Table 6 - Demographic variables of the respondents of motor insurance services**

Gender				
Male			270	70.10%
Female			115	29.90%
Age	Male	Female	Frequency	%
Under 24	10	11	21	5.50%
25-34	143	64	207	53.80%
35-44	91	27	118	30.60%
45-54	25	13	38	9.90%
Above 54	1	0	1	0.30%
Education Background				
Primary Education	9	2	11	2.90%
High School	82	55	137	35.60%
Bachelor's Degree	121	36	157	40.80%
Master's Degree	38	13	51	13.20%
Others	20	9	29	7.50%
Types of Employment				
Student	8	7	15	3.90%
Self-employed	50	14	64	16.60%
Unemployed	13	12	25	6.50%
Full-time employment	189	74	263	68.30%
Part-time employment	10	8	18	4.70%
Income Group				
Less than Nu.20,000	81	49	125	32.50%
Nu.21,000-Nu.30,000	85	35	120	31.20%
Nu.31,000-Nu.40,000	61	19	80	20.80%
Nu.41,000-Nu.50,000	25	10	35	9.10%
Above Nu.51,000	18	7	25	6.50%
Types of Motor Insurance				
Private car insurance	245	99	334	89.40%
Commercial vehicle insurance	12	11	23	6.00%
Two-wheeler insurance	13	5	18	4.70%
Location				
Bumthang	20	4	24	6.20%
Chhukha	49	15	64	16.60%
Dagana	14	4	18	4.70%
Gasa	2	0	2	0.50%
Haa	1	0	1	0.30%
Lhuentse	22	4	26	6.80%
Mongar	2	1	3	0.80%
Paro	15	17	32	8.30%
Pemagatshel	8	1	9	2.30%
Punakha	4	9	13	3.40%
Samdrup Jongkhar	10	4	14	3.60%
Samtse	8	5	13	3.40%
Sarpang	8	3	11	2.90%
Thimphu	73	39	112	29.10%
Trashigang	13	3	16	4.20%

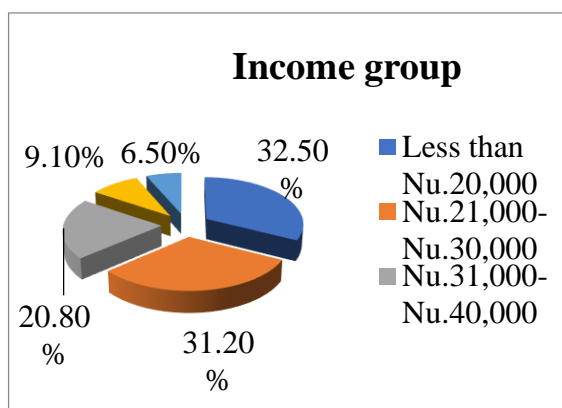
Trongsa	3	1	4	1.00%
Tsirang	9	1	10	2.60%
Wangdue Phodrang	7	3	10	2.60%
Zhemgang	2	1	3	0.80%

Source: Survey



Source: Survey

Figure 3 - Age classifications



Source: Survey

Figure 4 - Income classifications

Table 7 - Summary of frequency table

Factors	Customers' Perception	Scale	Customers' Expectation	Scale
Reliability	20.1	4 (Agree)	36.1	4 (Satisfied)
Responsiveness	17.4	4 (Agree)	23.9	4 (Satisfied)
Assurance	16.6	4 (Agree)	19.7	4 (Satisfied)
Empathy	17.9	3 (Neutral)	23.4	4 (Satisfied)
Tangible	13	3 (Neutral)	17.7	4 (Satisfied)
Credibility	21.6	4 (Agree)	25.7	4 (Satisfied)
Competency	13.2	3 (Neutral)	16.9	4 (Satisfied)

Source: Survey



**Table 8 - Factor Analysis between service quality and customer satisfaction**

Dimensions	Statements	Customers Perception		Customer expectations	
		Loading	KMO	Loading	KMO
Reliability	Employees and agents of RICBL are never too busy to respond to requests <b>(R1)</b>	0.766	0.5	0.756	0.5
	Employees and agents have the necessary knowledge to give professional service to you <b>(R2)</b>	0.766		0.750	
Responsiveness	Employees of RICBL give the customers prompt service <b>(RES1)</b>	0.9	0.738	0.835	0.689
	Employees and the agents of RICBL will tell customers exactly when services will be performed <b>(RES2)</b>	0.886		0.806	
	Employees and agents of RICBL are always willing to help you <b>(RES3)</b>	0.885		0.809	
Assurance	RICBL has operating hours convenient to all its customers <b>(A1)</b>	0.853	0.699	0.786	0.669
	The employees and agents of RICBL are neat appearing <b>(A2)</b>	0.848		0.825	
	RICBL has employees and agents who give your personal attention <b>(A3)</b>	0.81		0.773	
Empathy	When you have a problem, RICBL shows sincere interest in solving it <b>(E1)</b>	0.907	0.745	0.808	0.692
	RICBL offers to you its services right the first time without discomforting you <b>(E2)</b>	0.9		0.837	
	Employees and agents of RICBL are consistently courteous with you <b>(E3)</b>	0.893		0.816	
Tangibles	RICBL offers to your products and services of the utmost quality <b>(T1)</b>	0.848	0.88	0.775	0.838
	RICBL offers to you its products and services at competitive prices <b>(T2)</b>	0.846		0.785	
	RICBL uses modern equipment and technology <b>(T3)</b>	0.843		0.719	
	RICBL keeps its promise when it undertakes to do something by a certain time <b>(T4)</b>	0.841		0.78	
	RICBL issues contracts containing clear, transparent, and non-ambiguous terms <b>(T5)</b>	0.802		0.764	
Credibility	You feel safe in transactions with RICBL <b>(CR1)</b>	0.892	0.725	0.821	0.702
	The behaviour of RICBL's employees and agents instil confidence in you <b>(CR2)</b>	0.877		0.834	
	The employees and agents of RICBL understand specific needs <b>(CR3)</b>	0.858		0.841	
Competency	Service associated materials (leaflets, prospects, various service documents etc.) used by RICBL are visually appealing <b>(COM1)</b>	0.854	0.831	0.732	0.815
	RICBL offers its services to you within the specified contract time limits <b>(COM2)</b>	0.836		0.799	
	RICBL issues error free bills, statements, receipts, contracts, claims and other documents <b>(COM3)</b>	0.834		0.733	
	RICBL gives you individual attention <b>(COM4)</b>	0.812		0.753	
	RICBL has best interests at heart <b>(COM5)</b>	0.68		0.757	

*Source: Survey*

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## Reflective Study on Midlife Crisis Among Priests and Catholic Followers

J. Sahaya Roselin

MSW (Medical and Psychiatry), St. Joseph Matriculation School, Tirunelveli

### Abstract

*A midlife crisis is a "personal difficulty or situation in mind" that cripples the individual in directing effectively his or her life. It is a specific state of mind which causes self-doubt, thinking about life and questing about different spheres of life (James & Gilliland, 2001). Subsequently Candidates seeking admission to seminaries and Catholic follower's formation houses arrive with assets and liabilities. Advertisements and movies that use sex, individualism, and consumerism have warped the understanding of vows, celibacy, and sex; some candidates may have engaged in sexual activity before entering the seminary and struggle with psychological issues. Therefore, in midlife, they might encounter mixed emotions that often encounter guilt, shame, and fear, from seeking temporal pleasure. This paper reflects on the mid-life crises among priests and Catholic followers, and their challenges and coping mechanisms.*

**Keywords:** *Midlife Crisis, Spiritual Maturity, Psychosexual Integration*

### 1. INTRODUCTION

Midlife life crisis among priests and Catholic followers are very vividly expressed in questionnaires conducted by John Jay college and Msgr. Stephen Rossetti research settings. It is precisely because of their past unfulfilled desires, childhood wounds, goals, and understanding about life choices that often flashes in their midlife that needs to be channelled in a proper way. And to come out of their midlife crisis Msgr. Stephen Rossetti and Thomas G. Plante suggested lots of psycho spiritual methods to transit their midlife crisis. As priest and Catholic followers enter in midlife, they are likely to review their progress and ask What have I done? Where am I now? Of what value is my life to society, to others, and especially to God and me his is a period of re-evaluation where priests and Catholic followers confront themselves. Some transit this passage easily and comfortably. For others, it might become a time of crisis. Psychologists identify mild to severe symptoms and behavioral changes during midlife can initiate some crises. Hence, this article highlights the midlife crisis among priests and Catholic followers, the risk factors, and the coping mechanisms.

#### *Common Symptoms of Midlife:*

1. Boredom and exhaustion
2. Self-questioning
3. Daydreaming
4. Irritability, unexpected anger
5. Taking refuge in alcohol, drug, food, or other compulsions
6. Greatly decreased or increased sexual desire
7. Sexual affairs, especially with someone much younger
8. Greatly decreased or increased ambition (Sheehy 1976).

### 2. MIDLIFE TRANSITION

Developmental psychologist Daniel Levinson (1920-1994) explains adult development as follows: When a person enters the adult world at the ages of 22 – 28, he plans out his future and makes initial choices regarding occupation, love relationships, peer relationships, values, and lifestyle. Approximately, at 28 - 33, the plans and goals he has taken at the prior stage become sterner and he considers further modifications and exclusions. People will try to do it with a sense of urgency, for they feel the scarcity of time. Some go through this period smoothly while many experience moderate or severe crises.

This is the period of decision-making in a person that defines the second half of life. The next phase up to 40 is the peak of early adulthood to realize his aspirations and goals. This is a settling down period, where a man will become one's person. Levinson was a pioneer in research and theory on developmental stages and crises of adulthood. In his established work *The Seasons of a Man's Life*, he talks about adult growth that is made up of several eras (stages) and transitional periods. There are four prime eras (typically a constant period) and three-five years of cross-era transitions that can be either rock-strewn or soft. (He has conducted a similar study on women who die before achievement). After this, a person enters middle adulthood, a period (45-60) in which he forms a new life structure caused by a transition and a real creative season in life, which is a period of fulfilment.

According to Sheehy (1983), a person stops trying to please others and begins to validate himself during this period. Another aspect of the transition in midlife is the urge or craving for life fulfilment or goal setting. Corey (1986) views this crisis in midlife as a process of developing one's philosophy of life. The experience of early adult life surfaces in the current life creating a chaotic situation and threatening the present life. Murphy (1992) also views it similarly: "(in midlife) people start to re-evaluate the truth of what they learned about life when the old answers no longer work for the new questions".

1. Feeling that half of life is over
2. Questioning the present life situation
3. Plans to change the career
4. Creative season in life
5. A period of fulfillment
6. New life structure and settlement

Thomas Phante (1992) suggests that the major problems of midlife among priests are loneliness, uncontrolled sexual desire, alcoholism (drug abuse), and depression.

*Loneliness:* McWhirter (1990) defines loneliness as "An enduring condition of an emotional state that arises when a person feels estranged from or is misunderstood or rejected by, and/or lacks an appropriate social partner for the desired activity." The Oxford Dictionary defines "loneliness as a feeling of depression resulting from being alone or having no companions." Similarly, Fitzgibbons (1989), in his article "*Identifying, Resolving Loneliness in Priestly Life*" mentions "loneliness as one of the most painful of all human experiences. Driven, consciously or unconsciously, to escape its pain, many priests in midlife pursue some type of consolation, emotional high companionship, or warmth. To warm the body, some priests may take drinks and drugs. It might console them temporarily. Other behaviours, which are attempts to rise above loneliness, include chronic masturbation, pornography, heterosexual or homosexual acting out, voyeurism, pedophilia, preoccupation with dirty jokes, and sexting." More compulsive behaviours include compulsive television watching, eating, shopping, exercising, and smoking. (Richard P. Fitzgibbons 1989). The above-mentioned bad habits raise the level of neuro-chemicals in the brain such as oxytocin, vasopressin, dopamine, norepinephrine, endorphins, and serotonin which can lead to chronic addiction" (Wendy & Maltz, 2008; Wilson, 2014).

Subsequently, loneliness can lead to "Dependent Personality Disorder", a pattern of submissive and clinging behaviour related to an excessive need to be taken care of (DSM-IV-TR, 2005). Individuals with dependent personality styles have a pervasive need to cling to more assertive personalities, fearing isolation and being alone. Thus, they hold on to their superiors and peers. If their peers or superiors reject them, they may experience clinical depression and anxiety.

*Uncontrolled Sexual desire:* The global impact of the Boston Globe's report resulted in a featured motion picture *Spotlight*, which won an Academy Award for Best Picture in 2015. More recently, the sexual exploitation of young adult seminarians and other non-clerical laypersons (e.g., church congregants and employees, Catholic followers' sisters) by Catholic priests who are in midlife has received much attention (Steinfels, 2019). Kochurani Abraham in her article "Unmaking Integrity: The Challenge before Clergy Sexual Abuse" (2020) mentions that the crisis of sexual abuse of nuns by clergy in the present times was exposed by Lucetta Scaraffia, who was the Editor of the Vatican's. Subsequently, Catholic priests are likely to be child sex offenders, active homosexuals, or violate their own rules regarding sexual ethics and behavioural standards (Steinfels, 2019). Parappully (2006) mentions that "There is an explosion of Internet use, part of which is online pornographic pursuits. Sexually oriented chat rooms draw a large number of Internet users. Seminarians and priests who are in midlives are part of the growing number of online pornography addicts" (Tellis, 2013, p. 37; Putnam & Maheu 2000). Further pornography can lead to personality disorders in users. Therefore, Catholic followers and priests must use the internet for noble purposes. "Any seminarian involved in sexual acts should be referred for proficient assessment and counselling. Otherwise, he can become an unsuccessful pastor and a sex addict" (Rossetti 2011).

*Masturbation:* Masturbation is a source of much perplexity, worry, and distress for priests and Catholic followers in midlife. "A disembodied spirituality which denigrates the beauty of the human body and the eroticism of sensuality and sexuality can make them more vulnerable to the enticement of autoeroticism" (Kraft, 1982, p. 39). "To view masturbation as a challenge for spiritual growth, we must listen and learn from the uncomfortable feelings that often underline and motivate masturbation" (Parappully, 2012). "In midlife priests also need to have an intrinsically arrived meaning for their celibate commitment; such meaning will motivate the candidate to exercise the vigilance and temperance necessary to maintain celibate chastity."

Harvey wrote: "Masturbation can become so much a part of one's pattern of behaviour that its elimination will leave a deep experiential void, which must be filled in some way. Experience of real relationships with God in prayer and with other persons in friendship will fill that void." (Harvey, 1993, p. 45). "The habit or compulsion

of masturbation, often associated with the use of internet pornography, is a serious problem that has often been neglected in the pastoral ministry of the Church" (Kleponis, 2012, p. 13). To celebrate a happy celibate life, we must understand and embrace the sacred dimension of sexuality as a gift of God. The moral danger in masturbation is that it may stunt one's growth. "It can silence the urging of the spirit that invites a person to a loving relationship and abort the opportunity for growth and this is the real sin in masturbation" (Kelsey, M.& Kelsey, 1986, p. 124). "Persons who are facing the problem of masturbation in midlife should be helped out to face this problem with courage and confidence and determination and invite the person to the love and forgiveness of God the father to come out of masturbation and grow to sexual maturity and integrity" (Kochuthara, 2019, p. 70).

*Warning Signs in a Perpetrator:* There are some "red flags", which can indicate a person who is at risk of offending, or who is already behaving in an abusive way. Although not hard and fast signs (neither is the list exhaustive), the following categories of soft, warning, and emergency danger signals may be helpful.

#### *Soft Signs*

- Lack of peer relationships.
- Uncomfortable with peers.
- Comfortable with minors.
- Interest in child/adolescent activities/games.
- Uncomfortable/denial regarding own sexuality.
- The person warrants greater attention and more frequent accompaniment when these signs are present. These initial signs may point to what is known as "grooming" where the perpetrator is preparing the child for future abuse.

#### *Warning Signs*

- Hangs around minors a lot, more than necessary.
- Unusual gifts to minors.
- Keeps "secrets" with minors.
- "Befriends" minors on social media platforms.
- Some minors find him to be "creepy."
- Adults feel increasingly uncomfortable with him.
- Stuffed animals, children's games, and toys in his room.
- Speaks of children/teenagers as though they were adults; or their relationship as if an adult relationship. The response here is that the person needs close monitoring/support, scrutiny, and psychotherapy.

#### *Emergency Danger Signals*

- Takes children on private vacations/into private quarters.
- Has hundreds of photos of children.
- "Wrestles" with children.
- Hands "all over" children.
- Increasingly intrusive touching of minors.
- Increasingly intrusive suggestive sexual talk with minors.
- Giving alcohol/drugs to minors.

Here immediate intervention is mandated involving removal from the formation of the context, ministerial restrictions, treatment in a restricted setting, and, upon the results of the investigation, may need to be referred to proper authorities (James Mc Tavish 2020).

*Alcoholism and drug abuse:* "A few priests, but not many in midlife, are drug abusers. Sustained use changes brain chemistry. It is a terrible addiction to overcome. At all costs, it must be avoided. More priests are alcohol abusers. Most priest alcoholics are not "falling drunks," rather they are functional alcoholics who use alcohol as a way of dealing with a whole host of problems. While it seems that some alcoholics have simply inherited an alcoholism gene through family transmission, many use alcohol as a way of dealing with inner anxiety and/or depression, inner conflicts (such as sexual desires that they dislike), or external conflicts, anger, and disappointment. These priests need to learn how to face such problems without resorting to alcohol. Depression in alcoholics is not uncommon. For example, the alcoholic may try to medicate depression with alcohol, and conversely, alcohol can eventually worsen an underlying depression. Alcohol and depression are a nasty combination". (Federation of Asian Bishops' Conferences FABC-OC, 2007).

*Depression:* “There are many kinds of depression in midlife. Some priests in midlife suffer from major depression and may go through an intense period of depression in which they find it difficult to function. Many who suffer dysthymia (mild depression) tend to spiritualize their condition, thinking that this dour (grim) mood is a sign of their sanctity. Indeed, those who suffer from psychological illnesses if they bear them in faith can become holy through their long suffering. However, we need to tell them that their depression is treatable. We must convince them that “it is not a sin to be happy” that is, an abiding sense of joy is a sign of the indwelling of the Holy Spirit. More on this topic will be discussed when we deal with anxiety disorders”. (Federation of Asian Bishops’ Conferences FABC-OC, 2007).

*Priesthood and Midlife Challenges:* Karl Rahner (1969) defines a priest as one who functions as a bridge between God and human beings with cultic and pastoral activities. “According to various studies on midlife and celibates, there are two major challenges that the priests are not prepared to meet as they enter the ministry after completion of seminary formation: 1) The sexual revolution in the present day society. 2) The challenges of adult development in midlife transition. A clerical student with a strong desire to become a priest, well guided and guarded by the seminary formation team enters into ministry, where he is practically free. The infusion of mass media and liberal morality in present-day society is a great challenge, which many young priests are not prepared to face. The second problem is handling the midlife transition. Here too, the priests who are poor in psychosexual development fail to handle healthily the different adult development issues that take place in them, especially as they grow older and older. Due to these, priests get involved in many scandals and illegitimate sexual relationships and sometimes leave the active ministry” (Janetius S.T., 2008).

*Coping Mechanisms in Midlife:* Priests should direct the creative energy of adult life, which is normally diverted to the family and children, into other creative purposes like writing, composing, and building society. Only then midlife will become a productive period of life. Otherwise, it will create psychological numbness in a person. Several coping mechanisms will help to overcome a midlife crisis. Here are presented two important mechanisms which will help to overcome the crisis.

*Rational Emotive Behaviour Therapy:* Rational Emotive Behaviour Therapy (REBT) is the first form of Cognitive Behaviour Therapy (CBT) and was created by Dr. Albert Ellis in 1955. REBT is based on the concept that emotions and behaviours result from cognitive processes and human beings can modify such processes to achieve different ways of feeling and behaving. REBT was originally called ‘Rational Therapy’, was soon changed to ‘Rational-Emotive Therapy’ and again in the early 1990s to ‘Rational Emotive Behaviour Therapy’. A useful way to illustrate the role of cognition is by using Ellis’ ‘ABCDE’ model.

1. Activating event: The external event that activates how we feel or think;
2. Belief: Our automatic beliefs about the event, ourselves, and other people;
3. Consequence: Your emotional or behavioural responses;
4. Dispute: When you dispute or question these beliefs;
5. Effective behaviour: When you have resisted irrational beliefs and have changed your behaviour.

Psychologist Ellis recommends a ‘selectively eclectic’ approach to therapy, using strategies from REBT and other approaches. But ensuring the strategy is compatible with REBT theory.

*Cognitive Technique: Rational analysis:* Analyses of specific episodes to teach the client how to uncover and dispute irrational beliefs (as described earlier) are usually done in session at first; then, as the client gets the idea, they can be done as homework.

*Double-standard dispute:* If the client is holding a ‘should’ or is self-downing about their behaviour, ask whether they would globally rate another person (e.g. best friend, therapist, etc.) for doing the same thing, or recommend that person hold their demanding core belief. When they say ‘No’, help them see that they are holding a double standard. This is especially useful with resistant beliefs which the client finds hard to give up.

*Catastrophe scale:* This is a useful technique to get *awfulizing* into perspective. On a whiteboard or sheet of paper, draw a line down one side. Put 100% at the top, 0% at the bottom, and 10% intervals in between. Ask the client to rate whatever they are catastrophizing about, and insert that item into the chart in the appropriate place. Then, fill in the other levels with items the client thinks apply to those levels. You might, for example, put 0%: ‘having a quiet cup of coffee at home, 20%: ‘having to mow the lawns when the rugby is on television, 70%: ‘being burgled’, 90%: ‘being diagnosed with cancer, 100%: ‘being burnt alive, and so on. Finally, have the client progressively alter the position of their feared item on the scale, until it is in perspective with the other items.

*Devil’s advocate:* This useful and effective technique (also known as reverse role-playing) is designed to get the clients to argue against their own dysfunctional beliefs. The therapist role-plays adopting the client’s belief and

vigorously argues for it; while the client tries to ‘convince’ the therapist that the belief is dysfunctional. It is especially useful when the client sees that a belief is irrational, but needs help to consolidate that understanding.

*Reframing:* Another strategy for getting bad events into perspective is to re-evaluate them as disappointing, ‘concerning’, or ‘uncomfortable rather than as ‘awful’ or ‘unbearable’. A variation of reframing is to help the client see that even negative events almost always have a positive side to them; listing all the positives the client can think of to change his life.

REBT is generally accepted as an effective type of therapy. A 2017 review of 84 published articles on REBT concluded that it is a valid treatment that can help with obsessive-compulsive disorder, social anxiety, depression, and disruptive behaviour.

### 3. SOBRIETY PLAN METHOD BY STRIVE ORGANIZATION

The Sobriety Plan was introduced by Matt Fradd, who is the founder of the Striving Online Mission. Strive’s mission is to help people overcome porn and internet addiction through its twenty-one-day programme. Fradd (2017) narrates steps to identify healthy behaviours that help one to live a good and happy life.

Subsequently, the Three Circles mentioned below can help people move towards a healthy and holistic life.

1. Inner Circle (*Setbacks/Falls*). Write in a diary and list the ways you can fall sexually. Examples may include watching porn, masturbation, and adultery so that it could be easy to know the triggers and take preventive methods to cure the problems.

2. Middle Circle (*Unhealthy Behaviours*). It is the second phase. In this step, list the unhealthy behaviors that generally lead you into the inner circle (toward a setback). Examples: 1. Drinking Alcohol 2. Social Media 3. Watching movies late at night.

3. Outer Circle (*Healthy Behaviours*)

Matt Fradd describes (2017) “A reaction sequence that begins when you are in a vulnerable place from that position of vulnerability; there is a pattern of thoughts, subconscious action, and reaction that will inevitably lead to the path of addiction.” The outer circle has four layers, in which one needs to carefully examine each layer to heal the inner wounds through positive habits with scientific counselling methods.

1. Spiritual - This circle requires prayer, mindfulness techniques, mantra recitation, and other spiritual methods to evade preoccupying ideas and unholy thoughts.

2. Physical – It requires healthy exercises, a moderate lifestyle, and taking care of one’s body as God’s temple instead of indulging in unhealthy behaviors.

3. Emotional - It requires understanding the unhealthy emotions with maturity and integrating it by engaging in music, gardening, reading books, and spiritual direction.

4. Relational- which requires developing good and qualitative relationships with family, friends, and the community where we live to avoid isolation and loneliness.

### 4. CONCLUSION

All human beings experience different developmental stages of life. These stages are inevitable, very common, and not surprising parts of human life. What is interesting, however in these developmental stages is that each stage has uniqueness and many aspects can be studied about human beings from varying times who undergo these stages differently in distinct settings. Similarly, "Catholic followers also go through a midlife crisis and some give up their vocation. That causes other Catholic followers to worry about their vocation too," Father Simon Truong Quynh said to UCA News in June 2021. Therefore, priests and Catholic followers need to mend their psychological wounds, unsatisfied dreams, pleasure, and gratification that can help to overcome this midlife crisis. Psychologist Robert Emmons defines it, as "*the capacity to feel the emotion of thankfulness on a regular and consistent basis, across situations and over time.*" (Emmons 2003). We live gratefully even amid pain and inconveniences. Gratitude is an appreciative disposition that we cultivate in midlife, an attitude that enables us to see the silver lining even in the around dark clouds. More importantly, research has shown that grateful people fall sick less often, and even when they fall sick, they recover faster. Therefore, let us develop this art of gratitude in our midlife.

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## Internet of Things (IOT) Based Energy Tracking and Bill Estimation System

**Md. Taz Alam**

BCA – Final Year, Department of Computer Science, St. Joseph University, Nagaland

**A. Prem Kumar**

Associate Professor, Department of Computer Science, St. Joseph University, Nagaland

**Dr. S. Pradeep Kumar Kenny**

Professor and Head, Department of Computer Science, St. Joseph University, Nagaland

### Abstract

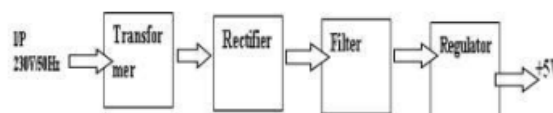
*Electricity is the most requisite energy in modern times. IoT based energy tracking and bill estimation system discussed in this project has an objective to build awareness among household and industrial consumers about their usage of this energy. It does so by displaying real-time estimated electricity consumption by each load connected to it and real-time estimated bill of total consumption on a monitor unit. To save energy when unused, users can operate the control unit to transmit switching instructions for loads. The proposed system also uses Microcontroller, 4-channel relay module, and Blynk android application. microcontroller fetches average consumption detail of loads from and logs estimated bill to the cloud-hosted database, monitors the duration for which each relay in a 4-channel relay module was switched-on, performs calculations, and transmits real-time results to an IoT cloud interface. 4-channel relay module executes switching instructions on loads sent over the internet via the control unit, and the Blynk android application is the IoT cloud interface with both control unit and monitor unit built-in. This project provides highlights on cloud-hosted database details, hardware design, IoT cloud interface application design, and working principle with mathematical modelling of the proposed system and tested results of this system are discussed, with the cloud-hosted database and IoT cloud interface.*

### 1. INTRODUCTION

The concept of the Internet of Things (IoT) provides interconnection of the system's ability to transmit data over the internet. The energy tracking and bill estimation system discussed in this project utilizes this concept with a microcontroller, binary actuators, cloud-hosted database, and IoT cloud interface to build awareness among consumers about their electricity usage. Deployment of this system using the concept of IoT provided the scope of reading real-time results from anywhere in the world, which only has constraints of having the right credentials and internet access. It also enabled the simple design and implementation of additional features in the proposed system. This project comprises a section of Proposed Work, which contains system architecture, hardware design, IoT cloud interface application design, working principle, and system implementation and Result Analysis, which consists of tested results of the intended system.

### 2. POWER SUPPLY

#### Block Diagram



**Figure Power Supply**

### 3. HARDWARE

#### NodeMCU

Introduction to NodeMCU Introduction NodeMCU is an open source LUA based firmware developed for ESP8266 Wi-Fi chip. By exploring functionality with ESP8266 chip, NodeMCU firmware comes with ESP8266 Development board/kit i.e. NodeMCU Development board.





NodeMCU Development Board/kit v0.9 (Version1) Since NodeMCU is open source platform, their hardware design is open for edit/modify/build. NodeMCU Dev Kit/board consist of ESP8266 wifi enabled chip. The ESP8266 is a low cost Wi-Fi chip developed by Espressif Systems with TCP/IP protocol. For more information about ESP8266, you can refer ESP8266 WiFi Module. There is Version2 (V2) available for NodeMCU Dev Kit i.e. NodeMCU Development Board v1.0 (Version2), which usually comes in black coloured PCB.



*NodeMCU Development Board/kit v1.0 (Version2)*: For more information about NodeMCU Boards available in market refer NodeMCU Development Boards NodeMCU Dev Kit has Arduino like Analog (i.e. A0) and Digital (D0-D8) pins on its board. It supports serial communication protocols i.e. UART, SPI, I2C etc. Using such serial protocols, we can connect it with serial devices like I2C enabled LCD display, Magnetometer HMC5883, MPU-6050 Gyro meter + Accelerometer, RTC chips, GPS modules, touch screen displays, SD cards etc.

*How to start with NodeMCU?*: NodeMCU Development board is featured with wifi capability, analog pin, digital pins and serial communication protocols. To get start with using NodeMCU for IoT applications first we need to know about how to write/download NodeMCU firmware in NodeMCU Development Boards. And before that where this NodeMCU firmware will get as per our requirement. There is online NodeMCU custom builds available using which we can easily get our custom NodeMCU firmware as per our requirement. To know more about how to build custom NodeMCU firmware online and download it refer Getting started with NodeMCU.

*How to write codes for NodeMCU?*: After setting up ESP8266 with Node-MCU firmware, let's see the IDE (Integrated Development Environment) required for development of NodeMCU.

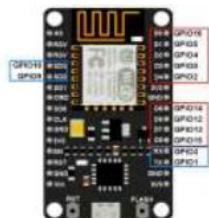
*NodeMCU with ESPlorer IDE*: Lua scripts are generally used to code the NodeMCU. Lua is an open source, lightweight, embeddable scripting language built on top of C programming language. For more information about how to write Lua script for NodeMCU refer Getting started with NodeMCU using ESPlorerIDE.

*NodeMCU with Arduino IDE*: Here is another way of developing NodeMCU with a well-known IDE i.e. Arduino IDE. We can also develop applications on NodeMCU using Arduino development environment. This makes easy for Arduino developers than learning new language and IDE for NodeMCU. Difference in using ESPlorer and Arduino IDE Well, there is a programming language difference we can say while developing application for NodeMCU using ESPlorer IDE and Arduino IDE.

We need to code in C\C++ programming language if we are using Arduino IDE for developing NodeMCU applications and Lua language if we are using ESPlorer IDE. Basically, NodeMCU is Lua Interpreter, so it can understand Lua script easily. When we write Lua scripts for NodeMCU and send/upload it to NodeMCU, then they will get executes sequentially. It will not build binary firmware file of code for NodeMCU to write. It will send Lua script as it is to NodeMCU to get execute. In Arduino IDE when we write and compile code, ESP8266 toolchain in background creates binary firmware file of code we wrote. And when we upload it to NodeMCU then it will flash all NodeMCU firmware with newly generated binary firmware code. In fact, it writes the complete firmware. That's the reason why NodeMCU not accept further Lua scripts/code after it is getting flashed by Arduino IDE. After getting flashed by Arduino sketch/code it will be no more Lua interpreter and we got error if we try to upload Lua scripts. To again start with Lua script, we need to flash it with NodeMCU firmware. Since Arduino IDE compile and upload/writes complete firmware, it takes more time than ESPlorer IDE.

*NodeMCU GPIO with Arduino IDE*

Introduction General-purpose input/output (GPIO) is a pin on an IC (Integrated Circuit). It can be either input pin or output pin, whose behaviour can be controlled at the run time. NodeMCU Development kit provides access to these GPIOs of ESP8266. The only thing to take care is that NodeMCU Dev kit pins are numbered differently than internal GPIO notations of ESP8266 as shown in below figure and table. For example, the D0 pin on the NodeMCU Dev kit is mapped to the internal GPIO pin 16 of ESP8266.

*Node MCU Dev Kit GPIOs*

Below table gives NodeMCU Dev Kit IO pins and ESP8266 internal GPIO pins mapping

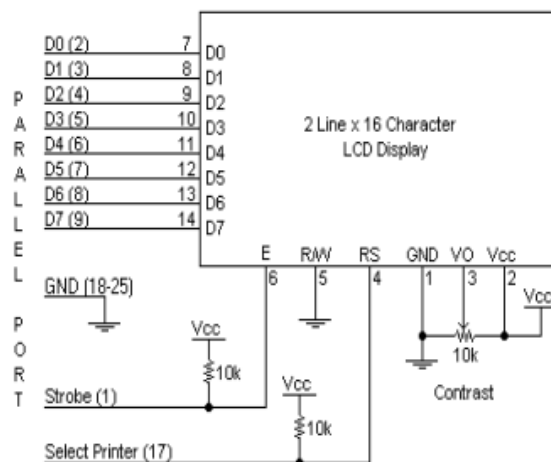
Pin Names on NodeMCU Development Kit	ESP8266 Internal GPIO Pin number
D0	GPIO16
D1	GPIO5
D2	GPIO4
D3	GPIO0
D4	GPIO2
D5	GPIO14
D6	GPIO12
D7	GPIO13
D8	GPIO15
D9/RX	GPIO3
D10/TX	GPIO1
D11/SD2	GPIO9
D12/SD3	GPIO10

*Liquid Cristal Display*

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other. A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to a controller is an LCD display. Some of the most common LCDs connected to the controllers are 16X1, 16x2 and 20x2 displays. This means 16 characters per line by 1 line 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

*Description of 16x2*

This is the first interfacing example for the Parallel Port. We will start with something simple. This example doesn't use the Bi-directional feature found on newer ports, thus it should work with most, if not all Parallel Ports. It however doesn't show the use of the Status Port as an input. So what are we interfacing? A 16 Character x 2 Line LCD Module to the Parallel Port. These LCD Modules are very common these days, and are quite simple to work with, as all the logic required to run them is on board.

*Schematic Diagram*

- Above is the quite simple schematic. The LCD panel's Enable and Register Select is connected to the Control Port. The Control Port is an open collector / open drain output. While most Parallel Ports have internal pull-up resistors, there are a few which don't. Therefore, by incorporating the two 10K external pull up resistors, the circuit is more portable for a wider range of computers, some of which may have no internal pull up resistors.
- We make no effort to place the Data bus into reverse direction. Therefore, we hard wire the R/W line of the LCD panel, into write mode. This will cause no bus conflicts on the data lines. As a result, we cannot read back the LCD's internal Busy Flag which tells us if the LCD has accepted and finished processing the last instruction. This problem is overcome by inserting known delays into our program.
- The 10k Potentiometer controls the contrast of the LCD panel. Nothing fancy here. As with all the examples, I've left the power supply out. You can use a bench power supply set to 5v or use an onboard +5 regulator. Remember a few de-coupling capacitors, especially if you have trouble with the circuit working properly.

*16 x 2 Alphanumeric LCD Module Features:*

- Intelligent, with built-in Hitachi HD44780 compatible LCD controller and RAM providing simple interfacing
- 61 x 15.8 mm viewing area • 5 x 7 dot matrix format for 2.96 x 5.56 mm characters, plus cursor line
- Can display 224 different symbols
- Low power consumption (1 mA typical)
- Powerful command set and user produced characters
- TTL and CMOS compatible
- Connector for standard 0.1-pitch pin headers

*16 x 2 Alphanumeric LCD Module Specifications:*



*Features*

- 5 x 8 dots with cursor
- Built-in controller (KS 0066 or Equivalent)
- + 5V power supply (Also available for + 3V)
- 1/16 duty cycle
- B/L to be driven by pin 1, pin 2 or pin 15, pin 16 or A.K (LED)
- N.V. optional for + 3V power supply

*Data can be placed at any location on the LCD. For 16x1 LCD, the address locations are:*

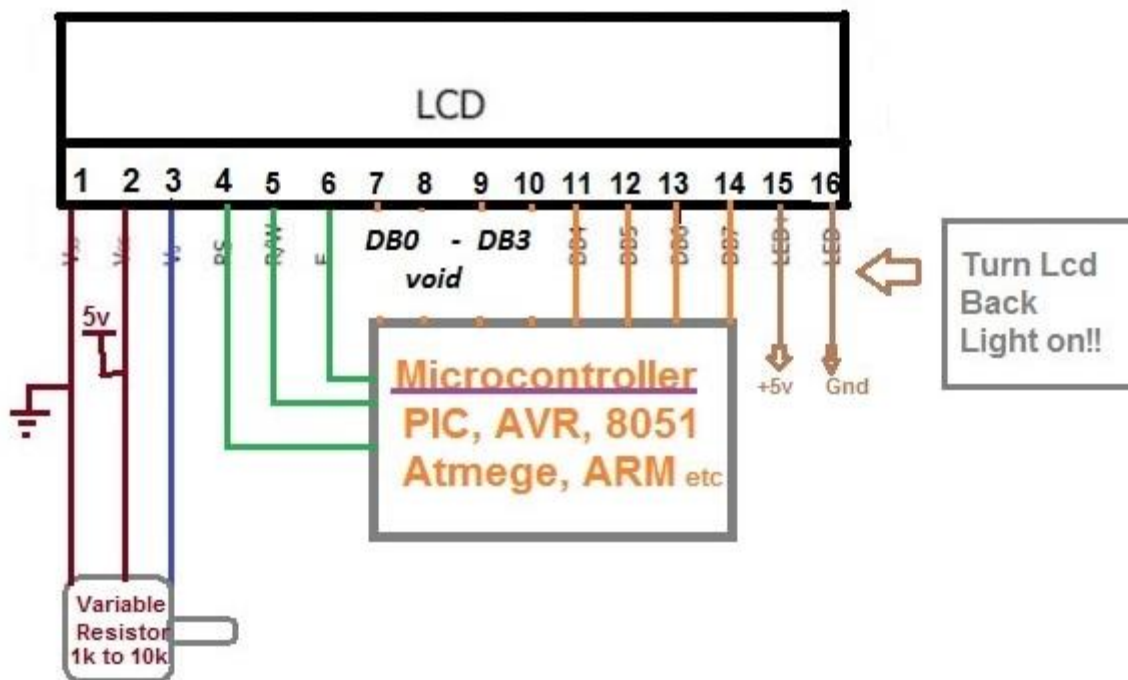
00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13
40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53
14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27
54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	60	61	62	63	64	65	66	67

*Figure Address locations for a 1x16 line LCD*

Even limited to character based modules, there is still a wide variety of shapes and sizes available. Line lengths of 8,16,20,24,32 and 40 characters are all standard, in one, two and four line versions. Several different LC technologies exists. “supertwist” types, for example, offer Improved contrast and viewing angle over the older “twisted nematic” types. Some modules are available with back lighting, so that they can be viewed in dimly-lit conditions. The back lighting may be either “electroluminescent”, requiring a high voltage inverter circuit, or simple LED illumination.

*Pin Description*

Most LCDs with 1 controller has 14 Pins and LCDs with 2 controller has 16 Pins (two pins are extra in both for back-light LED connections).

*Control lines:*

EN: Line is called "Enable." This control line is used to tell the LCD that you are sending it data. To send data to the LCD, your program should make sure this line is low (0) and then set the other two control lines and/or put data on the data bus. When the other lines are completely ready, bring EN high (1) and wait for the minimum amount of time required by the LCD datasheet (this varies from LCD to LCD), and end by bringing it low (0) again.

RS: Line is the "Register Select" line. When RS is low (0), the data is to be treated as a command or special instruction (such as clear screen, position cursor, etc.). When RS is high (1), the data being sent is text data which should be displayed on the screen. For example, to display the letter "T" on the screen you would set RS high.

RW: Line is the "Read/Write" control line. When RW is low (0), the information on the data bus is being written to the LCD. When RW is high (1), the program is effectively querying (or reading) the LCD. Only one instruction ("Get LCD status") is a read command. All others are write commands, so RW will almost always be low. Finally, the data bus consists of 4 or 8 lines (depending on the mode of operation selected by the user). In the case of an 8-bit data bus, the lines are referred to as DB0, DB1, DB2, DB3, DB4, DB5, DB6, and DB7.

*Logic status on control lines:*

- E - 0 Access to LCD disabled - 1 Access to LCD enabled
- R/W - 0 Writing data to LCD - 1 Reading data from LCD
- RS - 0 Instructions - 1 Character

*Writing data to the LCD:*

- 1) Set R/W bit to low
- 2) Set RS bit to logic 0 or 1 (instruction or character)
- 3) Set data to data lines (if it is writing)
- 4) Set E line to high
- 5) Set E line to low

*Read data from data lines (if it is reading) on LCD:*

- 1) Set R/W bit to high
- 2) Set RS bit to logic 0 or 1 (instruction or character)
- 3) Set data to data lines (if it is writing)
- 4) Set E line to high
- 5) Set E line to low

*Entering Text:*

First, a little tip: it is manually a lot easier to enter characters and commands in hexadecimal rather than binary (although, of course, you will need to translate commands from binary couple of sub-miniature hexadecimal rotary switches is a simple matter, although a little bit into hex so that you know which bits you are setting). Replacing the d.i.l. switch pack with an of re-wiring is necessary.

*LCD Commands:*

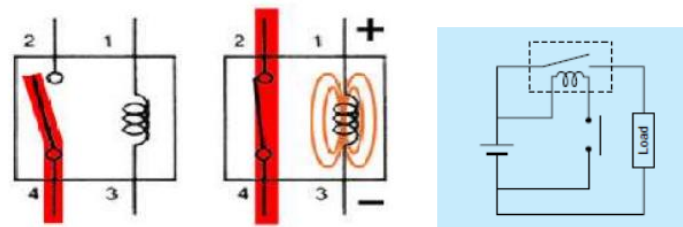
There are some present commands instructions in LCD, which we need to send to LCD through some microcontroller. Some important command instructions are given below:

**Table Commands**

No	HEX Value	COMMAND TO LCD
1	0x01	Clear Display Screen
2	0x30	Function Set: 8-bit, 1 Line, 5x7 Dots
3	0x38	Function Set: 8-bit, 2 Line, 5x7 Dots
4	0x20	Function Set: 4-bit, 1 Line, 5x7 Dots
5	0x28	Function Set: 4-bit, 2 Line, 5x7 Dots
6	0x06	Entry Mode
7	0x08	Display off, Cursor off
8	0x0E	Display on, Cursor on
9	0x0C	Display on, Cursor off
10	0x0F	Display on, Cursor blinking
11	0x18	Shift entire display left
12	0x1C	Shift entire display right
13	0x10	Move cursor left by one character
14	0x14	Move cursor right by one character
15	0x80	Force cursor to beginning of 1st row
16	0xC0	Force cursor to beginning of 2nd row

*Relays*

A relay is an electrically operated switch. These are remote control electrical switches that are controlled by another switch, such as a horn switch or a computer as in a power train control module, devices in industries, home based applications. Relays allow a small current pin, 4-pin, 5-pin, and 6-pin, single switch or dual switches. Relays are used throughout the automobile. Relays which come in assorted sizes, ratings, and applications, are used as remote control switches. A typical vehicle can have 20 relays or more.



*Specification*

Number and type of contacts – normally open, normally closed, (double-throw)

Contact sequence – "Make before Break" or "Break before Make". For example, the old style telephone exchanges required Make-before break so that the connection didn't get dropped while dialling the number.

Rating of contacts – small relays switch a few amperes, large contactors are rated for up to 3000 amperes, alternating or direct current

Voltage rating of contacts – typical control relays rated 300 VAC or 600 VAC, automotive types to 50 VDC, special high-voltage relays to about 15 000 V

Coil voltage – machine-tool relays usually 24 VAC, 120 or 250 VAC, relays for switchgear may have 125 V or 250 VDC coils, "sensitive" relays operate on a few milli-amperes.

*Applications:*

*Relays are used:*

To control a high-voltage circuit with a low-voltage signal, as in some types of modems.

To control a high-current circuit with a low-current signal, as in the starter solenoid of an automobile.

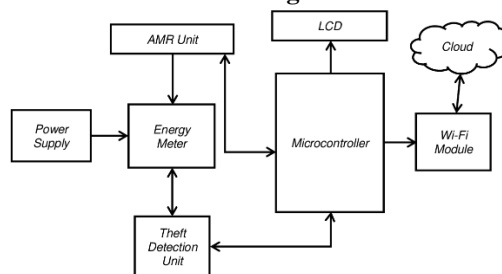
To detect and isolate faults on transmission and distribution lines by opening and closing circuit breakers (protection relays).

To isolate the controlling circuit from the controlled circuit when the two are at different potentials, for example when controlling a mains-powered device from a low-voltage switch. The latter is often applied to control office lighting as the low voltage wires are easily installed in partitions, which may be often moved as needs change. They may also be controlled by room occupancy detectors in an effort to conserve energy. To perform logic functions. For example, the Boolean AND function is realized by connecting relay contacts in series, the OR function by connecting contacts in parallel. Due to the failure modes of a relay compared with a semiconductor, they are widely used in safety critical logic, such as the control panels of radioactive waste handling machinery.

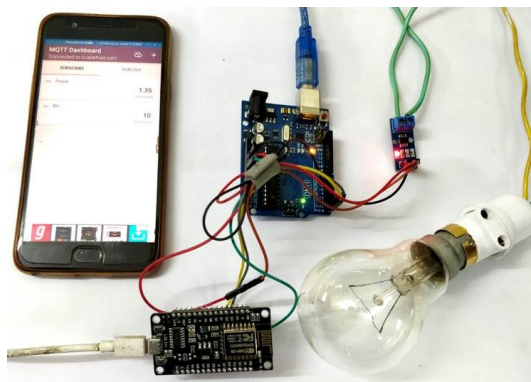
As oscillators, also called vibrators. The coil is wired in series with the normally closed contacts. When a current is passed through the relay coil, the relay operates and opens the contacts that carry the supply current. This stops the current and causes the contacts to close again. The cycle repeats continuously, causing the relay to open and close rapidly. Vibrators are used to generate pulsed current. To generate sound. A vibrator, described above, creates a buzzing sound because of the rapid oscillation of the armature. This is the basis of the electric bell, which consists of a vibrator with a hammer attached to the armature so it can repeatedly strike a bell. To perform time delay functions. Relays can be used to act as a mechanical time delay device by controlling the release time by using the effect of residual magnetism by means of a inserting copper disk between the armature and moving blade assembly.

#### 4. RESULT

##### Block Diagram



##### Schematic Diagram



##### Flowchart

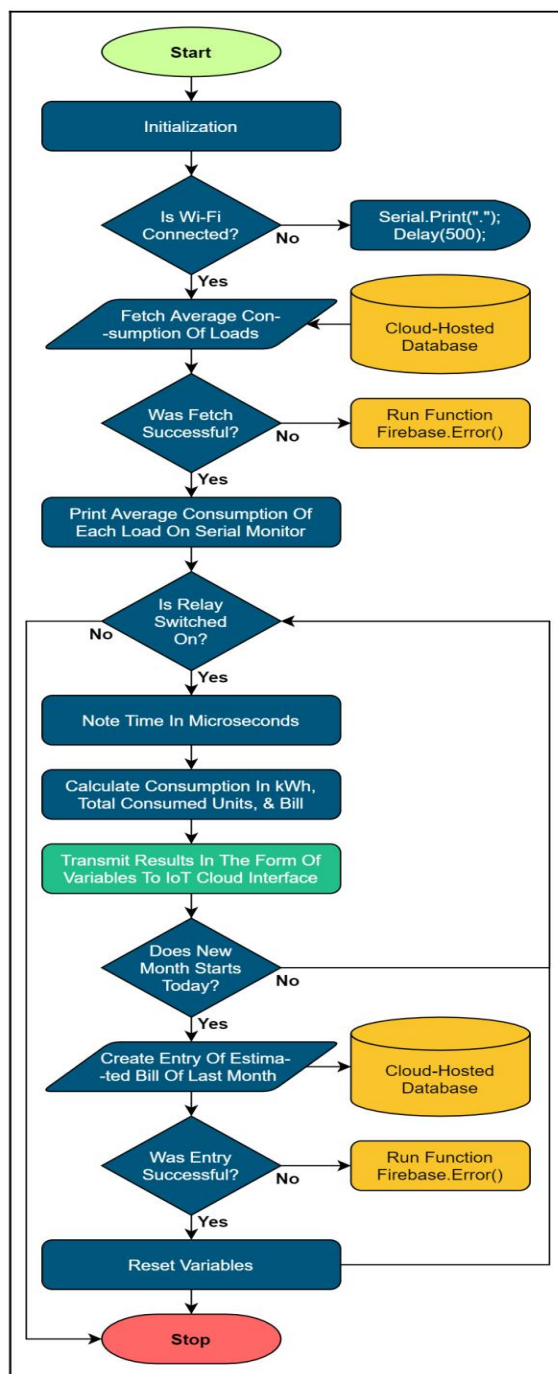


Fig. 6. Bill Estimation Algorithm.

## 5. CONCLUSION

IoT based energy tracking and bill estimation system discussed in this paper with various sections is successful in building awareness about electricity usage by displaying real time estimated electricity consumption by each connected to it and real-time estimated bill of total consumption on monitor unit built-in IoT cloud interface. It has a simple design as it fetches the average consumption detail of loads from a cloud hosted database and not uses any chips or sensors to measure electricity, current, and voltage. It also has additional features of logging the final estimated bill of each month to a cloud hosted database and transmitting switching instructions for loads via a control unit built-in IoT cloud interface. The simplistic design and implementation of extra features were possible by utilizing the concept of the Internet of Things (IoT) in the proposed system.



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## Impact of NBSE's Eligibility Criteria for Promoting Students to XI Standard: Students' Attitude towards Mathematics

Lichoi P John Yimchunger

Dept. of Psychology, St. Joseph University, Nagaland

Dr. Watinaro Longkumer

Associate Professor, Dept. of Psychology, St. Joseph University, Nagaland

### Abstract

*Attitude is a learned tendency to evaluate things in certain way which is formed by several factors such as experience, social factor, learning, conditioning and observation. Likewise, students' attitude towards mathematics subject take its shape over the years due to above mentioned factors. Studies on students' attitude towards mathematics have found many factors that affect students' attitude towards mathematics. The common factors include; parental influences, teacher affective support and classroom instruction. In the recent years, many students who completed X grade from Nagaland Board of School Education could not get admission in schools and colleges (outside Nagaland) and other competitive platforms due to the board issuing a provisional pass certificate with a failed mark in one subject. With this contention the purpose of this study was to find whether the Eligibility criteria for promoting students, implemented by the Nagaland Board of School Education since 2015, has significant impact on students' attitude towards mathematics subject. A descriptive survey was carried out with a sample of 250 students from both Government and Private schools. Attitudes Toward Mathematics Inventory (Tapia & Marsh, 2004) questionnaire was used to collect data to measure the student's attitude towards Mathematics while 20 item questionnaire was designed to measure the students' attitude towards mathematics after the implementation of the Eligibility Criteria capturing the cognitive, affect and behaviour factors of their attitude. The data collected was used to analyze the measurement of Students' attitude towards mathematics by using two sets of questionnaires- i) measuring general attitude towards mathematics and ii) attitude after the implementation of the criteria iii) and to describe/analyze whether different demographic details of the study (gender, parents' education, living arrangement, private and government schools) has any influence on the attitude towards mathematics. This study will conscientize the students, teachers, parents and policy makers on how students' attitude towards mathematics is developed and suggest the education policy makers to re-frame the narration- particularly of the Eligibility criteria, keeping in mind the importance of mathematics subject in early education and the consequences of promoting students to higher secondary with a failed mark.*

**Keywords:** *attitude, mathematics subject, education policy makers, eligibility criteria, gender, living arrangement, private and government schools, NBSE.*

### 1. INTRODUCTION

Attitude is a learned tendency to evaluate things in certain way. It is a lasting positive or negative opinion or feeling about some person, object, or issue. Attitude is formed by several factors such as direct experience, social factor, learning, conditioning and observation. Likewise, students' attitude towards mathematics subject take its shape over the years due to above mentioned factors. Studies on students' attitude towards mathematics have found many factors that affect students' attitude towards mathematics. The common factors include; parental influences, teacher affective support and classroom instruction (Davadas, & Lay, 2017). In the recent years, many students who completed X grade from Nagaland Board of School Education could not get admission in schools and colleges (outside Nagaland) and other competitive platforms due to the board issuing a provisional pass certificate with a failed mark in one subject. With this contention the purpose of this study was to find whether the Eligibility criteria for promoting students, implemented by the Nagaland Board of School Education, since 2015, has significant impact on students' attitude towards mathematics subject.

#### *Conceptual Framework*

The Nagaland Board of School Education has an Eligibility Criteria which states that students who fail in any of the following subjects; Mathematics, science, Social Science and Second Language but gets qualifying mark in Sixth Subject can be promoted to Eleven standard in Arts stream. This narration can lead to the development of a belief in the students that it is okay to fail in one of the above mentioned subjects. The perceived outcome in most students is to give up the Mathematics subjects as in general Mathematics subject is considered as the most difficult subject by most students. Thus the students gradually develop negative attitude towards mathematics

subject. As a result of the poor attitude towards Mathematics students do not show any interest Mathematical activities such as attending Mathematics class attentively, completing home assignments on time, eagerness to learn problem solving skills and consequently they perform poorly in their examinations.

## 2. STATEMENT OF THE PROBLEM

Nagaland Board of School Education (NBSE) is a board which governs and oversees the educational system especially of high school and higher secondary school level in the state of Nagaland. In a hand book published by NBSE, Management of Examinations (2015) under the section, Eligibility of Students #7 states that ‘A student who does not get qualifying grade in one of the following subjects - Mathematics, Science, Social Sciences and Second Language but gets qualifying grade in the sixth subject can be admitted to Class XI under Arts stream.’ In layman’s understanding this would simply mean that a student can be promoted to Class XI Arts stream even if he or she fails in one of the four subjects mentioned above but gets a qualifying mark in the sixth subject. These criteria while intending the promotion of weak students may have become a factor that crumble the attitude of the students towards Mathematics subject which in general is already very low. At the most it benefited the students who sought admission to secondary schools in Nagaland and not beyond. The victims of this criteria were those who sought admission to secondary schools outside Nagaland and other competitive platform were rejected.

### *Rationale of the Study*

Since the academic year 2015, many Class 10 students under the Nagaland Board of School Education have been promoted even though they failed in one of the major subjects most of them in Mathematics. The matter seems no problem at the peripheral, however, such policies or provisions affect students’ attitude towards Mathematics. The findings of many researchers point out that there are many factors that affect the attitude of the Students towards Mathematics. However, there has been no research done to determine whether the educational policies such as the above mentioned provision has any significant impact on the students’ attitude towards Mathematics. Hence, this study is an attempt to investigate if the students have developed negative attitude towards Mathematics after the implementation of the provision resulting to their poor performance in Mathematics subjects

### *Significance of the study*

The study aims to conscientize the parents, teachers, students and educational policy makers about how a negative attitude towards Mathematics is formed due to various factors particularly the narration of the education policy makers. It is intended to help the students know the importance of Mathematics in life and hence encourage them to develop positive attitude towards Mathematics which will enhance their performance in Mathematics subjects. The students also will come to understand the consequences of getting a pass certificate without a qualifying grade in Mathematics which can be a life time regret as their certificates will bear not value. The study also will suggest the education policy makers the need to re-frame the Eligibility criteria of promoting Students at the earliest so that no more students of Nagaland from the Nagaland Board of School Education are send out to the competitive world with a certificate that has one subject failed mark. The re-framing of the criteria should be emphasizing the importance of qualifying in all major subjects.

### *Objectives of the Study*

1. To measure students’ attitude towards mathematics in general.
2. To measure students’ attitude towards mathematics after the implementation of the criteria.
3. To analyze the relationship between students’ attitude towards Mathematics subject and their performance.
4. To analyze and describe whether different demographic details of the study (gender, parents’ education, living arrangement, private and government schools) has any influence on the attitude towards mathematics.

## 3. REVIEW OF LITERATURE

Researchers suggest that attitude has three components viz, cognitive, affective, and the behavioural components. The individual’s beliefs and thoughts is the cognitive component, the affective component of attitude is the feelings or emotions of the individual associated with the attitude object and the tendency to respond in a certain way to the attitude object is the behavioural aspect of the attitude (Eagly & Chaiken, 1993;

Maio & Haddock, 2010). These components of attitude are interrelated and interconnected with each other. According to Social Psychologists attitudes are formed through individual experiences, using three major learning theories which are classical conditioning, operant conditioning and observational learning. Attitude towards Mathematics is defined by Neale (1969), as an aggregated measure of “a liking or disliking of Mathematics, a tendency to engage in or avoid Mathematical activities, a belief that one is good or bad at Mathematics, and a belief that Mathematics is useful or useless”. Students’ attitude towards Mathematics is also formed, perceived and seen in the way the students engage themselves in mathematical activities either positively or negatively.

Although there is no consensus finding regarding attitude being gender related, in general many people hold the view that boys outdo girls when it comes to doing Mathematics. This belief can have an impact on girls who begin developing negative attitude towards Mathematics (Farooq and Shah (2008). The results of the researches on the relationship between students’ attitude towards Mathematics and their performance are inconclusive. However, some findings show that there is a positive correlation between these two variables (Joakim Samuelsson, 2021). The findings of the researches reveal that the education of the parents have positive relationship with students’ performance in Mathematics (Arup Kundu, 2018, L. Ayebale et al. 2020).

#### *Research questions*

1. Has the students’ attitude towards mathematics changed with the awareness of the implementation of the Eligibility Criteria for promotion.
2. Is there a significant relation between students’ attitude towards mathematics and their performance in mathematics subject?
3. Is gender a determinant factor that affect students’ academic performance?
4. Does parents’ qualification help students’ academic performance in mathematics?
5. Is there a significant relation between living arrangement and students’ attitude towards mathematics and performance in mathematics subject?
6. Is there difference in the performance of private school students and government school students?

#### *Research Hypothesis*

The following null hypotheses ( $H_0$ ) were formulated for this research:

$H_{01}$ : NBSE’s Eligibility Criteria has not affected students’ attitude towards mathematics.

$H_{02}$ : There is no significant relationship between students’ attitude towards mathematics and their academic performance in mathematics

$H_{03}$ : There is no significant gender difference in students’ attitude towards Mathematics

$H_{04}$ : There is no significant relationship between Parents’ qualification and students’ academic performance in mathematics subject.

$H_{05}$ : Living arrangement has no significant impact on students’ attitude and performance in mathematics.

$H_{06}$ : There is no significant difference in the performance between private and government schools’ students in mathematics subjects.

## **4. METHODOLOGY**

This study was done as a quantitative descriptive survey with a total of 250 sample population collected from both government and private schools of Dimapur and Chumukedima districts of Nagaland. The data was collected through Convenient Sampling method. The demographic details of the sample include 104 boys, 146 girls, 29 students had both educated parents while 146 students’ parents were both uneducated, 27 students were hostelers and 223 students were Day Scholars while 49 students from government school and 201 students from private schools. Two sets of questionnaires were used to collected data. The first set used was Attitude Towards Mathematics Inventory (Tapia and Marsh, 2004) a 40 question designed to measure high school and college students’ attitudes toward mathematics. It was used to measure the general attitude of the student towards mathematics subject. The second set was developed by the researchers with 20 items capturing the three components of attitude; the cognitive, the affective and the behavioural component in order to measure the students’ attitude towards mathematics in relation to the Eligibility criteria of the Nagaland Board of School Education. Both the questionnaires were in a Likert-type format with five response options from 1 (Strongly Disagree) to 5 (Strongly Agree). The researcher administered the first set of questionnaire with an instruction to enter the number that closely corresponds to how each statement best describes their feelings. The second set of

questionnaire was administered after the students were made known about the existing NBSE's Eligibility Criteria for promoting students.

## 5. ANALYSIS AND RESULT

**Table 1 - Attitude of Students**

<i>Attitude of students towards mathematics in general</i>	
Mean	124.06
Standard Deviation	18.19
Count	250

The result shown in the table 1 shows that the general attitude of the students towards mathematics is low.

**Table 2 - Students' attitude towards Mathematics**

	<i>Pre - Implementation</i>	<i>Post Implementation</i>
Mean	124.06	68.72
Variance	331.18	113.74
Observations	250	250
P(T<=t) one-tail	1.2	

The result of the t-test shows ( $p=1.2 >0.05$ ) that there is no significant difference in students' attitude toward mathematics before and after the awareness about the NBSE's implementation of Eligibility Criteria for promoting students on students' attitude towards mathematics, which also indicates that Null hypothesis 1: NBSE's eligibility criteria has not affected students' attitude towards mathematics, is accepted.

**Table 3 - Difference between attitude and performance**

	<i>Attitude</i>	<i>Performance</i>
Mean	124.06	29.49
Variance	331.18	293.66
Observations	250	250
P(T<=t) one-tail	2.4	

The result of the t-test ( $p=2.4 >0.05$ ) indicates that the attitude of the students towards mathematics and their performance in mathematics has no significant difference. Hence, Null Hypothesis 2: There is no significant relationship between students' attitude towards mathematics and their academic performance in mathematics, is accepted.

**Table 4 - Relationship between gender and students' Attitude towards mathematics**

	<i>Male's Attitude</i>	<i>Female's Attitude</i>
Mean	126.2	122.5
Variance	330.3	328.5
Observations	104	146
P(T<=t) one-tail	0.06	

To analyze gender and student attitudes toward mathematics an independent T-test of was used. As depicted in Table 4, ( $p > 0.05$ ) shows that there is no significant difference in attitudes between genders toward mathematics. Although male students mean score indicates more positive in comparison to their female counterparts. This indicates that Null Hypothesis 3: There is no significant gender difference in students' attitude towards Mathematics, is accepted.

**Table 5 - Relationship between parents' education and students' performance in mathematics**

	<i>Performance of students of the Uneducated Parents</i>	<i>Performance of students of the educated Parents</i>
Mean	28.17	39.58
Variance	250.77	521.82
Observations	221	29
P(T<=t) one-tail	0.006	

To find the relationship between parents' qualification and students' academic performance, t-test was conducted which resulted with ( $p < 0.05$ ). This implies that Null Hypothesis 4: There is no significant relationship between Parents' qualification and students' academic performance in mathematics subject, is rejected. Hence, the alternative hypothesis is established that there is a significant relationship between Parent's qualification and student's academic performance in mathematics subject

**Table 6 - Living arrangement and students' performance in mathematics**

	<i>Hostelers</i>	<i>Day Scholars</i>
Mean	34.14	28.93
Variance	319.4	289.03
Observations	27	223
P(T<=t) one-tail	0.08	

A t-test was conducted to see if there is significant relationship between living arrangement and students' performance in mathematics subject. The depicted result in table 6 shows that there is no significant relationship between hostelers and day scholars which means that Null Hypothesis 5: Living arrangement has no significant impact on students' performance in mathematics, is accepted.

**Table 7 - Performance of Private School students and governments students in mathematics subject**

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	32.65	16.55
Variance	299.82	61.37
Observations	201	49
P(T<=t) one-tail	2.3	

The above table 7 is the result of analysis on the relationship between the performance of the students from private schools and government school. The outcome of the test ( $p < 0.05$ ) reveals that the Null Hypothesis 6: There is no significant difference in the performance between the private and government schools' students in mathematics subjects, is accepted.

## 6. DISCUSSION

The findings show that in general student's attitude towards mathematics was low as is the case with the findings of the other studies. The findings of the study indicate that students' belief, preparation, and performance in approaching the subject hasn't changed even after their awareness about the implementation of the eligibility criteria. According to study made by Karjanto N. (2017) there is a significant positive relationship between previous performance and attitude towards mathematics. However, in this study the finding that there is no significant relationship between student's attitude towards mathematics and their performance. The students may have positive or low attitude towards mathematics however it is not reflected in their performance in mathematics which is in contrast to some researchers' findings (Batool, Akhter, Kalsoom, 2020).

It is interesting to note that there is a significant relationship between on their children's performance in mathematics. The reason could be the educated parents insist on taking tuition or spending sufficient time in mathematical activities. It is general assumption that those who stay in hostels do better in studies. However, the result reveals that there is no significant relationship between the living arrangement and students' performance in mathematics subject. In the context of Nagaland, the motive of staying in a hostel is not academic excellence but due to the following factors; students from rural area, students who cannot be under parents' control and to prevent students from using gadgets. In most cases staying in hostel is the desire of the parents rather than the students. In contrast to the findings in previous studies (Musbahu A (PhD); Oluyemo A. A; Dr. I. Amos & Alhassan D. Safo, 2021) the performance of the private school students had no significant difference with that of the government school students (Kasimu (2017). Parents usually prefer to send their children to private schools because of the believe that private schools give better education. However, the result of analysis between the private and government schools show otherwise. The reason could be that both the students of private and government schools have same home environment which includes family support system and study behaviour.

## 7. CONCLUSION

Generally, Mathematics is considered the most difficult subject or that it cannot be learned with difficulty. Attitude has a huge role to play whether or not Mathematics is hard. A positive attitude towards Mathematics

has been found to help students perform well in Mathematics. And one way to develop students' positive attitude towards Mathematics is by way of acknowledging and instilling the minds of the students, Mathematics as an important subject which helps in developing problem solving skills and analytical thinking. Any policy that under-minds the importance of Mathematics can adversely affect students' attitude towards Mathematics.

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## Post Covid scenario in Financial Investment Management System Pattern – A New Beginning

**Prof. Neeraj Kumar**

Assistant Professor, Jinvani Management College, Ara

**Prof. Dr. Anand Mohan**

Principal, Jinvani Management College, Ara

### Abstract

*With the shrunk in contribution to the GDP from 32.5% (Pre Covid) to 30.7% (Post Covid), the investment pattern shows some paradigm shift of investor's Modus Operandi. The global recession coupled with the pandemic wave heavily impacted the Indian economy with the sharp increase in Inflation (7%) resulting in curtail in investment and savings, although the resilience global market seems vibrant. The study focuses on, how the investor harvested their return on investment, the rate of return in both the pre and post Covid time and the variations of their investment style. Moreover, digital technology is rewriting the future script for capital markets worldwide and is conceived as the main driver for the industry to evolve over the next few years. Newer technologies that are integrating capital markets with the investor include Artificial Intelligence(AI), Cloud technology, open architecture, mobile computing creates the new ecosystem with management system approach now dictating the new investment style and nitty-gritty of financial investment. With the application of various financial model like Valuation of Assets, ROI (Return on Investment), Technical Analysis, Financial Analysis Company Analysis, the trends of investment during the transition period of pre Covid to post Covid is analyzed and studied. The relevance data (secondary data) were obtained from the RBI (Reserve Bank of India), CMIE (Centre for Monitoring Indian Economy), ICRA (Investment Information and Credit Rating Agency of India Limited) on which the study was conducted. By carrying out samples align with the SMDM (Statistical Methods for Decision Making) approach the study revealed that the pattern in investment in post Covid shown a new approach in investment style with the more awakened and knowledgeable investor.*

**Keywords:** Return On investment (ROI), Statistical Methods for Decision Making(SMDM), Valuation of Assets (VA), Financial Analysis (FA), Artificial Intelligence (AI)

### 1. INTRODUCTION

In a financial parlance investment implies a sacrifice of current money or other resources for future benefits. The two key aspects of any investment are time and risk, for evaluating an investment avenue, the relevant attributes like rate of return, risk, marketability, tax shield and convenience are conceived. A well designed and efficient financial market bolster the investors envision towards investment in different financial assets/instruments which leads to the larger corpus of funds creation. The efficiency of financial market depends on the nitty-gritty of the financial transactions, technological adaptability, integrated globally. The fabrics of financial market stand firmly when it is more viable towards investor's choice and aspirations with progressive approach. The conducive milieu set up by the regulatory bodies lays down the foundation of platform of the perfect competitive market with more rational and judicious valuation of financial assets/instruments. Due to speculative in nature, the pattern of investment is highly influenced by time reference and return sustainability. During onset of Covid 19, there were no any significance rise in new investors (Money Control), however the capital markets remain intact with healthy returns. The Post Covid witnessed a sharp increase in numbers of Investor as well as market capitalization. particularly in the younger generation.

The transition period between pre and post Covid is the decisive time and more significant in important events in chronology of Financial Market. Moreover, it seems to be more transformed and redefined the strategy of investment and its pattern. The comparative study of pre covid and post covid reveals the new Modus Operandi of the investment with the sharp increase in the number of youngsters who is more tech savvy and well equipped with updated technology that are making inroads in the financial market. With the rapid change in the global scenario, the implications are widely felt across the world. With the integrated financial markets which works pan world. The introduction of new avenues of investment like, ETF, Global Bond, Index Global Fund, Open Access to the foreign stock exchanges felicitates in reviewing and valuate financial assets and tapping the best return in adjusting the trade –off between risk and return. The study will be helpful in analyzing and browsing the new investment scenario.



## 2. LITERATURE REVIEW

Apropos to the research topic, the framework of the concept and notion is established on the various facets of different faculties which are integrated and recasted into a sequential method. According to Adam Hayes, investment refers to an asset or item acquired with the goal of generating income or appreciation overtime. Cambridge University Press defines investment as the action or process which is worth buying because it may be profitable in future. The ecosystem of financial investment evolved over the years of restriction and conservative approach, the contemporary financial investment management system seems vibrant and viable. According to Prasanna Chandra, the investment environment has been shaped by four major trends which revolutionize the investment style that is globalization, information and computer network, financial engineering and securitization.

However, the most indispensable factor for selecting investment behaviors is the relationship between return and risk. The investor gauge their returns on the parameters of good credibility, large company size, high dividends and high returns. Hence, the valuation of underlying assets (financial instrument/securities) is contemplated. In the context of India, the observation of (Zhang& Zheng 2015), is aptly fitted that Sociological and demographic factors are also to explain and influence investment behavior. The Financial market milieu is observed with the premises and framework of financial analytical tools and model for which a module of research paper is designed. As the technical analysis is explained by Brandon Renfro, it is one way to analyze potential investment to determine if or when to buy or sell. It is based on idea that supply and demand affect the price movement. Company analysis examines a firm's financial condition, products and services and competitive strategy. While the fundamental analysis provides the financial health of the company. So, the nitty –gritty of financial instruments transaction/investment needs to be meticulously observed and analyzed, the methodology to adopt the specific strategy while divulging the complexities and conceal movement of securities with dexterity.

The significant observation done by OACED that the Covid 19 crisis risks creating major setbacks in financing for sustainable development, many resources rich countries who derive a high share of tax and non-tax revenue from commodities and natural resources will be particularly affected by the significant drop in global economy, compared to GDP, low income countries rely more strongly on natural resource rents than income group. Recently Money Control revealed that the role of youngsters has significantly increased in financial market parlance. It has been observed, an increasing number of youngsters are directly investing in equities indicating that their focus is long term returns, it can also be noted that brokerages like Zerodha, Upstox, Groww and traditional players like HDFC Securities, ICICI Securities more than doubled their new customers since the pandemic. During study, the limited sources regarding the investment pattern, the outline of the study is designed on the basis of analysis of the SMDM model and other managerial tools is applied.

## 3. RESEARCH METHODOLOGY

The methodology entails the research proceedings identifying the relevance analytical and mathematical tools and methods and the alignment of the collected data with the models which is appropriate for the analysis is adopted. The study's main purpose is to find out the thrust and factors which highly impacted the financial investment pattern with the integration of the advanced technological system, while the financial and statistical models have specific and limited roles for the valuation and the behavior of financial assets, the data (secondary data) employed because the study is of qualitative in nature. The outline of the research is based on the data and its implications to the ecology of financial investment system The secondary data is obtained from the journals, financial magazines, website of SEBI, CDSL, NDSL. Data were analyzed and plotted graphically and presented quantitatively using MS word tools so as to comprehended the study in a more precise and coherent way.

## 4. DATA ANALYSIS

As market capitalization reflects the quantum of investment in capital market, the data.

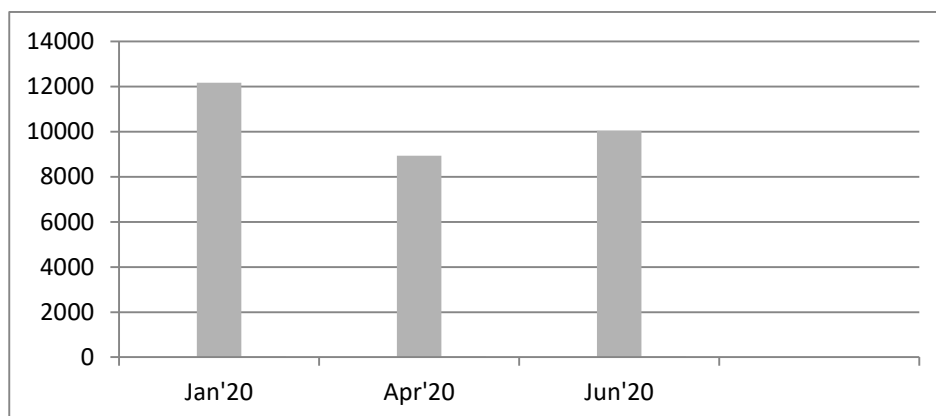
**Table 1 - Comparison of Market Capitalization between Pre and Post Covid time**

Market Capitalization (in \$)	Pre -Covid	Post- Covid
	\$ 2.16 trillion	\$ 3.37 trillion

It represents some significant changes in market capitalization around 56- 01% in post covid, another relevant data to represent the real picture of the impact.

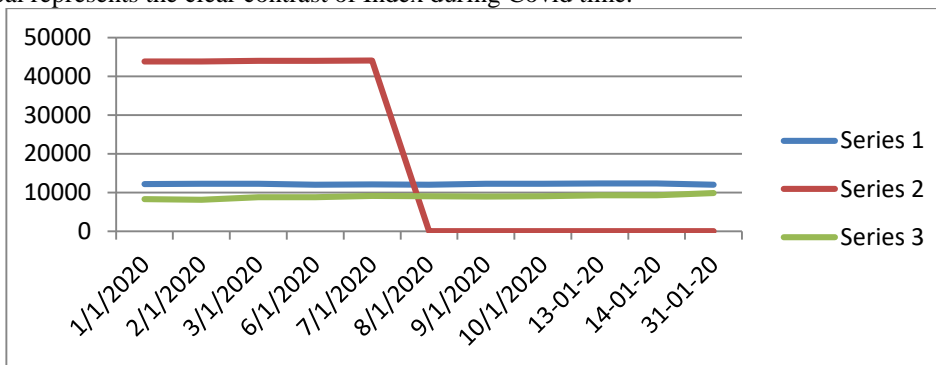
**Table 2 - Index Value during the months of Jan'20, Apr'20 and June'20**

Jan '20 data		Apr' 20 data		Jun' 20 data	
Date	Closing Indexes	Date	Closing indexes	Date	Closing Indexes
01-01-20	12182.5	01-04-20	8253.8	01-06-20	9826.15
02-01-20	12282.2	03-04-20	8083.8	02-06-20	9979.15
03-01-20	12226.7	07-04-20	8792.2	03-06-20	10061.6
06-01-20	11993.1	08-04-20	8748.75	04-06-20	10029.1
07-01-20	12,053	09-04-20	9111.9	05-06-20	10142.2
08-01-20	12025.4	13-04-20	8993.8	08-06-20	10167.5
09-01-20	12215.9	15-04-20	8925.3	09-06-20	10046.7
10-01-20	12256.8	16-04-20	8992.8	10-06-20	10116.2
13-01-20	12329.6	17-04-20	9266.75	11-06-20	9902
14-01-20	12362.3	20-04-20	9261.85	12-06-20	9972.9
31-01-20	11962.1	30-04-20	9859.9	30-06-20	10302.1



**Figure 1 - Index Value**

The graphical represents the clear contrast of Index during Covid time.



**Figure 2 - Index during Covid time**

Series 1- Jan'20, Series 2- Apr'20, Series -3- Jun'20.

SEBI – data

Recently a survey of ETMONEY have revealed that there is a sharp increase in investor in which the younger plays a very vital role. As this data suggests (Sources of ETMONEY).

**Table 3 – Investor Group**

Year	18-35	36 and above
2017	66%	34%
2018	70%	30%
2019	69%	31%
2020	70%	30%



Figure 3 - Patterns of age group 18-35



Figure 4 - Patterns of age group 36 and above

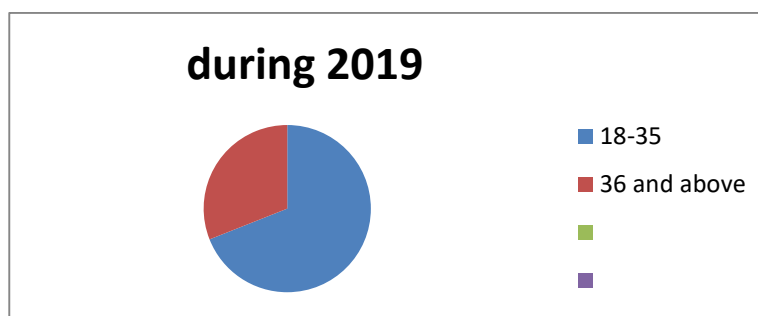


Figure 5 – During 2019

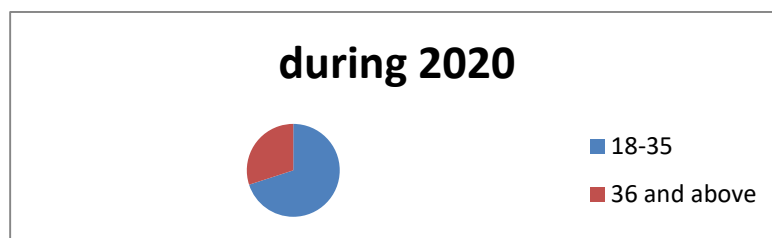


Figure 6 - During 2020

Table 4 - Investments

	FY 2022-23	FY 2021-22	FY 2020-21	FY 2019-20	FY 2018-19	FY 2017-18	FY 2016-17
<b>Total during FY</b>	<b>1,00,581</b>	<b>1,24,566</b>	<b>96,080</b>	<b>1,00,084</b>	<b>92,693</b>	<b>67,190</b>	<b>43,921</b>
March		12,328	9,182	8,641	8,055	7,119	4,335
February		11,438	7,528	8,513	8,095	6,425	4,050
January		11,517	8,023	8,532	8,064	6,644	4,095
December		11,305	8,418	8,518	8,022	6,222	3,973
November	13,306	11,005	7,302	8,273	7,985	5,893	3,884
October	13,041	10,519	7,800	8,246	7,985	5,621	3,434
September	12,976	10,351	7,788	8,263	7,727	5,516	3,698
August	12,693	9,923	7,792	8,231	7,658	5,206	3,497
July	12,140	9,609	7,831	8,324	7,554	4,947	3,334
Jun	12,276	9,156	7,917	8,122	7,554	4,744	3,310
May	12,286	8,819	8,123	8,183	7,304	4,584	3,189
April	11,863	8,596	8,376	8,238	6,690	4,269	3,122

Besides these data, the mathematical models are also used in terms of alpha model and CAPM Model which established the return and risk analysis with reference to time. Alpha is a standard performance ratio that are commonly used to evaluate stocks or investment portfolio. Alpha is usually a single number (e.g 1 to 4) representing a % that reflects how an investment performed relative to a benchmark index. CAPM approach is used to calculate the amount of return that investors need to realize to compensate for a particular level of risk. It is calculated as follows:

$$R = R_f + \beta (R_m - R_f) + \text{Alpha}$$

R – represents the portfolio return,  $R_f$ = risk free rate of return ,  $R_m$ = represents the market return, Beta – represents the systematic risk .

Another factor beside these aspects the following observations have been revealed by SEBI. An average of 26 Lakh new D-mat accounts were opened every month in the year 2022 as against a monthly average of 4 lakhs in 2019-20. As of Nov. 2021, the total no. of investor accounts, stood at 7.7 crore (NSDL, CSDL) as of nov 21 with total investment of Rs 330 Lakh crore. With reference to Upstox own data reveals, the number of new investor before the surge, most of the Demat accounts were in 8 metro cities, since the pandemic, there is an incremental increase in customer’s addition from the top 50 cities.

It is encouraging to note that more than 80% of Upstox customers are in the 18-36 age bracket and from areas untapped previously. The models of DCF and NPV were analyzed for the current worth of investment and net return on the investment.

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n}, \text{ where DCF = discounted cash flow, } r = \text{rate of interest, } CF_i = \text{cash flow period } i, n = \text{time in years before the future cash flow occurs.}$$

$$NPV = \sum \frac{CF_n}{(1+i)^n} - \text{Initial Investment}$$

The financial assets are analyzed during the study and found to be non-significant as the valuation of the assets remain intact, however it was having some impact.

## 5. FINDINGS

The ongoing study has made a detailed analysis of the parameters that involves the valuation of financial asset while with the advent of the up surging of the online brokerages who provides easy access to the reach of capital markets. Some interesting findings during the research are

- There is a significant change in the capital market outreach with the entrance of On line brokerages houses. Resulting in the gradual rise in the numbers of investors
- The omnipresence of computer or IT application the various mathematical tools of financial nature can be easily understood and handled, which is making an inroad in the new system
- During Covid or transition period, investors basically the traditionalist approach which have a larger share of contribution in investment, the loss in that period have been compensated by the younger generations.
- However, the nitty – gritty of financial investment remains intact, the leading role of IT applications gave a great momentum to the ecosystem of Financial Investment System.
- Comparing the facts of pre and; post COVID time, it has been observed that tech savvy persons have taken the lead role with the application of algorithm calculation.
- Infact the Indian Financial System have worn a new sleeve in terms of computer network with more versatile and vibrant efficient market.

## 6. CONCLUSION

The data and relevance analysis gave a picture to the new world, which are guided by the intellect with more sophisticated and fabricated technology, assimilating the milieu of Investment with the global approach redefining the new global order and designing a new world.

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## Teachers' Attitude Towards the Need for Inclusive Education

Nenchu Kath

Department of Psychology and Counselling, St. Joseph University, Nagaland

Senteinla Yaden

Department of Psychology and Counselling, St Joseph University, Nagaland

### Abstract

*One of the main highlights of National Education Policy (NEP) 2020 is on the idea of “equitable and inclusive education.” Children with disabilities are often at higher risk of marginalization. Like their counterpart, they have every right to achieve the same opportunities by streamlining inclusive education in mainstream schools. Teacher’s attitude plays a significant role in fostering integrated education. This study thus aimed to describe the attitudes held by in-service teachers towards the idea of inclusive education. For the current study, quantitative descriptive survey approach was employed by utilizing Attitude Towards Teaching All Students (ATTAS-mm) questionnaire. Altogether, 194 in-service government and private school teachers participated from 18 different school in Dimapur district, Nagaland. Data was analysed using mean, standard deviation and independent sample t-test. The study findings revealed that there is a positive level of attitude towards the need for inclusive education. The study also revealed that there was no significant difference between government and private in-service teacher. Similarly, no significant difference was found between male and female in-service teacher. The finding of this study will provide recommendation to the government policies and contribute towards inclusivity where persons with disabilities can flourish.*

**Keywords:** *inclusive education, attitude, mild/moderate disabilities, ATTAS-mm*

### 1. INTRODUCTION

One of the main highlights of National Education Policy (NEP) 2020 is on the idea of “equitable and inclusive education”. Children with disabilities are often at higher risk of marginalization. Like their counterpart, they have every right to achieve the same opportunities by streamlining inclusive education in mainstream schools. However, there are multiple attitudinal and environmental barriers that hinders access to inclusive education for persons with disabilities. According to Nations Convention on the Rights of Person with Disabilities (2016) one of such barriers includes “the failure to understand or implement the human rights model of disability, according to which barriers within the community and society, rather than personal impairments, exclude persons with disabilities”. The Rights of Persons with Disabilities Act, 2016 (RPWD Act 2016) complies with the UNCRPD. NEP 2020 is in agreement with the RPWD Act 2016 where inclusive education is defined as a “system of education wherein students with and without disabilities learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities” (RPWD Act, 2016). Teachers are one of the major contributors to a student’s educational development. Therefore, to understand how effective inclusive education are it is crucial to recognise the importance of teacher’s attitudes (Boyle, Anderson & Allen, 2020). While we may see that teacher’s role is vital to foster inclusive classrooms and that inclusion in schools begins with the teachers, it is imperative that teachers themselves are supported by the education system through access to appropriate resources, and the provision of supportive leadership and effective policy (Boyle, Anderson, & Allen, 2020).

The need for inclusive education in Nagaland has not been understandably enlightened yet. Through the columns of the local dailies published in Nagaland, there were several headlights on inclusivity which needs to be brought to light in Nagaland such as, during one-day workshop on ‘Inclusive education- a step into inclusion’ held by the State Commissioner for Persons with Disabilities in collaboration with Bumblebee Inclusive School, the Principal Director of School Education, Shanavas C noted that “Though everyone talks about inclusive education, it happens only on paper ” (Morung Express, 2021). On the same event, NBSE Chairperson Asono Sekhose pointed out that “there is a lack of baseline survey and building of schools and community support system to take care of the different needs of the children” (Morung Express, 2021). Diethono Nakhro, State Disability Commissioner, also further stated that “Without putting the mechanisms in place, inclusive education will just remain on paper while our children with disabilities continue to be ignored and excluded from our education system – left behind like they do not matter” (Morung Express, 2021). Therefore, it seems opportune to conduct a research study to understand if the teachers of Dimapur district is prepared to countenance inclusivity. The present study thus aimed to describe the attitudes held by in-service teachers towards the idea of inclusive

education. The finding of this study will help in creating awareness by providing data for the process and outcomes of developing an inclusive education system.

## 2. REVIEW OF LITERATURE

### *Attitude and Its Dimension*

The study of teachers' attitude towards inclusive education is an object of psychological literature. Psychological studies record a close relationship between behaviour and attitude. According to Ajzen and Fishbein (2000) attitude is "evaluation of an object, concept, or behaviour along a dimension of favour or disfavour, good or bad, like or dislike". Furthermore, Fishbein and Ajzen (1972) also defined attitude as having three components: cognitive, affective and behavioural. "The cognitive component is made up of one's thoughts, ideas or beliefs about something or someone, this may be stereo-typing; The affective dimension of attitude includes the feelings, the emotional response to something or someone, while the conative part of attitude is the behavioural dimension; The behavioural or conative component is a description of the tendency to act in a way towards something" (Gregory & Noto, 2012). Attitudes, although drawn from cognitions, can pervasively impact teachers' affect and behavioural intentions (Boyle, Anderson & Allen, 2020).

### *Inclusive Education and Teacher's Attitude*

Inclusive education refers to "a student with a disability receiving his/her educational experience in a classroom with students who are not disabled" (Gregory & Noto, 2012). Mintz (2007; as cited in Gregory & Noto, 2019) state that "successful inclusion is based on general education teachers having accepting and willing attitudes toward the inclusion of students with disabilities into their classrooms". Research by Monsen and Frederickson (2004; as cited in Boyle, Anderson & Allen, 2020) reported that teachers who are more positive to inclusion have more controlled learning environments compared to teachers with more negative attitudes to inclusion".

Studies carried out during recent years reports moderate to favourable level of attitude towards inclusivity (e.g., Singh, Kumer & Singh, 2020; Hazarika (2020); Galaterou & Antoniou 2017; Stemberger & Kiswarday 2017). A review study conducted by Supriyanto (2019) reported that out of 27 literatures that involves 5471 teachers, result showed that most of the teacher hold positive attitudes towards inclusive education. However, study conducted by Jury, Perrin, Rohmer and Desombre (2021) showed that although teachers have overall positive attitude, their attitudes were more favourable toward students with motor impairment than students with cognitive disorder or students with autism spectrum disorder.

Additionally, a number of studies suggest that there are no differences in teachers' attitude towards inclusive education between government and private teachers (e.g., Singh, Kumer & Singh, 2020; Hazarika (2020); Galaterou & Antoniou 2017). In contrast, some studies detected significance differences (e.g. Mahajan, 2015). Furthermore some studies shows no significance differences in gender (e.g. Sesay, 2018; Galaterou & Antoniou , 2017) whereas in some studies they show differences (e.g. Mahajan, 2015).

### *Research questions*

- What is the level of attitude of teachers toward inclusive education?
- Is there any significant difference between Government and private school teachers regarding their attitude toward inclusive education?
- Is there any difference between male and female general teachers regarding their attitude toward inclusive education?

### *Objectives of the Study*

- To study the level of attitude of teachers towards Inclusive Education.
- To study the significant difference between Government in-service teachers and private in-service teachers regarding their attitude towards Inclusive Education.
- To study the significant difference between male and female general in-service teachers regarding their attitude towards Inclusive Education.

### *Hypotheses*

**H<sub>1</sub>** There is a positive level of attitude of in-service teachers toward inclusive education.

**H<sub>2</sub>** There is no significant difference between Government and private in-service teachers regarding their attitude toward inclusive education.

**H<sub>3</sub>** There is no significant gender difference among in-service teachers regarding their attitude toward inclusive education.

### 3. METHODS

#### *Procedure and Participants*

Dimapur district is considered as a commercial hub in Nagaland. This district contains high heterogeneous population with immense socioeconomic and social-cultural variability making it an ideal place to collect data. In the current study, simple random sampling technique was employed. The characteristics of the participants are detailed in Table 1. The initial sample population consisted of 219 general in-service teachers from eighteen schools in the Dimapur district of Nagaland. However, during the process of data inspection, 25 out of 219 as a result of invalid data obtained were excluded. Inclusive criteria include any local or non-local in-service teachers working either at government or private schools. Those teachers working at special education need schools and inclusive schools were excluded from the study.

Necessary information to the participants was informed verbally along with a typed form mentioned in the consent form of the participants. Precisely, the purpose of the study, confidentiality, potential risks and discomfort, voluntary participation, eligibility criteria of the participants, and also personal contacts of the researcher such as mobile number and email address were provided if there were any questions or concerns with regards to this research study. The participants were also informed that there was no time limit to complete the questionnaire and asked to respond candidly to the questions and based on their belief systems as there were no right or wrong answers to those items.

### 4. OPERATIONAL DEFINITIONS

*Inclusive Education:* “A student with a disability receiving his/her educational experience in a classroom with students who are not disabled” (Gregory & Noto, 2012).

*General In-Service Education Teacher:* A person who provides education to the students and is currently employed as a teacher in Government and Private schools.

*Attitude:* “Attitude refers to personal beliefs, which is the degree to which the individual likes or dislikes the outcomes that their behaviour produces” (Ajen, 1991).

*Cognitive:* “Believing all students can succeed in general education classrooms” (Gregory & Noto, 2012).

*Affective:* “Developing personal and professional relationships” (Gregory & Noto, 2012).

*Behavioural:* “Creating an accepting environment for all students to learn” (Gregory & Noto, 2012).

*Mild/moderate disability:* “Under federal special education law, mild to moderate disabilities include: learning disabilities; hearing impairments; visual impairments; physical handicaps; attention deficit disorder; speech/language impairments; and mild/moderate emotional disturbance, mental retardation, autism, or traumatic brain injury” (Gregory & Noto, 2012).

### 5. INSTRUMENT

#### *Demographic Questionnaire*

The demographic questionnaire of the study incorporated an adapted version of ATTAS-mm demographics. These demographic details included gender, level of degree, years of teaching experience, courses completed in special education, grade level taught and educational sector. These details provide a background information of the participants.

#### *Attitude Towards Teaching All Students (ATTAS-Mm)*

“Attitude Towards Teaching All Students (ATTAS-mm)” was developed by Jess L. Gregory & Lori A. Noto (2012). It has 9 items using 7-point Likert scale format: Agree Very Strongly, Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree, and Disagree Very Strongly. The questionnaire consists of three subscales: The first subscale consisting of items 1,2, and 3 measures the cognitive dimension of attitude. This scale is titled believing all students can succeed in general education classrooms. The second subscale consisting of items 4,5, and 6 measures the affective dimension of attitude. This subscale is titled creating an accepting environment for all students to learn. The third subscale consisting of items 7,8, and 9 measures the behavioural



dimension of attitude. This subscale is titled creating an accepting environment for all students to learn. “Together the three subscales measure an individual’s three elements of attitude” (Gregory & Noto, 2012). A mean less than 12 for the subscale indicates a positive attitude in that domain while a mean greater than 12 indicates a negative attitude (Stewman, 2021).

### Statistical Analyses

To statistically analyse, descriptive statistics was used to organize and summarize the data in a way of describing the relationships between the variables and to draw overall conclusions regarding the teachers’ attitude towards the need for inclusive education by using spreadsheets of graphical representations. Subsequently, t-test was carried out to evaluate mean differences or relationships between Government school teachers and private school teachers regarding their attitude towards inclusive education and also evaluate the mean difference between male and female genders regarding their attitude towards inclusive education.

**Table 1 - Frequency Distribution of the Sample Characteristics**

Sample	Characteristics	n	%
Gender	Male	66	34
	Female	128	65
Educational qualification	Matriculate	1	0.51
	Higher secondary	20	10.30
	Bachelors	105	54.12
	Masters	65	33.50
	M.Phil.	1	0.51
	Ph.D.	2	1.03
Year of experience	0-4 Years	37	19.07
	5-9 Years	56	28.86
	10-14 Years	51	26.28
	15-19 Years	20	10.30
	20 or more Years	30	15.46
Special education courses	0	103	53.09
	1-3	88	45.36
	4 or more	3	1.54
School	Kindergarten	4	2
	Primary	123	63
	Secondary	67	67
Sector	Government	101	52
	Private	93	47

Note. N= 194(n= no. of respondents), %=percentage of respondents

Table 1 provides the demographic details of the sample. Out of 194 participants, 52% (n=101) participants were from nine Government schools and 47% (n=93) were teachers from nine private schools around Dimapur. Of the respondents, a large majority 65%(n=128) were females and 34% (n=66) were males. Among these participants’ highest degree of qualification consisted of 0.51% (n=1) matriculate, 10.30%(n=20) higher secondary, 54.12% (n=105) bachelor’s degree, 33.50% (n=65) Master’s degree, 0.51% (n=1) M.Phil., and 1.03% (n=2) Ph.D. Participants included 2% (n=4) kindergarten education teachers, 63%(n=123) primary education teachers, and 34% (n= 67) secondary education teachers. The respondents have also some level of experience as an educator, specifically,19.07% (n=37) respondents have 0 to 4 years of experience, 28.86% (n=56) have 5 to 9 years, 26.28% (n=51) have 10 to 14 years, 10.30% (n= 20) of them have 15 to 19 years, and 15.46% (n=30) have 20 or more years of experience as an educator. Several teachers have also completed courses concerning special education, precisely, 1.54% (n=3) out of 194 respondents have completed 4 or more courses, 45.36% (n= 88) have completed 1 to 3 courses, and 53.09% (n=103) have not taken courses in special education.

**Table 2 - Mean, Standard Deviation of General In-service Teachers’ Attitude Towards Inclusive Education.**

Variables	M	SD
Cognitive	12.63	3.20
Affective	9.44	1.89
Behavioural	9.74	2.54
Attitude	31.80	6.17

*Note.* A mean less than 12 for the subscale indicates a positive attitude in that domain while a mean greater than 12 indicates a negative attitude (Stewman, 2021).

#### *Hypothesis testing*

H<sub>1</sub> There is a positive level of attitude of teachers toward inclusive education.

Table 2 shows the mean and standard deviation score of in-service teachers' attitude towards inclusive education. The results show that the mean score (M=12.63, SD= 3.20) of the cognitive subscale shows negative attitude whereas the mean score (M= 9.44, SD= 1.89) for subscales affective and the mean score (M= 9.74, SD= 2.54) for behavioural shows positive attitude. Therefore, the overall mean score (M= 31.80, SD= 6.17) for general in-service attitude towards inclusive education is positive. Therefore, H<sub>1</sub> is accepted.

**Table 3 - Mean, Standard Deviation, Independent Samples t-test Showing the Difference Between the Attitudes of Government and Private In-service Teachers Towards Inclusive Education.**

Variables	Government Teachers		School Private Teachers		t (192)	p	Cohen's d
	M	SD	M	SD			
Cognitive	12.05	2.872	13.27	3.427	-2.693	.008	0.385
Affective	9.39	1.995	9.51	1.797	-.436	.663	0.063
Behavioural	9.57	2.586	9.91	2.492	-.930	.353	0.133
Attitude	30.99	5.832	32.69	6.435	-1.928	.055	0.276

#### *Hypothesis testing*

H<sub>2</sub> There is a significant difference between Government and private school teachers regarding their attitude towards inclusive education.

Table 3 displays the overall attitude findings by applying independent samples t-test. Based on the results in table 3 it inferred that there is no significant difference between government and private school teachers regarding their attitude towards inclusive education. Although their mean scores may slightly vary which shows that the mean scores (M= 32.69, SD=6.435) of private in-service teachers have a slightly less positive attitude than the mean scores (M= 30.99, SD= 5.832) obtained for government in-service teachers' attitude towards inclusive education. However, since the p-value was found to be higher than the significant value,  $t(192)=-1.928$ ,  $p>.05$ , it indicates that there is no significant difference between government and private school teachers' attitude towards inclusive education. As displayed in the table 3, Cohen's d was also found to be 0.2 which according to Cohen, suggests that  $d=0.2$  is small effect size indicating that the relationship between government and private school teachers is weak to have a significant difference between the two. Therefore, H<sub>2</sub> is rejected.

**Table 4 - Mean, Standard Deviation, Independent Samples t-test Showing the Differences Between the Attitudes of Male and Female In-service Teachers Towards Inclusive Education.**

Variables	Male		Female		t(192)	P	Cohen's d
	M	SD	M	SD			
Cognitive	12.91	3.468	12.49	3.061	.859	.391	0.128
Affective	9.82	2.162	9.25	1.725	1.990	.048	0.291
Behavioral	9.95	2.458	9.63	2.584	.855	.393	0.126
Attitude	32.68	6.069	31.35	6.198	1.426	.155	0.216

#### *Hypothesis testing*

H<sub>3</sub> There is a gender difference among general in-service teachers regarding their attitude toward inclusive education.

From the above table 4, it can be inferred that there is no significant difference between male and female teachers' attitude towards inclusive education. The mean scores of the overall attitude may slightly vary showing that the mean scores (M= 32.68, SD= 6.069) of male teachers have a slightly positive attitude than the mean scores (M= 31.35, SD= 6.198) of female teachers attitude towards inclusive education, it cannot be inferred to have a significant difference between male and female teachers' attitude towards inclusive education since the p-value was found to be greater than the significant value,  $t(192)=1.426$ ,  $p>.05$ . The effect size between male and female teachers' attitude to have a significant difference was also found to be small based on the Cohen's d value found

( $d = 0.216$ ). Cohen's  $d$  for  $d = 0.2$  suggests small effect size which suggests that the relationship between male and female teachers is weak to conclude to have a significant difference between the two. Therefore, H3 is rejected.

## 6. DISCUSSION

The main aim of the study was to describe the attitudes held by in-service teachers towards the idea of inclusive education. The overall findings suggest that in-service teachers have a positive level of attitude towards inclusive education. This result is in congruence with the study conducted by Singh, Kumar and Singh (2020), Hazarika (2020), Galaterou and Antoniou (2017), and Stemberger and Kiswarday (2017). The study also aimed to observe if there exist any significant difference between government and private school teachers' attitude regarding inclusive education. Based on the findings it was concluded that there is no significant difference between government and private school teachers' attitude towards inclusive education. This result contradicts with the findings of Mahajan (2015).

Furthermore, another aim of the study was to observe if there exist any significant difference between male and female in-service teachers' attitude towards inclusive education. The findings showed no significant difference between male and female in-service teachers' attitude towards inclusive education. Similarly, studies conducted by Singh, Kumar and Singh (2020), and Galaterou and Antoniou (2017) also reported no differences. However, this finding contradicts with Mahajan (2015) who reported significant differences in gender. The study measured three subscales of attitude: cognitive, affective and behavioural. The study revealed that teachers have negative attitude on cognitive subscale, i.e. believing all students can succeed in general education classrooms, which contradicts with the findings of Stemberger and Kiswarday (2017). The result, thus, indicates that although teachers have positive attitude to develop personal and professional relationship (affective) as well as create a positive environment (behavioral) for all students including students with disability, their attitude that all students can succeed in general education classrooms is negative.

### *Limitation of the Study*

- The study could not cover a wide range of population due to time constraint.
- The study also could not achieve a generalized position due to the above-mentioned factor.

### *Recommendations for Future Scope:*

- For further research study, wide range of populations could be applied to attain more effective results such as including teachers from all over Nagaland.
- Mixed methodologies could also be applied to achieve more practical findings.

### *Implications*

The study will help the government policies to look further into the matter to achieve what is require to fulfil the indefinite need for inclusive education. The findings of the study can also serve a bigger purpose as a pilot study for further research to be conducted on a wider scale. Furthermore, this study can also be reinforced by utilizing multiple research methods and designs to give more prominent and in-depth results. Mass communication and media can also help in this sector by circulating awareness on this important issue. Organizing workshops interventions and seminars on this matter can also serve in normalizing the need for inclusive education.

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## Identification of Chemical Constituents from *Scutellaria barbata* as a Potential ER $\alpha$ Inhibitor for Breast Cancer through Molecular Docking Approach

Kapuw Athizuo

Department of Chemistry, St. Joseph University, Nagaland

Putusenla Pongen

Department of Chemistry, St. Joseph University, Nagaland

### Abstract

To set up a quantitative structure-activity relationship, 39 phytoconstituents from *Scutellaria barbata* species were collected and molecular docking analysis on a series of compounds with Estrogen Receptor  $\alpha$  (ER $\alpha$ ) were performed. From these phytoconstituents ligand 2, 5, 6, 19, and 29 showed good binding energy compared to the standard drug Tamoxifen, which was used as a reference in the docking analysis. The study indicates that ligand 5 showed better binding affinity towards the target protein as compared with standard drug. In addition, the analysis of the binding interaction revealed that ligand 5 is involved in hydrogen bonding interaction with the active site residue ASP:351 and THR:347 of the target protein in ER $\alpha$ -phytoconstituents complexes. The top binding ligands were screened for drug-likeness using Lipinski's rule of five, where ligands 2, 5 and 6 did not violate any rule. Consequently, these top scoring ligands could be further investigated for an alternative inhibitor for ER $\alpha$  receptor. This work provides reference for assessing molecular interactions between ER $\alpha$  and *Scutellaria barbata* phytoconstituents. The outcomes of this finding can be employed in the drug designing pipeline.

**Keywords:** *Scutellaria barbata*; phytoconstituents; breast cancer; Tamoxifen; molecular docking

### 1. INTRODUCTION

*Scutellaria barbata* (SB) is a medicinal plant found in the Chinese Pharmacopoeia [1] and others [2,3]. The herb contains flavanone compounds scutellarin, scutellarein, carthamidin, wogonin and isocarthamidin. Sato *et. al.* [4] reported that the antibacterial activity against *Staphylococcus aureus* from a crude extract. Chemical composition in SB was evaluated against Gram-positive bacteria, Gram-negative bacteria and yeast [5]. An aqueous extract of SB was testified to tempt apoptosis of ovarian cancer cell lines [6]. The anticancer activity and mechanism of SB extract in human lung cancer cell lines were investigated [7]. It remained that the SB extract reduces tumor volume in smooth muscle cells by inducing a concomitant increase in the rate of apoptosis [9]. Modern pharmacological studies have exposed that SB has a widespread choice of biological activities, including antioxidant [10], antiviral activities [11]. Breast cancer growth is by a long shot the most well-known disease in women in industrialized nations and is the second greatest killer after lung cancer. For quite some time estrogens have been perceived as being significant for stimulating the development of a huge extent of breast cancers [12]. It similarly holds up Growth of about 75% of primary breast cancers. For this cause, exclusion of estrogen or blocking of its action with the anti-estrogen is the key treatment aimed at estrogen receptor alpha (ER $\alpha$ )-positive tumors [13]. The estrogen receptor (ER) antagonist tamoxifen (trade names comprise Nolvadex, Istubal, Valodex), is widely used in the treatment of ER-positive breast cancer. Regardless of the progress of tamoxifen in the therapy of ER-positive breast cancer, 30-50% of patients fail to give positive results to tamoxifen therapy [14]. Henceforth, it has drawn the broad consideration of researchers towards the improvement of viable medications for the therapy of breast cancer. It is generally perceived that drug discovery and development are very time and resources use up processes [15,16]. There is an ever-growing effort to apply computational power to the combined chemical and biological space in order to streamline drug discovery [17]. In biomedical arena, computer-aided is being utilized to expedite and facilitate hit identification, hit-to-lead selection and pharmacokinetics properties. The computational tools will improve effectiveness and efficiency of drug discovery and development processes [16]. Based on our literature examination, a complete review on the current pharmacological activities of SB, we aimed to provide an in-depth analysis of SB phytoconstituents against ER $\alpha$  Inhibitor for Breast Cancer through computational approach.

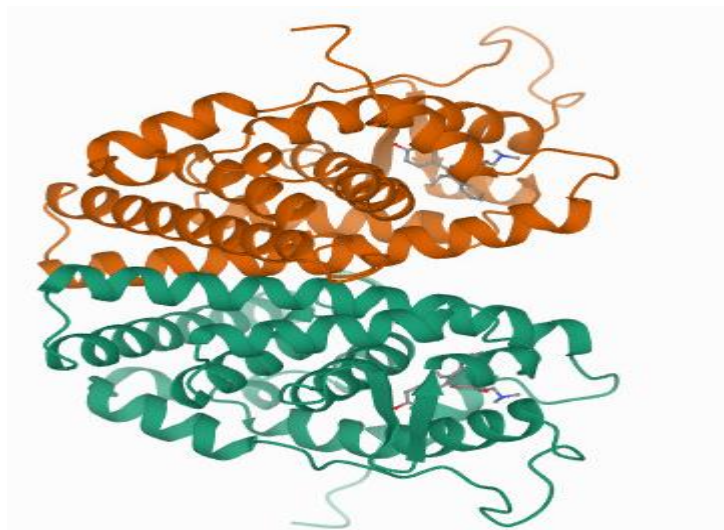
### 2. MATERIALS AND METHODS

#### 2.1 Preparation of ligand

Totally, 39 herbs of *Scutellaria barbata* were retrieved from literature [18]. The 3D structure data file of each bioactives were drawn using chem draw software. The database of bioactive structures was subjected to energy minimization process using Amber12: EHT method. This method is implemented in MOE 09 docking tools [19].

## 2.2. Preparation of protein

The crystal structure of ER $\alpha$  (PDB code: 3ERT) was retrieved from the RCSB PDB site ([www.rcsb.org](http://www.rcsb.org).) The crystal structure of the ER $\alpha$  is displayed in Figure 1. The water molecules, structure correction and 3D protonation were done. The protein structure was energy minimized using Amber12: EHT Forcefield with the help of MOE 09 docking software [19].



**Figure 1 - Crystal structure of the Human Estrogen Receptor**

## 2.3. Molecular docking

The prepared bioactive compounds and protein were subjected to molecular docking by using MOE 09 docking software [19]. The 5 finest docked positions were created by applying a scoring job London dG and using induce-fit model. Tamoxifen was used as standard for comparing the affinity of the designed drug for the target protein. The docking results were viewed and analyzed with Discovery studio visualizer.

## 2.4. Drug likeness of phytoconstituents

Drug-likeness properties were calculated by using SwissADME online property calculation [20]. Lipinski's rule of five (molecular mass (MM) less than 500 Da, not more than 10 hydrogen bond acceptors (HBA), partition coefficient (log P) not greater than 5 and not more than 5 hydrogen bond donors (HBD)), were used to filter the bioactive compounds based on their physicochemical properties [21]. These properties are used to evaluate the oral bioavailability of the five top-scoring *Scutellaria barbata* herbals from docking study.

**Table 1 - Binding energy of *Scutellaria barbata* herbals**

Ligand no	Ligand Name	Binding energy (kcal/mol)	Ligand no	Ligand Name	Binding energy (kcal/mol)
1	Scutellone C	-5.67	21	Scutebarbatin C	-6.02
2	Scutellone D	-7.25	22	Scutebarbatin D	-6.3
3	Scutellone A	-7.14	23	Naringenin	-6.33
4	Scutellone B	-5.68	24	6-methoxynaringenin	-6.58
5	Scutellone E	-7.51	25	Physcion	-6.16
6	Scutellone F	-7.39	26	Syringaresinol	-4.66
7	Scutellone G	-7.11	27	Pinoresinol	-5.85
8	Scutellone H	-7.08	28	Medioresinol	-6.87
9	Scutellone I	-7.11	29	Scutebarbatin E	-7.24
10	Scuterivulactone A	-6.95	30	Scutebarbatin F	-6.21
11	Scuterivulactone B	-6.97	31	Stigmasterol	-6.12
12	Scuterivulactone C1	-6.47	32	$\beta$ -sitosterol	-5.49
13	4'-hydroxywogonin	-5.7	33	6-hydroxycoumarin	-4.65
14	Apigenin	-6.05	34	p-hydroxybenzaldehyde	-4.18

15	Luteolin	-6.18	35	p-hydroxyacetophenone	-4.49
16	Scuterivulactone C2 5,4'-dihydroxy-	-6.09	36	vanillic acid	-4.76
17	6,7,3',5'- tetramethoxyflavone	-7.02	37	p-hydroxy ethylbenzoate	-5.07
18	Scuterivulactone D	-7.04	38	p-hydroxycinnamic acid	-5.17
19	Scutebarbatin A	-7.35	39	E-1-(4'-hydroxyphenyl)-but- 1-en-3-one	-5.07
20	Scutebarbatin B	-7.13			

### 3. RESULTS AND DISCUSSION

The selected estrogen receptor for the molecular docking was the x-ray structure in complex with 4-OHT (PDB ID: 3ERT). Tamoxifen, which is an antagonist, is used as a reference compound to compare the docking results. The receptor contains a Ligand binding pocket (LBP) constituted by amino acid residues 302-552, which is a hydrophobic cavity and is formed by Helices 3,6,7,8,11 and 12 [22]. The LBD regions which are in direct contact with the ligand are more conserved and is protected against degradation [23]. The interaction of a ligand with helix-12, with residues from 536-544 determines the activity of the ligand as agonist or antagonist. In the interaction of tamoxifen with the ligand binding domain (Figure 2), the absence of hydrogen bond interaction with HIS 524 closes helix-12 and disable its binding to co-activator [24]. Tamoxifen produced a docking score of -9.09 kcal/mol and all the amino acid residues interacting with the ligand are in the LBD region. The interactions are stabilized with carbon hydrogen bond with residues ASP A:351 and THR A:347. Two aromatic rings of tamoxifen are involved in Pi-sulphur interactions with MET A:421 and MET A:343. One aromatic ring is involved in Amide-Pi stacked interaction with LEU A: 346 and there are a couple of alkyl and pi-alkyl interactions that stabilized the interaction of tamoxifen with estrogen receptor at the LBD region.

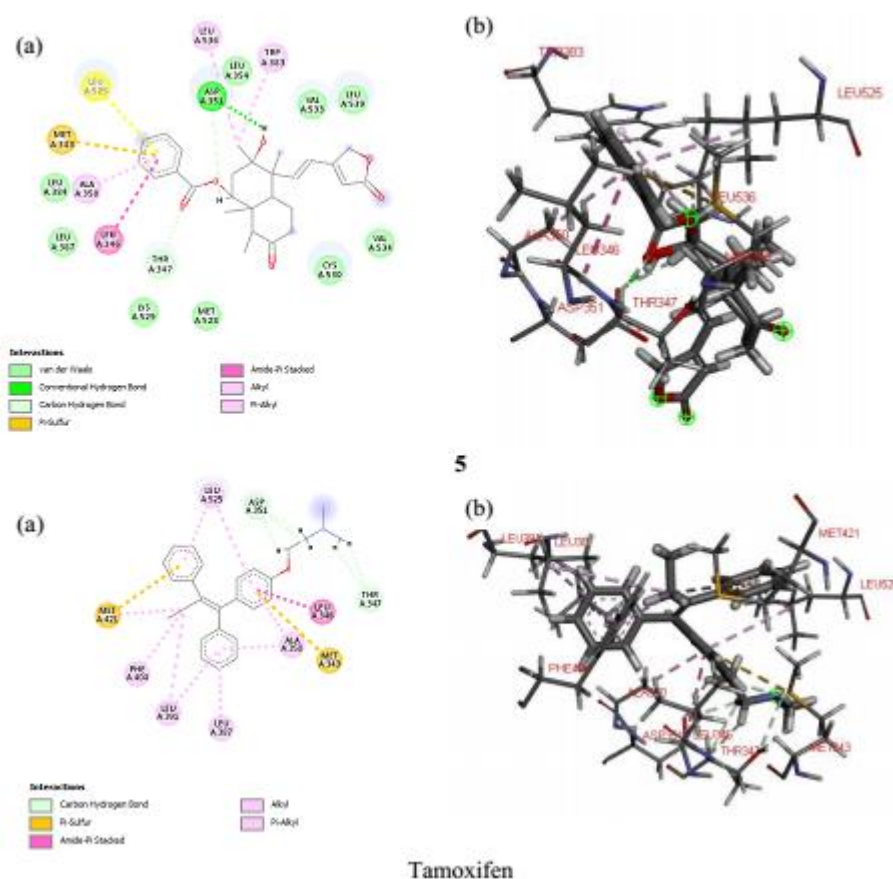


Figure 2 - (a) 2D and (b) 3D images of ligand 5 and Tamoxifen drug

The phytoconstituents from *Scutellaria barbata* showing the best interaction energies are ligand 2, 5, 6, 19 and 29 (Table 2). Ligand 2 has a binding score of -7.25 kcal/mol but has some unfavorable interactions though it is

stabilized by two hydrogen bonds with THR A:347 and GLU A:353, and carbon hydrogen bond with ASP A:351 and THR A:347. There are a couple on alkyl and pi-alkyl interactions of one aromatic ring and vinyl methyl with the amino acid residues at the LBD region. Two of the aromatic rings are involved in pi-sulphur interactions with MET A:421 and MET A:343.

Ligand 5 with a binding score of -7.51kcal/mol is stabilized by a conventional hydrogen bond interaction with ASP A:351 and carbon hydrogen interaction with THR A:347. The aromatic ring is involved in pi-sulphur interaction with MET A:343, amide-pi stacked interaction with LEU A:346 and pi-alkyl interaction with ALA A:350.

**Table 2 - Docking result of *Scutellaria barbata* Phytoconstituents and Standard Drug**

Ligand no	Binding energy (kcal/mol)	Interactions	H-bond
2	-7.25	MET A:421; MET A:388; LEU A:428; PHE A:404; ILE A:424; LEU A:391; LEU A:387; LEU A:349; ALA A:350; LEU A:346; LEU A:525; MET A:343; ASP A:351; THR A:347	GLU A:353; THR A:347
5	-7.51	LEU A:525; MET A:343; LEU A:384; ALA A:350; LEU A:387; LEU A:346; LYS A:529; MET A:528; CYS A:530; VAL A:534; VAL A:533; LEU A:539; LEU A:354; TRP A:383; LEU A:536	ASP A:351; THR A:347
6	-7.39	MET A:421; MET A:388; LEU A:428; LEU A:391; LEU A:387; MET A:343; ALA A:350; LEU A:346; ASP A:351; THR A:347; LEU A:525	GLU A:393; ARG A:394
19	-7.36	CYS A:530; LEU A:525; VAL A:533; LEU A:536; PRO A:535; GLU A:380	MET A:522; ARG A:515
29	-7.24	CYS A:530; LEU A:525; MET A:528; VAL A:533	ASP A:351
Tamoxifen	-9.09	LEU A:525; MET A:421; PHE A:404; LEU A:391; LEU A:387; ALA A:350; MET A:343; LEU A:346; THR A:347; ASP A:351; LEU A:525	

Ligand 6 has a binding score of -7.39 kcal/mole and is stabilized with two hydrogen bond interactions with GLU A:393 and ARG A:394. There is also an unfavorable bump which might have reduced its binding affinity. The aromatic rings are involved in amide-pi stacked with LEU A:346 and pi-alkyl interactions with MET A:421, LEU A:525, LEU A:387 and ALA A:350. The ethyl vinyl group is involved in a couple of alkyl interactions. Ligand 19 has a binding score of -7.36 and is stabilized by two hydrogen bond interactions with MET A:522 and ARG A:515. The aromatic ring is involved in pi-sigma interaction with LEU A:525 and pi-sulphur interaction with CYS A:530. The pyridine ring is involved in pi-alkyl interactions with VAL A:533 and LEU A:536. Ligand 29 gives a binding score of -7.24 kcal/mol and is involved in hydrogen bond interaction with ASP A:351 and a number of alkyl and pi-alkyl interactions with CYS A:530, LEU A:525 and MET A:528. The pyridine ring is also involved in pi-alkyl interaction with VAL A:533. The top five scoring ligands can be expected to interfere in the binding of the hormone estrogen to the receptor as all the common amino acid (table 2) are in the LBD region. Inhibiting the binding of estrogen to the receptor will inhibit dimer formation of estrogen bound receptor and eventually inhibiting its binding to the specific sequences of DNA. The ADMET screening of the top scoring phytoconstituents predicts good drug likeness properties (Table 3). The violations in ligand 19 and 29 are only due to their higher molecular weight.

**Table 3 - Drug likeness properties of the *Scutellaria barbata* phytoconstituents**

Ligand no.	MF	MW	Log p	Log s	HBA	HBD	TPSA	refractivity	NRB	NHA
2	C <sub>27</sub> H <sub>34</sub> O <sub>7</sub>	470.55	2.91	-4.24	7	3	113.29	126.09	5	34
5	C <sub>27</sub> H <sub>32</sub> O <sub>6</sub>	452.54	3.69	-4.73	6	1	89.90	123.93	5	33
6	C <sub>27</sub> H <sub>32</sub> O <sub>6</sub>	452.54	3.84	-4.76	6	1	85.36	122.74	5	33
19	C <sub>32</sub> H <sub>34</sub> N <sub>2</sub> O <sub>7</sub>	558.62	3.67	-5.29	9	1	124.91	149.65	8	41
29	C <sub>33</sub> H <sub>33</sub> NO <sub>8</sub>	571.62	3.81	-5.49	9	1	129.09	152.05	8	42



Tamoxifen	C <sub>26</sub> H <sub>29</sub> NO	371.51	5.77	-6.59	2	0	12.47	119.72	8	28
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#### 4. CONCLUSION

In this study, molecular docking and drug-like properties were performed to examine the relationships between *Scutellaria barbata* and ER $\alpha$ . The results obtained from these computational approaches revealed binding energies in the range of -4.18 to -7.51 kcal / mol. In the present study molecules 2, 5, 6, 19 and 29 show very stable bonds with ER $\alpha$ . Of these five herbs, ligand 5 has a better binding energy compared to the standard drug (tamoxifen). Selected molecules were further evaluated for Lipinski's rule of five. The herb 5 shows the properties required for a drug candidate. These findings may contribute to a better structural understanding of the estrogen-degrading chemicals that target ER $\alpha$  and are the initial basis for further identification of potential selected ligaments.

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## ***In-silico* Screening of Alpha-Amylase and Alpha-Glucosidase Inhibitors from Phytoconstituents of *Momordica dioica* Fruit Pulp**

**Myano Kikon**

Department of Chemistry, St. Joseph University, Nagaland

**Dieku Mekrisuh**

Department of Chemistry, St. Joseph University, Nagaland

### **Abstract**

*The goal of this study is to assess the anti-diabetic activity of phytochemicals found in Momordica dioica fruit pulp. The fruit pulp phytoconstituents (1-4) were collected from the literature. The molecular docking research was to figure out how the phytoconstituents bind to the  $\alpha$ -amylase and  $\alpha$ -glucosidase protein pockets. The binding energies were compared with commercial drug Acarbose. When compared to the Acarbose drug, the compound 1- $\alpha$ -amylase and 1- $\alpha$ -glucosidase complex demonstrated good binding energy. Furthermore, utilizing Lipinski's rule of five, the phytoconstituents were evaluated for drug-likeness properties. The pharmacokinetic properties of the compounds 1-4 were assessed using pkCSM. According to the in-silico investigation, molecule 1 could be a good therapeutic candidate for diabetes treatment. We believe that this work will stimulate the researchers for further research on the potential use of Momordica dioica fruit pulp having anti-diabetic potential.*

**Keywords:** *Momordica dioica*;  $\alpha$ -amylase;  $\alpha$ -glucosidase; molecular docking.

### **1. INTRODUCTION**

Diabetes mellitus is a metabolic illness that is rapidly becoming a serious problem. It presently affects roughly 143 million people [1, 2] and is predicted to affect 366 million people by 2030 [3]. As a result, the management of diabetes mellitus is an important thread in the current situation. In diabetes patients,  $\alpha$ -amylase and  $\alpha$ -glucosidase breakdown carbohydrates and raise postprandial glucose levels [4–7]. Controlling postprandial hyperglycemia and lowering the risk of diabetes can be accomplished by inhibiting the activity of these two enzymes. The enzyme inhibitors acarbose, miglitol, and voglibose are being used to controlling postprandial hyperglycemia. Miglitol and Voglibose inhibit solely  $\alpha$ -glucosidase inhibitor, while Acarbose inhibits both  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors [8,9]. These inhibitors are efficient in reducing postprandial hyperglycemia, but their gastrointestinal adverse effects make them unsuitable for long-term use [10,11]. Given that around 80% of diabetics live in low- and middle-income countries [12], these medicines are also prohibitively expensive.

As a result, various research groups have worked to identify  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors in plants, bacteria, marine algae, and fungi [13–16]. The majority of them focused on crude extracts (organic or aqueous), however some also looked at isolated bioactive compounds [17,18]. The majority of plant extracts and isolated bioactive compounds inhibited either  $\alpha$ -amylase or  $\alpha$ -glucosidase, with a few exceptions being effective against both enzymes [19,20]. The plant-derived compounds have long been a valuable source of medicines for a variety of ailments, and their unique pharmacological properties have attracted a lot of interest in recent years [21–27]. In South Asia, *Momordica dioica* is a perennial climber with a limited distribution. Its fruits are a nutrient-dense source of protein, lipids, crude fibre, carbohydrate, iron, calcium, and phosphorus. In addition, the fruit has a higher concentration of ascorbic acid and iodine. In herbal therapy, the fruit, leaves, and roots of *Momordica dioica* are used to treat diabetes [28–30]. The protein extracts from the fruit pulp of *Momordica charantia* L. have been shown to inhibit  $\alpha$ -amylase and  $\alpha$ -glucosidase in a recent study [31]. As a result, we screened  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors from *Momordica dioica* fruit pulp phytoconstituents in this work, and the results are provided here.

### **2. MATERIALS AND METHODS**

*Collection of phytoconstituents and protein preparation:* The phytoconstituents of *Momordica dioica* fruit pulp were collected from literature [32]. The structure phytochemicals (1-4) were listed in Figure 1. The 3D structure data file of each bioactive compounds was drawn using chem draw software. A database of ligand containing all the four compounds were prepared in MDB format. Each ligand in SDF format was entered into the database after 3D protonation and energy minimization with Amber12: EHT Force field. The crystal structure of  $\alpha$ -amylase (pdb code: 1HNY) and  $\alpha$ -glucosidase (pdb code: 2ZEO) was downloaded from RCSB protein data bank. Before of docking calculations, all water molecules were removed from protein. Later, structure correction and 3D

protonation were assigned for the protein. The protein structure was energy minimized using Amber12: EHT Forcefield. This method is implemented in MOE 09 docking tools [33].

*Molecular docking analysis:* The docking analysis of  $\alpha$ -amylase and  $\alpha$ -glucosidase receptors with phytochemicals (1-4) was carried out by MOE 09 docking tool. Acarbose has been used as a standard drug. The 5 finest docked positions were created by applying a scoring job London dG and using induce-fit model. The Discovery studio visualizer was used to analysis the report.

*Drug likeness and pharmacokinetics properties evaluation:* Using the SWISS-ADME server[34]] molecular properties and drug likeness of the compounds was examined on the basis of “Lipinski’s Rule of Five” [35]. The Absorption, Distribution, Metabolism, Excretion, and Toxicity (ADMET) properties analysis of the ligands 1-4 was performed by pkCSM server [36]. The ligand SMILES was retrieved from NCBI PubChem database and was used as the input file for the SwissADME and pkCSM online servers.

### 3. RESULTS AND DISCUSSION

#### *Docking analysis*

A docking analysis was conducted to estimate the putative binding mode of the bioactive active compounds 1-4 with the target protein. Table 1 lists the docking results of these compounds against  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors.

#### *$\alpha$ -amylase inhibition analysis*

The compound 1 was docked into the  $\alpha$ -amylase binding pocket and showed a binding energy of -8.06 kcal/mol. It forms a hydrogen bond with the ASP A:236 amino acid residues, despite a number of consensus pi-alkyl interactions with residues ALA A:310, PRO A:288, PHE A:248, and PHE A:348. The standard drug Acarbose has a binding energy of -7.80 kcal/mol and establishes hydrogen bond interactions with ALA A:307, HS A:201, ARG A:195, ASP A:197, ASP A:300, ASN A:352 amino acid residues. On the other hand, compound 2 had a binding energy of -7.75 kcal/mol. Meanwhile, there was no H-bond in the complex, despite the presence of a number of consensuses van der Waals interactions (Table 1). The phytoconstituent 3-protein complex was stabilized with TRP A:58, HIS A:305, TRP A:59, ILE A:235, LEU A:162, HIS A:201, ALA A:198 by pi-alkyl interaction and lead to binding energy -6.72 kcal/mol. The data in Table 1 demonstrate that the compound 3 has the lowest binding energy of -5.99 kcal/mol and forms pi-alkyl interactions with the amino acids TRP A:59, HIS A:305, LEU A:162, TYR A:151, HIS A:201, ILE A:235 in the active pocket  $\alpha$ -amylase inhibitor. The 2D and 3D images of ligand 1 and Acarbose with  $\alpha$ -amylase inhibitor is shown in Figure 1.

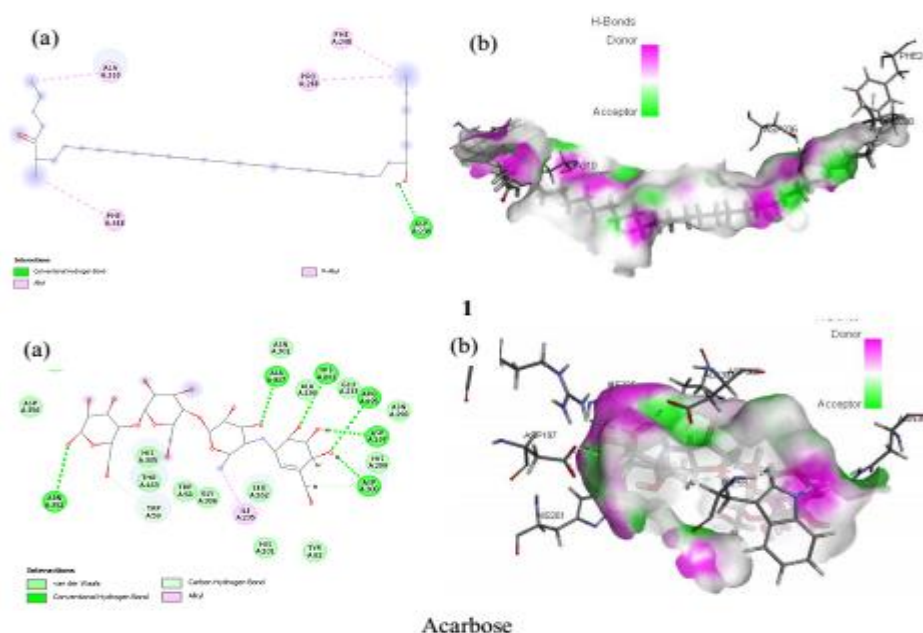
**Table 1 - Docking results of bioactive with  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors**

Ligand No	$\alpha$ -amylase		$\alpha$ -glucosidase			
	Binding energy	Interactions	H-bond	Binding energy	Interactions	H-bond
1	-8.06	ALA A:310, PRO A:288, PHE A:248, PHE A:348	ASP A:236	-8.1	TYR A:340	-
2	-7.75	ASN A:220, SER A:219, TRP A:221, PHE A:222, ARG A:92, PRO A:223, GLN A:8, GLY A:9, ASN A:5, ARG A:5, ARG A:10, PRO A:4, THR A:4, THR A:11, GLY A:334, ARG A:398, ARG A:252, ASP A:290, SER A:289, SER A:3, PHE A:335, THR A:6, GLN A:7	-	-7.37	HIS A:203, MET A:229	-
3	-6.72	TRP A:58, HIS A:305, TRP A:59, ILE A:235, LEU A:162, HIS A:201, ALA A:198	-	-6.43	TYR A:63, LEUA:285, PHEA:163, PRO A:328	-

4		TRP A:59, HIS A:305, LEU A:162, TYR A:151, HIS A:201, ILE A:235	-	PROA:328, HIS A:203, PHE A:163	-
Acarbose	-5.99	ILE A:235	-6.01	ASP A:375, GLUA:435, ASP A:337	ARG
e	-7.80	ILE A:235			A:373
			ALA A:307, HS A:201, ARG A:195, ASP A:197, ASP A:300, ASN A:352		
			-6.52		

### *$\alpha$ -glucosidase inhibition analysis*

As seen from Table 1, the compound 1 had the best docking score (-8.1 kcal/mol), indicating that the complex formed a pi-alkyl association with TYR A:340 amino acid residues in the protein's active pocket. Acarbose binds to  $\alpha$ -glucosidase in the catalytic site (-6.52 kcal/mol) at ARG A:373, ASP A:375, GLU A:435 and ASP A:337 amino acid residues. Observing ligand 2, which has the binding energy (-7.37 kcal/mol). The compound had no hydrogen bonds; however, it did interact with HIS A:203 and MET A:229 via pi-alkyl interactions. The 2D and 3D images of ligand 1 and Acarbose with  $\alpha$ -glucosidase inhibitor is shown in Fig. 2. Among the other ligands, molecule 3 has a binding energy of -6.43 kcal/mol, which is likely owing to pi-alkyl interactions generated with TYR A:63, LEU A:285, PHE A:163, and PRO A:328 amino acid residues in the active site of the  $\alpha$ -glucosidase receptor. Compound 2 has the lowest binding energy (-6.01 kcal/mol) in the tested phytoconstituents. It also interacts with PRO A:328, HIS A:203, and PHE A:163 amino acid residues in the active site of the protein. The interactions between the recommended docking studies and the key residues described above were visually inspected.



**Figure 1 - (a) 2D and (b) 3D images of ligand 1 and Acarbose with  $\alpha$ -amylase inhibitor**

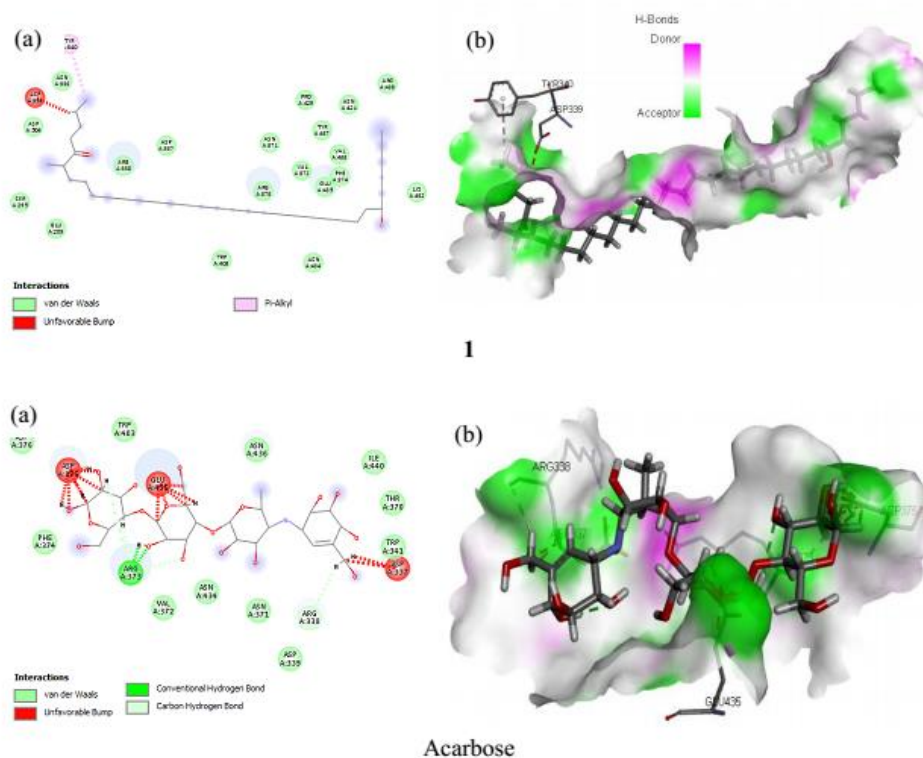
### *Lipinski's rule of five evaluation*

The SWISS-ADME web server was used to analyze the molecular and drug similarity features of *Momordica dioica* fruit pulp phytoconstituents. The Lipinski's Rule of five was used to analyze the results. The results showed that the molecular weight (M.Wt.), hydrogen bond acceptor (HBA) and hydrogen bond donor (HBD), and polar surface area (PSA) of the investigated compounds were all better than predicted. Drug-likeness properties of *Momordica dioica* fruit pulp phytoconstituents is shown in Table 2. However, the log P and atom molar

refractivity values are violating the standard protocol. To be a potential drug application, however, a drug does not have to follow all of the rules. Bickerton et al. proposed in 2012 that the oral bioavailability of ligands has no effect on a drug candidate's bioactivity or pharmacological potencies [37].

**Table 2 - Drug-likeness properties of *Momordica dioica* fruit pulp phytoconstituents.**

Ligand No	M.Wt.	logP	HBA	HBD	PSA	Atom Molar Refractivity
1	508.90	10.79	2	1	37.30	166.91
2	448.85	11.91	0	0	35.21	155.46
3	412.69	6.67	1	1	20.23	132.75
4	424.70	6.93	1	1	20.23	134.67



**Figure 2 - (a) 2D and (b) 3D images of ligand 1 and Acarbose with  $\alpha$ -glucosidase inhibitor**

*ADMET analysis*

Due to inadequate ADMET (Absorption, Distribution, Metabolism, Excretion, and Toxicity) qualities and unavoidable adverse effects, the majority of medicines fail in clinical trials or are removed from the market. The effort of the researcher to estimate ADMET features *in silico* has been lowered for every created chemical to develop a lead drug [38]. The drug development process considers absorption parameters such as water solubility, GI absorption, skin permeability, and Caco2 permeability. It is assumed that a value of more than 30% intestinal absorption indicates good absorption. It is evidenced from the Table 3, the compounds 1-4 have a significant GI absorption percentage. Low skin permeability is defined as a value larger than -2.5 cm/h. Except compound 2 all drug compounds exhibited acceptable skin permeability. As seen from the Table 3, the bioactive compounds 1-4 had low Caco2 permeability (0.9 cm/s). The drug distribution was studied using the VDss, CNS and BBB membrane permeability [39]. A log VDss of more than 0.45 was regarded as relatively high. With the exception of ligand 2, others had higher distribution volumes. For BBB membrane permeability, log BB values > 0.3 but < -1 showed that drug molecules penetrated the BBB membrane. The range of log PS values > 2 to < -3 defined impenetrability for CNS permeability.

**Table 3 - ADMET properties of phytoconstituents 1-4 using pkCSM server**

Model Name	1	2	3	4	Unit
Water solubility	-4.99	-6.30	-7.17	-7.03	Numeric (log mol/L)
<b>Absorption</b> Caco2 permeability	1.22	1.12	1.20	1.28	Numeric (log Papp in 10 cm/s)

	Intestinal absorption (human)	86.10	86.75	93.38	95.53	Numeric (% Absorbed)
	Skin Permeability	-2.74	-2.38	-2.88	-2.98	Numeric (log Kp)
	P-glycoprotein substrate	No	No	No	No	Categorical (Yes/No)
	P-glycoprotein I inhibitor	No	No	Yes	Yes	Categorical (Yes/No)
	P-glycoprotein II inhibitor	Yes	Yes	Yes	Yes	Categorical (Yes/No)
	VD <sub>ss</sub> (human)	-0.49	0.04	0.50	0.62	Numeric (log L/kg)
	Fraction unbound (human)	0.16	0.07	0	0	Numeric (Fu)
	BBB permeability	-0.95	1.21	0.78	0.69	Numeric (log BB)
<b>Distribution</b>	CNS permeability	-0.94	-0.57	-1.20	-2.23	Numeric (log PS)
	CYP2D6 substrate	No	No	No	No	Categorical (Yes/No)
	CYP3A4 substrate	Yes	Yes	Yes	Yes	Categorical (Yes/No)
	CYP1A2 inhibitor	No	No	No	No	Categorical (Yes/No)
	CYP2C19 inhibitor	No	No	No	No	Categorical (Yes/No)
	CYP2C9 inhibitor	No	No	No	No	Categorical (Yes/No)
	CYP2D6 inhibitor	No	No	No	No	Categorical (Yes/No)
<b>Metabolism</b>	CYP3A4 inhibitor	No	No	No	No	Categorical (Yes/No)
	Total Clearance	2.15	2.12	0.64	0.12	Numeric (log ml/min/kg)
<b>Excretion</b>	Renal OCT2 substrate	No	No	No	No	Categorical (Yes/No)
	AMES toxicity	No	No	No	No	Categorical (Yes/No)
	Max. tolerated dose (human)	-0.52	-0.28	-0.48	0.135	Numeric (log mg/kg/day)
	hERG I inhibitor	No	No	No	No	Categorical (Yes/No)
	hERG II inhibitor	Yes	Yes	Yes	Yes	Categorical (Yes/No)
	Oral Rat Acute Toxicity (LD50)	0.23	1.85	2.00	1.96	Numeric (mol/kg)
	Oral Rat Chronic Toxicity (LOAEL)	4.08	0.81	0.74	0.92	Numeric (log mg/kg_bw/day)
	Hepatotoxicity	No	No	No	No	Categorical (Yes/No)
	Skin Sensitization	No	No	No	No	Categorical (Yes/No)
	<i>T.Pyriformis</i> toxicity	0.29	0.289	0.65	0.50	Numeric (log ug/L)
<b>Toxicity</b>	Minnow toxicity	-4.78	-5.10	-1.69	-1.60	Numeric (log mM)

The CYP450 enzyme is critical for drug metabolism in the liver [40]. All compounds affect/inhibit CYP2D6 enzymes, according to the metabolism scores (Table 3). According to the metabolism scores, all of the ligand substances block CYP3A4 enzymes. A combination of hepatic and renal clearance is used to determine total drug clearance. Using the elimination rate, total clearance defies the drug's concentration in the body [41]. The predicted results showed that the drug candidates' excretion ranges from 0.64 to 2.15 mL/min/kg. Toxicity is an important criterion in drug development, and it has an impact on which drug candidates are chosen [39]. There were no skin allergies or hepatotoxic effects in any of the pharmaceutical ingredients evaluated in this investigation. hERG inhibition (I and II) is a significant toxicity factor that also includes cardiotoxicity. The ligands 1-4 were shown to be inhibitors of hERG-I. The hERG-II was not inhibited by any of the substances tested. AMES toxicity has not been reported in any of the tested candidates. The toxicity analysis server projected the LD50, LOAEL, and maximum tolerable dose range of medication candidates, and the predicted scores are displayed in Table 3.

#### 4. CONCLUSION

Finally, the MOE technique was used to successfully dock the phytoconstituents of *Momordica dioica* fruit pulp against  $\alpha$ -amylase and  $\alpha$ -glucosidase inhibitors. In comparison to the standard drug Acarbose, the ligand 1-  $\alpha$ -amylase and 1- $\alpha$ -glucosidase complexes exhibit higher binding energy among the four bioactive molecules. Furthermore, complexes of 1-  $\alpha$ -amylase and 1- $\alpha$ -glucosidase formed many interactions with key residues in the active region of enzymes. The Lipinski role of five was estimated for the phytoconstituents. The ADMET

properties were assessed using the pkCSM web server. These findings motivate other researchers to complete studies on *Momordica dioica* fruit pulp phytoconstituents, as well as us to conduct future wet lab experiments.

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## Indian Ocean in context of Free and Open Indo-Pacific Strategy

**Benjungnungsang**

Ph.D. Scholar, North East Christian University, Nagaland

**Dr. Salikyu Sangtam**

Assistant Professor, North East Christian University, Nagaland

### Abstract

*The term 'Indo-Pacific' has recently entered the geo-strategic discussion and it is now being increasingly used in place of Asia-Pacific. The concept of Indo-Pacific is extremely important for India and her Act East Policy mission. The term Indo-Pacific can be meaningfully applied in two ways. First Indo-Pacific contains strategic and security implications for many nation-states around the world. Second, Indo-Pacific stands very closely connected to global maritime co-operation as the term Indo-Pacific is basically a maritime domain. Indian Ocean is central to the emerging Indo-Pacific concept. Today, the world is witnessing a critical time as the global power dynamics is slowly shifting from West to East. This phenomenal global attention shift towards Indo-Pacific is due to certain factors that act as driving force such as existence of important Sea Lines of Communication (SLOC) for countries around the world (developed and developing), existence of numerous opportunity for global trade and commerce, increasing rise of non-traditional threats such as illegal trafficking, piracy, terrorism, environmental issues, illegal fishing etc. requiring global effort and co-operation, and finally this global paradigm shift towards Indo-Pacific region is due to rising China factor. In regard to China, India does not have a clear-cut and prospective foreign policy and she lacks a dependable long term policy. Whatever policies and initiatives that may have started more specifically in recent times are nothing but counter measures and are reactionary in nature. The concept of Indo-Pacific is surely going to serve India's interest particularly in her Act East Policy in many ways. However, although India looks forward to expanding its diplomatic and political presence across the Indo-Pacific, its primary area of concern remains the Indian Ocean as India can play a meaningful role in Indo-Pacific only if her Indian Ocean is safe and secure. The primary objective of this research article is to analyse the significance of Indian Ocean Region in context of Free and Open Indo-Pacific concept mainly emphasising on the security dimension of Indian Ocean Region. This article also attempts to highlight the impact of Chinese Indian Ocean Policy and its security implication for India.*

**Keywords:** *Indo-Pacific, Indian Ocean, Act East Policy, Belt and Road Initiative, China*

### 1. INTRODUCTION

Throughout history, the maritime affairs have been one of the most influential factors in determining global power politics as well as shaping the regional power dynamics. In contemporary international politics, the importance and significance of Indian Ocean Region (herein after IOR) has surfaced like never before. With deeper process of globalization, the happenings around IOR are increasing each passing day. These happenings are numerous ranging from security issue to disputes and conflicts, from competition to dominate Indian Ocean to trade and other economic activities. The geo-strategic and other security related significance of IOR are many that almost all the major powers of the world today are interested to engage in this region of the world. Countries such as United States, United Kingdom, China, India, Japan Australia etc are directly involved and their presence is highly influential in maintenance of geo-political and economic or power dynamics in the region. IOR is a massive region extending across three crucial continents covering a huge global land area of 17.5%. IOR consists of 28 important countries out of which 21 countries hold the membership of Indian Ocean Rim association (IORA). Looking from the geo-strategic location of Indian Ocean, the latter connects Asia with Africa, Australia and a host of littoral countries (Smita, 2021). Indian Ocean the third largest ocean in the world which is today the world's busiest trading route and the life line of many of these major countries, as such security of Indian Ocean is a question of pivotal interest for many contenders.

Though India Ocean is a playground of many major powers of the world, it is the presence of China at its backyard that concerns India. In regard to China, India does not have a clear-cut and prospective foreign policy and she lacks a dependable long term policy. Whatever policies and initiatives that may have started more specifically in recent times are in fact nothing much but counter measures and are reactionary in nature. Firstly, India's Act East Policy that started in 2014 is a reactionary and countering step taken against China's Belt and Road Initiative (herein after BRI) that started in 2013. It is to be remembered that in the year 1992 India initiated Look East Policy with a primary purpose of engaging with South-East Asian countries economically and commercially. It was most importantly after Chinese government's announcement about ambitious Belt and

Road Program and the tremendous effort thereafter China started to put in to strengthen her multi-dimensional relationship with countries around Asia and outside, that the policy makers of India realized the urgent need to review and revisit her South-East and East Asia policy. Henceforth, besides economic consideration, security measures were adopted for the first time through the Act East Policy which is in reality a reaction to China's BRI program to meaningfully and pro-actively engage with South-East Asian countries in an attempt to counter China. Secondly, India's interest to participate and strengthen Quadrilateral dialogue among USA, Japan and Australia is another reactionary and countering attempt by India and three other democratic countries in face of Chinese assertive and forward going maritime policy. Thus India's interest to participate in quad is primarily motivated by her desire to provide security and safety to Indian Ocean from Chinese domination. Thirdly the necklace of diamond strategy as started by India in recent time is more or less a move in response to China's 'String of Pearls' strategy under Belt and Road Initiative (here in after BRI). The above few instances show that every major international foreign policy pursued by China impacts India's foreign policy as well. India's flexibility and reactionary attitude towards China's offensive behaviour is reflected in many of India's China policy. With few exceptions, India is unable to devise a permanent China policy and hence the policy keeps changing in tune with new developments that may take place requiring either changes in the existing policy or creation of an overall new policy to accommodate the changes.

Indian Ocean is a very significant component within the concept of Indo-Pacific construct; therefore, the objective of this article is to reflect the significance of Indian Ocean for India in context of Indo-Pacific platform, an attempt has been made in the article to inform the readers that Indo-Pacific is the ultimate destiny of India's Act East Policy for which security of Indian Ocean must be considered first of all for India to play a meaning role at higher Indo-Pacific platform. Impact generated because of China factor affecting India's ocean policy is also discussed.

## 2. IMPORTANCE OF INDIAN OCEAN

The world's major countries dependence on Indian Ocean is increasing every passing day. Today, Indian Ocean has become one of the most crucial oceans of the world due to increasing trade and commercial activities of nation-states around the world. The countries surrounding Indian Ocean have a long tradition of progressive trade and commerce and vibrant cultural interaction with the outside world. Geo-political, cultural, security and economic significance of this region has increased like never before as a result of which today we find unprecedented presence of even military forces of different countries meddling around IOR. The presence of military forces of major powers around Indian Ocean is a proof that in recent times, security issue of Indian Ocean has increased more than any other issue. Today, India is looking forward to expanding her diplomatic and political presence across the Indo-Pacific, but her primary area of concern remains the Indian Ocean. India can meaningfully engage and leverage the benefits in Indo-Pacific construct only when the peace, stability and security of IOR are achieved to some extent. The potential of Indian Ocean for India is enormous. India currently has an area measuring 2.02 million sq.km of Indian Ocean called Exclusive Economic Zone (EEZ) besides a long coastline of about 8,118 km (Serajuddin et al. 2018). India is so much dependent on Indian Ocean for her commercial relationship with outside world. Indian Ocean is the lifeline of energy supply route for India besides there is enormous potential in fishery, mineral extraction, energy reserves, high presence of Manganese Nodules and Crusts, salts etc. Today 90% of India's trade with outside countries are done through Indian Ocean and which is also the source for India's energy supply. The third largest ocean in the world, the Indian Ocean provides a crucial geo-political space that brings together much crucial maritime connectivity. Besides trade and connectivity, India Ocean occupies a very vital geo-strategic space as well as availability of valuable natural resource. The rise and fall of India as a significant power depends to a great extent on her position in IOR. Among others, there are three core objectives of India's Indian Ocean policy. Firstly, India wishes to become the dominant power of IOR in near future. Secondly, India desires that her presence in major choke points of Indian Ocean must be strengthened. Thirdly, India's policy towards Indian Ocean is to ensure that China does not achieve a strong foothold in the Indian Ocean.

KM Panikkar once rightly remarked that, "Whoever controls the Indian Ocean has India at its mercy" (Aakaansha, 2020). Although India occupies central position around IOR yet India is unable to bring the region under her control and provide security to the region. Time and again history has proven that India have fallen as victim to external conquerors primarily due to her inability to secure Indian Ocean (Thaliyakkattil, 2019). China is equally or even more dependent on sea waters for trade and commerce and energy supply. Indian Ocean is so much important for China and is thus considered the lifeline. Answer to the question as to why China wish to dominate Indian Ocean is rather very simple, the ever increasing economy of China is extremely depended on Indian Ocean. China is deeply worried about her sea routes as neither Indian Ocean nor Malacca Strait is in their control. China cannot have trade relations with outside world without Indian Ocean, as 95% of China's trade

with Africa, Europe and Middle East use Indian Ocean for passage, China therefore needs Indian Ocean. More than a century ago Alfred Mahan Thayer a maritime strategist and a great thinker once rightly remarked that, “Whoever controls the Indian Ocean will dominate Asia. The destiny of the world will be decided on its waters” (Wion, 2021). Today, this prophetic vision is coming true and the war had just begun to control and dominate Indian Ocean. India, being the central to Indian Ocean is severely been threatened and challenged by nations particularly China. China views that control over Indian Ocean is a necessity due to its extreme dependence on Indian Ocean for trade and commerce as a result the String of Pearls strategy under BRI was created by China that include various strategic locations of Indian Ocean with an intention of exercising complete control over these crucial strategic points in future. China’s String of Pearls has identified almost all the major choke points of maritime sea route and there is presence of China in all these strategic points. India is upset to realize that China has already in hand the blueprint to control and dominate Indian Ocean region in near future and the work to accomplish such ambitious policy has begun. India has always regarded China as an outsider in Indian Ocean; the presence of China in Indian Ocean is a major threat to India as the latter’s previously held prominent status around IOR is slowly diluting and hence India once again wishes to regain her prominent status.

### 3. CHINESE PRESENCE IN IOR BACKYARD

The Indian Ocean is today an international region of conflict and confrontation. Indian Ocean has four critically important choke points such as Strait of Malacca between Indonesia and Malaysia, Strait of Hormuz between Oman and Iran, Suez Canal of Egypt and Bab el Mandeb between Djibouti and Yemen. Due to this international character of Indian Ocean, the region has accommodated significant number of naval forces from almost all the leading powers of the world. Though Indian Ocean is a playground of many major contenders of the world, it is the presence of China that concerns India. In the past history, Indo-China rivalry was mostly confined in and around the great Himalayan region, the two great nations of Asia also fought a major war in 1962, today, this rivalry and confrontation between them is becoming increasingly maritime related. Chinese experts maintains about India’s rejection of BRI as due to India’s assumption that BRI will compromise India’s aspiration to dominate IOR (Thaliyakkattil, 2019). The fear of India in regard to security of IOR is also emanating from the fact that Indian Ocean is the life line of India. For the security of Chinese overseas trade in Indian Ocean, the national interest of China demands good relation with countries around IOR but China’s attempt to befriend countries around Indian Ocean has been viewed with high degree of suspicious by India. Many of Chinese proposed projects in Sri Lanka, Bangladesh and Maldives are still withheld largely due to India’s objection. As far as IOR is concerned, India looks at China as an outsider meddling in the region. China on the other hand accuses India of treating Indian Ocean as India’s owned Ocean and as its backyard. “China argues that Indians view the Indian Ocean as an Indian lake, a sphere of influence that India must dominate, and India fears encroachment from other powers in the Indian Ocean.” (ibid, p. 167). Chinese experts maintains about India’s view of IOR as its backyard approach to be unacceptable and impossible. Scholars of China argue that in today’s fast changing world of globalization, no power can claim any sea or land to be its exclusive region and that IOR is an open sea where all the great majors may enter or exit freely and to use it. On the other hand, the fact is, even China continues to remain assertive in South China Sea and the so called ‘nine-dash line’ up to which China claims its sovereign control. If India is trying to bring IOR under her influence in line with her national interests, China is doing the same thing by remaining assertive around South China Sea.

China has in many occasions tried to divert India’s attention and focus from IOR by maintaining that India should devote more time and focus in a region that have better commercial trade relationship and that’s where more of India’s interests should lay. The trade data records and figures of India has clearly indicated that India’s beneficial trade relationships are not with the countries around the IOR but elsewhere such as western countries and East Asian countries, as such. Chinese experts even suggested that, “the economic size of the countries in the Indian Ocean region is small and that they cannot absorb India’s expanding economy and absolutely will not become a place where India can realize its dream of becoming a great power. If India wants to realize its trade and economic potential and realize its ambition to become a great power, India should go beyond the Indian Ocean and establish connectivity with Northeast Asia and Europe.” (ibid, p. 168). Meanwhile, India’s vigilance and proactive engagement around Indian Ocean is against Chinese interest. Considering India’s strategic location, IOR is the only suitable platform through which India can meaningfully take part in global affairs and can exert her influences. In IOR, no nation can say to have secured its position. India feels apprehensive by the manner in which China is encircling her through her String of Pearls strategy; similarly, China is restive due to the fact that in spite all its powers it cannot secure the ‘Malacca Strait’. Though China is an important world power it still feels vulnerable around IOR due to ‘Malacca Dilemma’ because any attempt to disrupt this vital sea route will be highly detrimental to China. China does not have an alternative sea route other than Malacca Strait and as such major chunk of its activities in and around IOR is seen as an attempt to minimize its strategic vulnerability. India is worried as China has successfully stationed submarines which are nuclear powered in and

around the north of the Strait of Malacca some 1200 nautical miles. India is seriously alarmed by the deployment of Chinese submarine near Hainan Island (Sanya). In this regard, China's relentless effort in strategic activities along the coast of Myanmar (around Bay of Bengal and Andaman Sea), building of connectivity system between China's Yunnan with Kyaukphyu port of Myanmar etc have serious implications for India's security. India knows the inevitable entry of China in the Indian Ocean there is no way to prevent. But the former should ensure that the latter does not in due process of time establish strong foothold in Indian Ocean. Comparatively India is however, in a better placed position around Indian Ocean. The latter have acquired much more and better information about the cultural terrain and physical of Indian Ocean than China in this regard as the latter's entry into IOR is a recent affair.

Though Chinese maritime activities are still in initial stage and do not pose major threat at the moment, but it cannot be denied that in future there is every possibility that Beijing will dominate the IOR as it is apparent from its determined activities around IOR. Beijing is aiming to build the best naval power in the world in the very near future. China's increasing naval modernization, its anti-ship missile program, submarine operation activities, development of strategic ports such as Hambantota in Sri Lanka, Gwadar port of Pakistan, its strategic base in Djibouti, China's strategic interests in Maldives and Mauritius etc are no doubt very remarkable activities with an ultimate objective of making China a great naval power ahead in future. Primarily, China has maintained two IOR Strategies to allow China dominate Indian Ocean in future. The first strategy is identification of strategic location in Indian Ocean and construction of port facility in these key locations. The second strategy is to convert these ports from commercial purpose to military purpose allowing People Liberation Army Navy (herein after PLAN) to use these ports as naval and military bases in future. With this requirement in mind, China has started building ports and military bases in several areas having deep strategic importance. Such commercial ports China has so far constructed in Gwadar (Pakistan), Djibouti (Horn of Africa), Hambantota (Sri Lanka), Kyauk Pyu (Myanmar), Dara Sakor project Cambodia etc. It is very clear that all of these ports are located in strategic locations designed to protect Chinese maritime trade and interest. Furthermore, much for the distress of India, China has already identified Myanmar, Thailand, Singapore, Indonesia, Pakistan, Namibia, Sri-Lanka, UAE, Kenya, Seychelles, Tanzania, Angola and Tajikistan as potential countries that China wants to target for bases in near future. The issue of maritime super-power is very much a 'China Dream' in future particularly under the current President Xi Jinping's vision. There is a tremendous modernization of Chinese navy today. In fact, there is no naval power in the world that is developing so fast and rapidly like the Chinese navy. The interest of India and other likeminded countries will certainly be affected if China is allowed to accomplish its ambition. India and other likeminded countries should ensure that Chinese ports erected in crucial strategic choke points should be limited exclusively for commercial interest and not to serve naval or any other military related interest. In the year 2020, the United States Department of Defence has alleged that "People Republic of China is seeking to establish a more robust overseas logistics and basing infrastructure to allow the PLAN to project and sustain military power at greater distance." The US department of defence further reported that beyond its current base in Djibouti, China is very likely already considering and planning for additional overseas military logistics facilities to support naval, air and ground forces. These overseas military logistics if successfully established would certainly challenge even United States of America's maritime interests and might eventually bring them into conflict.

However, if China aims to create the most powerful military base in Indian Ocean, it will be stationed in Pakistan, the most promising ally for China's BRI venture, China is able to claim the best of everything and dictate terms and conditions in Pakistan to its utmost advantages. Since 1985 onwards, China and Pakistan are familiar to each other as far as their naval operations are concerned. In recent year China and Pakistan co-operated in observing "Sea Guardians-2020" a joint naval drill in Karachi. During this particular drill exercise, PLAN of China deployed five warships (destroyer, frigate, supply ship, submarine rescue vessel), two fighter Helicopters and more than sixty special operation soldiers to Pakistan and the two countries are planning to take their relationship further. Again, recently China and Pakistan unveiled ambitious plan to develop Karachi coast. The most controversial activity between China and Pakistan in regard to BRI is however the port of Gwadar. The port Gwadar is situated along the maritime lifeline of China in Indian Ocean and also very closely situated near Persian Gulf as the gateway to the Middle East. There is a huge debate going on in different platforms in connection to the purpose construction and usage of Gwadar Port. What is the purpose for which Gwadar Port is being created? Since its inception China maintains that Gwadar Port is purely for trade and other commercial motives of China. However, the topography of Gwadar shows that the region is one of the poorest due to severe water shortage making economic activity extremely difficult and even for the transportation of oil from Gwadar to China is bound to be very costly considering the huge distance the cargo must travel. Yet China is spending more than 1 billion dollars to build Gwadar Port. Many strategists and analyst however maintain that the latter is not for China's trade purpose but for deployment of military base in future. Gwadar could be efficiently utilized and repurposed for use as PLAN military facility, Gwadar can support Chinese amphibious ship, fleet

replenishment ship and aircraft carriers. This strategic potential of Gwadar is what China is looking for and wishes to utilize to the extent possible. Once an officer of Peoples' Liberation Army answering to PLAN's option for using Gwadar as a base answered, "The food is already on the plate, we'll eat it whenever we want to." Gwadar is thus excellent examples of China's 'Dual Use' strategies that is building a port on the pretext of commerce and then equip the port for the PLAN. In many BRI program of China, the latter is determined in identifying and building 'Dual Use' ports with an aim to allow military to access those commercial ports whenever required. In the year 2016, Beijing made the National Defense Transportation Law; this law obligates organizations such as state-owned enterprises (SOEs) to support the State Council and Central Military Commission in the defence of national interests abroad and stipulates that overseas infrastructure projects must be designed to meet military standards. The People Republic of China maintains that "China must build overseas strategic points that depend on the homeland, radiate into the periphery, and move us in the direction of the two oceans (Pacific and Indian Oceans). These sites are to provide support for overseas military operations or act as a forward base for deploying military forces overseas, exerting political and military influence in relevant regions. We should form a posture with the homeland strategic layout that takes account of both the interior and the exterior, connects the near with the far, and provides mutually supporting facilities." (Russel & Berger, 2020, p. 18). Under this National Defense Transportation Law of China, all ports at home or overseas must be designed to meet People Liberation Army (PLA) standard and to accommodate Chinese navy ships. Under China's Civil Military Fusion principle China's port operators, shipping lines, all companies are legally required to support PLA not just during war time but even during peace time as well. BRI's commercial projects are designed to allow dual use system which can be militarized in the future. In other words, this dual use approach can be termed as 'Civilian First, Military Later' approach or doctrine. Therefore, guided by such law China is today building commercial ports for military usage. Hambantota Port of Sri-Lanka has been leashed out to China for ninety-nine years and is now completely under China's control due to its policy of debt trap loan. Experts strongly believe that these ports (Gwadar, Hambantota and Kyaukphyu and Dara Sakor) are strategically significant for China's PLA as most of these areas are situated along China's maritime lifeline around Indian Ocean. Besides it should be noted that all the above ports are heavily indebted to China. As a connectivity infrastructure between Male and island of Hulhumale and Hulhule the China-Maldives Friendship Bridge which is perhaps the first ever sea crossing bridge for the island country of Maldives is being constructed through financial aid from China. The China-Maldives Friendship Bridge is considered important for both China and Maldives particularly for the latter's future course of trade and commercial undertakings. It is learnt that the Maldives has further in exchange for USD \$ 4 million leased out Feydhoo Finolhu an uninhabited island to a Chinese company for a long period of fifty years. China is equally impressing African coastal countries the likes of Angola, Nigeria, Abuja etc through fund and other Chinese assistances.

The success of China's BRI would to a great extent depend on its power and position in and around Indian Ocean Region. In tune with the requirement of BRI, China is very much eager to penetrate deep into Indian Ocean and establish a strong hold in the region. In order to realize the ambitious objective of BRI, China will try and attempt to assert her position more in the coming future. It is important that nations must not allow Indian Ocean to become an ocean of confrontation, conflict and war to satiate the imperialistic hunger of few superpowers. All the peace loving countries around the world should come forward and uphold the slogan of peaceful Indian Ocean Region and 'free and open Indo-Pacific'. China's apparent violation of the UN Convention on sea law, its deployment of naval forces in sensitive places around Indian Ocean are all seen as threats to the concept of 'free and open Indo-Pacific' endorsed by peace loving nations. The manner in which China is investing in commercial and in infrastructure projects around IOR and other littoral countries convinces us about the deep interest China has in mind about Indian Ocean.

Having successfully secured certain border areas, Beijing is now on a move to do the same at sea and waters where its ultimate interest exists. China has been more successful on borders but India must not allow the same story repeat when dealing with China on waters. To counter China at sea India must push up her maritime related undertakings and modernize maritime infrastructures without which it will be difficult to face China. Though the Indian government realized the importance of maritime security quite early it was more specifically only recent that the government started to pay attention. India has initiated some notable undertakings in recent years, for instance, India is slowly modernizing infrastructures and facilities in Andaman and Nicobar Island around the Bay of Bengal. Deployment of more aircrafts, warships, drones and additional troops in Andaman and Nicobar Island was agreed upon in 2019 with an investment amount of 56.5 billion. India's overseas territories extend to Andaman and Nicobar Islands and thus India has every right to militarize these islands. Since 24<sup>th</sup> January 2019, INS Kohassa (a new naval station) is installed around Bay of Bengal region by India. India cannot counter China without becoming a major maritime power and to achieve strong maritime power India needs to extensively garner the support and cultivate good and strong friendship and co-operation of small but crucial island nations in the region. In a significant move India has recently improved relation with

Seychelles and Mauritius by taking initiative to build infrastructure facilities capable of dual use logistics system, India donated certain aircraft and has helped established radar facility. India has also promised to modernize Seychelles's Assumption Island besides assisting in securing Seychelles Exclusive Economic Zone. Besides a Memorandum of Understanding (MoU) was signed between India and Mauritius in 2015 with an agreement to upgrade and provide better air and sea facilities in Agalega Island. Winning over these tiny yet crucial island nations is important which both India and China have realized. India requires efficient and suitable logistic management but unfortunately, she is comparatively poor in logistic field. On the other hand, the Logistic Exchange Memorandum of Agreement concluded between India and United States is a ray of hope for India. India can avail logistic support from US as the latter have established number of such facilities in and around the Indo-Pacific region (Priyanjoli, 2020).

Joint military exercise conducted by different nations in and around Indian Ocean Region is a special maritime feature and is an admiring practice particularly in recent years. Fortunately, India is a member and has been actively participating in many of these bilateral and multilateral military exercises organized from time to time. Some of the prominent multilateral military (Naval) exercises where India is an active participant member includes IBSAMAR (India, Brazil and South Africa), MALABAR 2020 (India, United States, Japan and Australia), Milex (India, Bangladesh, Bhutan, Nepal, Sri Lanka, Myanmar, Thailand), PASSEX 2020 (India, USA, Russia, Australia, Vietnam), SITMEX (India, Thailand, Singapore) etc. On November 8<sup>th</sup> 2019, Indian navy hosted MILAN a joint naval exercise in which 17 foreign naval forces participated. Naval exercise MILAN is expected to garner more foreign naval forces in the future editions. These military exercises around IOR serve as threat to China's maritime strategy and it may well counter China's assertiveness in Indian Ocean. India has recently and rightly intensified her naval operations and coverage extending to almost entire Indian Ocean Region. Many of these joint military exercises have excluded China. India should therefore be a proactive member of these military exercises (bilateral or multilateral) and utilize this platform to her advantage.

#### **4. AMERICA-INDIA INDO-PACIFIC PARTNERSHIP IN THE MIDST OF A RISING CHINA**

Though inwardly India has attached so much interest and desire to contain the rise of China by willing to club with like-minded countries around the Indo-Pacific, in reality and outwardly India is hesitant not to provoke China. "India's Indo-Pacific strategy has now become in the main a subset of its China policy, with other element fading into the background. But contradictions also abound. The Indian government is loath to admit that China is the main driver of its Indo-Pacific policy and indeed actively discourages any such ideas" (Rajagopalan, 2021, p. 1). India's Indo-Pacific strategy is more of 'evasive balancing' meaning India's great effort that is applied in balancing China while trying to reassure the latter. Primarily, India's engagement in Indo-Pacific is motivated by the desire and determination not to allow China to dominate the region. So far India is trying to play two contradictory roles; i.e. first she outwardly refuses to admit or encourage any suspicion that China is the main driving force towards her Indo-Pacific involvement. Secondly, but on the other hand, India's recent policy steps undertaken suggests that China is the primary driver of her Indo-Pacific involvement. In brief, India is keen to involve in any undertaking that is interested in containing China, though without provoking the latter. Realizing about India's inability to balance China internally, India has tactically resorted to external balancing i.e. a strategy of uniting with other like-minded ally countries as a step to counter China. Balancing the threat posed by China has become so important for India that she is willing to partner with like-minded countries even though this is clear departure from her traditional behaviour of maintaining independence in global affairs. For many decades China was a good partner of India and not an adversary and as such India did not require the need to balance China. It is only recent that India started to emphasis the value of external balancing. Former President of America Donald Trump and India's Prime Minister Narendra Modi both agreed that in order to bring peace and stability around Indo-pacific, a close relationship between India and America is central and a pre-requisite. Marking the 70<sup>th</sup> years of Indo-America diplomatic relation, the leaders of the two leading democratic countries resolve to strengthen and deepen their strategic partnership in future. The Indo-America Indo-Pacific co-operation includes promoting peace and stability in Indo-Pacific, the issue of terrorism, promotion of free, fair and open trade system and strengthening linkages of energy supply. India-America improved partnership is particularly viewed as important in context of China factor. The phenomenal rise of China both economically and militarily in the last few decades was a source of great apprehension and dejection for many countries. America-India strategic partnership is to a large extent driven by their mutually shared common concern in regard to increasing geo-strategic ambition of China around the Indian Ocean as well as the Indo-Pacific region. The phenomenal rise of China as world's major power has no doubt brought a big challenge to both India as well as the United States in different yet complementary ways (Tellis, 2022). Today India and America have entered what is known as 'Global strategic partnership' era this partnership covers a wide ranging areas of mutual interests. In 2016, USA declared India as a 'major defence partner' and in the same year a commendable achievement was made between them by signing of Logistic Exchange Memorandum of



Agreement. In 2018, another milestone was achieved between them by successfully making an agreement on Communication Compatibility and Security. In many instances America has exhibited support and commitment towards Indo-American relationship. In the year 2008 during the 123 agreement or the civil nuclear deal, America simplified the existing global norms for India in regard to nuclear acquisition and maintenance. Another example which justifies deep India-America relationship is the successful arms transfer relationship. Over the last few decades, India and America are experiencing rapid growth particularly in security related partnership. There is a phenomenal increase in arms and ammunition import to India from USA and the two great Democracies are frequently engaging themselves in joint military exercises. However, since November 2017, India has carefully chalked out her own vision of Indo-Pacific quite different from America's vision. The latter's Indo-Pacific strategy is very much in confrontation with China. India outwardly cannot effort to upset China by following America's dream of containing China. India's vision is in consonant with common pursuit for progress and prosperity by all the stakeholders, promotion of free and open trade, commitment to uphold rule of law and her vision and partnership not directed against any power or country.

## 5. CONCLUSION

The significance of Indian Ocean will only increase in the days to come it is thus imperative that India must strengthen her position in around Indian Ocean. Amicable relationship with small yet significant Indian Ocean Island countries are extremely important for any Ocean strategy followed by India. Due to geographical proximity, India is directly affected by the foreign policy pursuit by island countries such as Sri Lanka, Maldives, Mauritius and Seychelles. India's cordial and amicable relationship with these countries is therefore both a choice and a necessity. China is slowly taking up the responsibility of security provider to island states of Sri Lanka, Maldives, Mauritius and Seychelles, the responsibility which was held by India previously during the post cold war period. The policy maker of India has realized this change of dynamics and has thus started constructing meaningful ties with these countries. India must therefore push up the policy of pro-actively engaging island countries and must ensure that they don't become dependent to China. Determined to dominate Indian Ocean Region China is modernizing her navy like never before. In fact there is no naval power in the world today that is developing so rapidly like the Chinese navy. In 2021, the Defense Budget of China shot up 6.8% to 1.35 trillion Yuan which is roughly US \$ 209 billion. It is learnt that much of this money will go towards the development of Chinese naval force. India cannot effort to stay different. The only way for India to counter China at sea is to become a major maritime power. It is time India must pay meaningful attention to maritime infrastructure build up. India must invest in her maritime infrastructure and modernize her naval capability. It is time India devote more time and attention towards sea security. She must continue to garner support from like-minded countries to uphold her foreign policy of keeping the Indian Ocean Region a region of peace and free from power rivalry. The Quadrilateral Security Dialogue between India, America, Japan and Australia should be allowed to continue and grow. This dialogue partnership between the four Democratic countries is often perceived by China as a big threat to her rise. It is a positive thing that in the face of China's ambitious rise, there is an attempt by countries around to counter. It is good for India as she is able to garner support and co-operation from like-minded countries and the fact that Indo-Pacific concept is not an isolated interest of India alone. There are many major countries whose strategic interests revolve around the region. Countries around the world believe that the peaceful and harmonious world to a great extent depends on a free and open Indo-Pacific. Just to name some important countries, the likes of America and Japan whose geo-strategic interests are firmly connected to Indo-Pacific region desires promotion of a liberal economic order in the region. These countries do not favour granting any country a sphere of influence in and around the Indo-Pacific region. Firstly, Indo-Pacific region comprises some of the world's most important Sea Lines of Communication (SLOC) for major countries around the world both developed and developing. Therefore, it is a mutual and common desire of all that the security of this significant SLOC be maintained at all times and at all cost to ensure uninterrupted global supply chain. Existence of this crucial Sea Lines of Communication for mutual exchange of trade and commerce is the reason why Indo-Pacific be maintained a global trading and other interactive platform free from the domination of any major power. It is the desire of many that the region of Indo-Pacific be evolved as a region of open and free where activities of nations may be governed and regulated by mutually acceptable international law. Secondly, Indo-Pacific is a region where there exists numerous opportunities for global trade and commerce and many of which are found to be flourishing. Thirdly, the Indo-Pacific region is a power house of valuable natural resources. Fourthly, there is increasing rise of non-traditional threats such as illegal trafficking, piracy, terrorism, environmental issues, illegal fishing etc. Nations are being increasingly challenged by these threats and these threats are global in nature that requires global effort and co-operation.

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## Preliminary Phytochemical Screening of Some Selected Medicinal Plants from Mokokchung District, Nagaland

Toshienla Pongen

Department of Botany, St. Joseph University, Nagaland

Lirola T Sangtam

Department of Botany, St. Joseph University, Nagaland

### Abstract

*Screening of phytochemicals is a baseline in the detection of bioactive principles present in medicinal plants and eventually may lead to discovery to novel drug. In the present investigation, a total of 24 medicinal plants were collected from three locations for phytochemical screening test. All the collected specimens were authenticated at BSI, Shillong before undertaking the study. Screening of the plants was performed using standard methods, the phytochemical analysis was performed on leaf, stem and bark of dried medicinal herbs using aqueous, methanol, ethyl acetate, chloroform, and dichloromethane as solvent for extracting the major phytoconstituents, and resulted in the detection of the presence of alkaloids, steroids, flavonoids, terpenoids, saponins, glycosides, Xanthoproteins. The presence of these phtochemicals is concerned with the medicinal properties of selected plant species.*

**Key words:** *Ethnomedicine, medicinal plants, natural products, phytochemicals.*

### 1. INTRODUCTION

About 80% of the world population depends on traditional medicine for their primary healthcare due to their therapeutic potentials (Ekor 2014, Abdullahi *et al.*, 2019). Plants have projected refined traditional medicine practices that have been used for thousands of years by people of China, India and many other countries (Nandagoapalan *et al.*, 2016). Plant chemicals are regarded as secondary metabolites, because they are synthesized in all the parts of the plants i.e., in barks, leaves, flowers, roots, fruits, seeds, may contain bio-active chemical entities for drug development (Yadav and Agarwala 2011, Mulay and Karle 2020). Millions of ethnic and indigenous people living in tribal and rural sector of India assure the need of medicinal plants. The natural plant product is very effective, efficient and has no or, little side effects as compared to synthetic drugs which have side effects and is therefore people utilized conventional drug obtained from their bioactive phytochemical contents, which have specific physiological effects on the human body (Jadhao *et al.*, 2014, Edegoa *et al.*, 2005, Rout *et al.*, 2009).

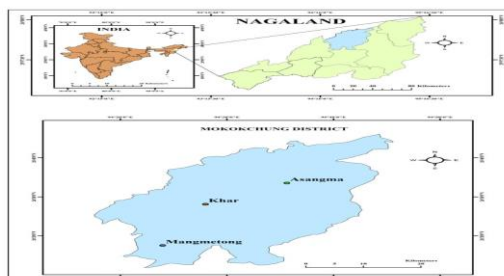
Traditional medicines, modern medications, nutraceuticals, food supplements, folk remedies, pharmaceutical intermediates, and chemical entities for synthesized pharmaceuticals are all found in medicinal plants. It is now evident that the medicinal efficacy of these plants is derived from their bioactive phytochemical contents, which have specific physiological effects on the human body (Jadhao and Kshirsagar 2022). A survey conducted by the Ministry of Environment and Forest and Climate Change (MOEF & CC), estimated that tribal communities in India use 10,000 wild plants for primary health care needs (Pushpangadan 2002, Unial *et al.*, 2011). The status of medicinal plants may be concerned by the number of environmental factors such as climate, altitude, rainfall and other conditions which affect the growth of plants and in turn affect the quality of constituents even though they are produced in the same country. Thus, the factors bring about variations in the activity of bioactive compounds (Neha *et al.*, 2015).

Preservation of proper documentation, bonafide research on traditional knowledge, standard control of herbal medicine is crucial for the growth of herbal medicine usage in the 21st century (Rodrigues *et al.*, 2003, Sen *et al.*, 2011). Folklore and traditional knowledge are in the process of declining because of disturbance of forest covers, tribal populations are uprooting due to industrialization. In this regard, conservation of various medicinal plants is a necessity which brings well-being of society in large and benefits good health to individuals (Jamir *et al.*, 2021). Owing to the significance discussed above, such preliminary phytochemical screening of the plants is need of the hour in order to discover and develop novel therapeutic agents with improved efficacy. Phytochemical analysis of the medicinal plants has yielded positive results (Fujii *et al.*, 2004). The present study revealed the preliminary phytochemical screening of 24 medicinal plants from three different villages used by the people of Mokokchung district, Nagaland, India.

## 2. MATERIALS AND METHODS

### *Collection of plant material*

Fresh plant materials were collected from three different villages of Mokokchung district, Nagaland, India (Figure 1). The plants collected commonly occurred in cultivated land, along with roadside, shady and moist places. The plants collected were identified at Botanical survey of India (BSI) eastern regional Shillong, Meghalaya, India.



**Figure 1 - Map showing study area of Mokokchung District (Source: Google)**

### *Preparation of plant extract*

The selected plants were thoroughly washed under running tap water 2-3 times to remove the dust particles, followed by shade dried for a few days at room temperature and then dried in an oven below 50°C. The dried plant samples were then powdered using a mixer grinder and stored in polythene bags for analysis. 30 gm of plant powder were extracted with 100 ml of Methanol, Aqueous, Ethyl Acetate, Chloroform and Dichloromethane. After 24 hours, the plant materials were filtered through a filter paper, the filtrate was collected for screening test.

### *Phytochemical screening*

The plant extracts of *Artemisia nilagirica* (whole part), *Erigeron karvinskianus* (whole part), *Ageratina adenophora* (whole part), *Houttuynia cordata* (whole part), *Plantago major* (whole part), *Persicaria chinensis* (leaves.stem), *Drymaria cordata* (whole part) *Pseudognaphalium luteoalbum* (whole part) using Methanol, Aqueous, Ethyl Acetate, Chloroform and Dichloromethane were tested to determine the secondary plant constituents (Velavan et al., 2015, Sofowra 1993, Trease et al., 1989, Harborne 1973).

### *Test for Alkaloids*

*Mayer's test:* Few drops of freshly prepared Mayer's reagent were added to the sample, a white precipitate showing the presence of alkaloids.

*Test for Terpenoids: Salkowki's test* - 1 ml of chloroform was added to 2 ml of extract, followed by a few drops of concentrated sulphuric acid. A reddish brown precipitate produced immediately indicated the presence of terpenoids.

*Test for Steroid: Salkowki's test* - Crude extract was mixed with 2 ml of chloroform and 2-3 drops of concentrated H<sub>2</sub>SO<sub>4</sub> was added sidewise. A red colour produced in the lower chloroform layer indicated the presence of steroids.

*Test for Triterpenoids:* Crude extract was dissolved in 2 ml chloroform and then added acetic anhydride (1ml) and added concentrated sulphuric acid (1ml) to the solution. Formation of reddish violet colour shows the presence of triterpenoids.

*Test for Saponins:* Extract was mixed with 5 ml of distilled water in a test tube and then it was shaken vigorously, formation of stable foam indicates the presence of saponins.

*Test for Flavonoids:* A few chop of 1% NH<sub>3</sub> solution is added to the extract of the plant sample in a test tube. A yellowish coloration is observed if flavonoids compounds are present.

*Test for Tannin: Lead subacetate test* - Few drops of lead acetate (1%) were added to 1 ml of the sample, appearance of white gel/ coloured precipitate indicating tannins were present.

*Test for Glycoside: Salkowski's test* - Crude extract was mixed with 2 ml of chloroform. Then 2 ml of concentrated H<sub>2</sub>SO<sub>4</sub> was added carefully and shaken gently. A reddish brown colour indicates the presence of a steroidal ring, i.e., the glycone portion of the glycoside.

*Test for Phlobatannins*: About 2 ml of aqueous extract was added to 2ml of 1% HCL and the mixture was boiled. Deposition of a red precipitate was taken as evidence for the presence of phlobatannins.

*Test for Carbohydrates*: Benedict's test: Crude extract when mixed with 2 ml of benedict's reagent and boiled, a reddish brown precipitate formed which indicates the presence of carbohydrates.

*Test for Quinones*: A small amount of extract was treated with concentrated HCL and observed for the formation of yellow precipitate (or colouration).

*Test for Xanthoproteins*: 1 ml of the extract was treated with few drops of conc. HNO<sub>3</sub> and NH<sub>3</sub> solution. Formation of reddish orange precipitate indicates the presence of xanthoproteins.

### 3. RESULTS AND DISCUSSION

Same eight medicinal plants were collected from three villages of Mokokchung district, *Artemisia nilagirica* (whole part), *Erigeron karvinskianus* (whole part), *Ageratina adenophora* (whole part), *Houttuynia cordata* (whole part), *Plantago major* (whole part), *Persicaria chinensis* (leaves.stem), *Drymaria cordata* (whole part) *Pseudognaphalium luteoalbum* were screened for their phytochemical bioactive constituent. It was investigated that all the plants have considerably proportion of important phytochemicals that are easily detected by qualitative test. In our analysis it was clear that *Artemesia nilagirica* is rich in glycoside, tannin, saponins, flavonoids, steroid, carbohydrates etc., *Erigeron karvinskianus* is rich in tannins, flavonoids, saponins, triterpenoids, glycoside, quinones etc., *Ageratina adenophora* is rich in carbohydrates, tannins, saponins, glycoside etc., *Houttuynia cordata* is rich in tannins, flavonoids, saponins, glycoside, phlobatannins, quinones etc., *Plantago major* is rich in alkaloids, saponins, flavonoids, tannins, glycoside, xanthoproteins etc., *Persicaria chinensis* is rich in saponins, tannins, carbohydrates, xanthoproteins etc., *Drymaria cordata* is rich in flavonoids, tannins, saponins, quinones, xanthaproteins etc., while *Pseudognaphalium luteoalbum* has slight alkaloids content and rich in tannins, saponins, flavonoids quinones (Table: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 and Fig: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12).

The medicinal value of these secondary metabolites is due to the presence of chemical substances that produce a definite physiological action on the human body. In all the plant samples one common and important secondary metabolite was the presence of abundant tannin. From the literature survey it was found that tannins had wide range of biological properties such as, antioxidant, radical scavenging, and antimicrobial, antiviral, antimutagenic and antinutrient effects (Jose *et al.*, 2009, Serrano *et al.*, 2009). It is used in the treatment of diabetes mellitus and has vasodilatory action. It is also reported that tannin extracts from various plants have been found to effectively inhibit intestinal enzymes. Inhibition of  $\alpha$ -amylase and  $\alpha$ -glucosidase activity (Broadhurst *et.al* 2000). Tannins are attributed for analgesic and anti-inflammatory activities, apart from this tannin contribute property of astringency i.e. faster the healing of wounds and inflamed mucous membrane (Okwu and Josiah 2006). Alkaloids have been well investigated for many pharmacological properties such as antiprotozoal, cytotoxic and antidiabetic and anti-inflammatory properties (Cherian and Agusti 1995), also exhibit antimicrobial and antioxidant effects (Al-Shahwany 2014). Some of the characteristics of saponins include permeability to the cell membrane, helpful in cholesterol binding properties; it has cytotoxic effects on malignant tumor cells and are involved in synergistic enhancement of the toxicity of immunotoxins (Thakur *et al.*, 2011). Saponins are reported having the property of precipitating and coagulating red blood cells and also known to produce inhibitory effect on inflammation (Just *et al.*, 1998, Sodipo *et al.*, 2000). Plant steroids are known to be important for their cardiotoxic activities, possession of insecticidal, anti-inflammatory (Akindele and Adenyemi 2007) analgesic properties, central nervous system activities and antimicrobial properties. They are also used in nutrition, herbal medicine and cosmetics (Malairajan *et al.*, 2006). According to the literature, it has been found that flavonoids play an important role such as anti-inflammatory, antibacterial, antiviral, anti-allergic, cytotoxic antitumor properties (Sandhar *et al.*, 2011). The most evident report about quinones is its pharmacological properties that makes it distinctive from other secondary metabolites is that it can inhibit HIV 1 reverse transcriptase and also shows antitumour and immunomodulatory activities (Valderrama *et al.*, 2000), it is also reported antimicrobial, anticancer, antiviral and antibacterial properties (Ignacimuthu *et al.*, 2009). Plant

terpenoids exhibit various important pharmacological activities such as antiviral, inhibition of cholesterol synthesis, anti-bacterial, anti-cancer, anti-inflammatory, and antimalarial activities (Mahato and Sen 1997). Glycosides are also known to lower the blood pressure according to much literature (Nyarko and Addy 1990). Thus, the results investigated in this study suggest that the identified phytochemical compounds may contain bioactive constituents and these selected medicinal plants are providing an increasingly valuable reservoir of bioactive compounds of immense medicinal quality.

**Table 1 - Phytochemical analysis of *Artemesia nilagirica***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Plb	CHO	Qui	ZXthp
Methanol	Khar	-	+	+	+	+	-	+	+	+	-	-	+
	Asangma	+	-	-	+	+	+	+	+	+	+	-	+
	Mangmetong	-	+	-	+	+	-	+	+	+	-	-	-
Chloroform	Khar	-	+	+	+	+	+	+	+	-	+	-	+
	Asangma	-	+	+	+	+	+	+	+	-	+	-	-
	Mangmetong	-	-	+	+	+	+	+	+	-	+	-	+
Dichloromethane	Khar	-	+	+	+	+	+	+	+	+	+	-	-
	Asangma	+	+	+	+	+	+	+	+	+	+	-	-
	Mangmetong	+	+	-	+	+	+	+	+	+	+	-	-
Aqueous	Khar	-	-	-	+	+	-	+	+	+	-	-	+
	Asangma	-	+	-	-	+	+	+	+	+	-	+	-
	Mangmetong	-	-	-	+	+	-	+	+	+	-	+	+
Ethyl Acetate	Khar	+	+	+	+	-	+	+	+	-	-	+	+
	Asangma	-	-	-	+	-	-	+	+	-	-	-	+
	Mangmetong	-	-	-	+	-	+	+	+	-	-	-	+

(+) Indicate the presence of phytochemicals and (-) Indicate the absence of phytochemicals

**Abbreviations-** **Al:** Alkaloids; **Ter:** Terpenoids; **St:** Steroid; **TRPs:** Triterpenoids; **Sap:** Saponins; **Fl:** Flavonoids; **Tan:** Tannins; **Gly:** Glycosides; **Plb:** Phlobatannins; **CHO:** Carbohydrates; **Qui:** Quinone; **Xthp:** Xanthoproteins

**Table 2 - Phytochemical analysis of *Erigeron karvinskianus***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Plb	CHO	Qui	Xthp
Methanol	Khar	-	+	+	+	+	+	+	+	+	+	+	+
	Asangma	+	+	-	+	+	+	+	+	+	-	-	+
	Mangmetong	+	-	+	+	+	+	+	+	+	-	+	-
Chloroform	Khar	-	+	+	+	+	+	+	-	-	+	-	+
	Asangma	-	-	-	-	+	+	+	-	-	-	-	+
	Mangmetong	-	-	-	-	+	+	+	+	-	+	-	+
Dichloromethane	Khar	-	-	-	-	+	+	+	+	+	+	-	+
	Asangma	+	-	-	-	+	+	+	+	-	+	+	+
	Mangmetong	-	-	-	-	+	+	+	+	+	+	-	+
Aqueous	Khar	+	-	-	+	+	+	+	+	+	+	+	+
	Asangma	-	+	+	+	+	+	+	+	+	+	+	+
	Mangmetong	-	+	-	+	+	+	+	+	+	-	+	+
Ethyl Acetate	Khar	-	-	-	-	-	+	+	-	-	-	-	+
	Asangma	-	-	-	-	-	+	+	-	-	-	-	-
	Mangmetong	-	-	-	-	-	+	+	-	-	-	-	-

**Table 3 - Phytochemical analysis of *Ageratina adenophora***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Plb	CHO	Qui	Xthp
Methanol	Khar	-	+	+	-	+	+	+	+	+	+	+	+
	Asangma	+	+	-	-	+	+	+	+	+	-	-	-
	Mangmetong	-	+	+	+	+	-	+	+	+	-	-	-
Chloroform	Khar	-	-	-	+	+	+	+	-	+	+	-	-
	Asangma	-	-	-	+	+	+	+	+	-	+	-	+
	Mangmetong	-	+	+	+	+	+	+	-	+	+	-	+
Dichloromethane	Khar	-	-	-	-	+	+	+	+	-	+	-	-
	Asangma	-	-	-	-	+	+	+	+	-	+	+	+

	Mangmetong	-	+	+	-	+	+	+	+	+	-	+
Aqueous	Khar	-	-	-	+	+	-	+	+	+	-	+
	Asangma	-	+	-	-	+	+	+	+	+	-	-
	Mangmetong	-	-	-	+	+	-	+	+	+	-	+
Ethyl Acetate	Khar	-	-	-	-	-	+	+	+	-	-	+
	Asangma	-	-	-	-	-	+	+	-	-	-	-
	Mangmetong	-	-	-	-	-	+	+	-	-	-	+

**Table 4 - Phytochemical analysis of *Houttuynia cordata***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Plb	CHO	Qui	Xthp
Methanol	Khar	-	+	+	-	+	-	+	+	+	-	+	+
	Asangma	+	+	-	-	+	+	+	+	+	+	-	+
	Mangmetong	-	-	+	+	+	-	+	+	+	-	+	-
Chloroform	Khar	-	-	+	-	+	+	+	+	-	+	-	+
	Asangma	-	+	-	-	+	+	+	+	-	+	-	+
	Mangmetong	-	+	+	-	+	+	+	+	-	+	-	+
Dichloromethane	Khar	+	+	+	-	+	+	+	+	-	+	-	+
	Asangma	+	-	-	-	+	+	+	+	-	+	+	-
	Mangmetong	-	+	+	-	+	+	+	+	+	+	-	-
Aqueous	Khar	-	+	-	-	+	-	+	+	+	-	+	+
	Asangma	-	+	+	+	+	+	+	+	+	-	-	+
	Mangmetong	+	+	-	+	+	-	+	+	+	-	+	+
Ethyl Acetate	Khar	-	-	-	-	-	+	+	+	-	-	-	+
	Asangma	-	-	-	-	-	-	-	-	-	-	-	+
	Mangmetong	-	-	-	-	-	+	+	+	-	-	-	+

**Table 5 - Phytochemical analysis of *Plantago major***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Plb	CHO	Qui	Xthp
Methanol	Khar	-	-	+	-	+	-	+	+	+	-	+	-
	Asangma	+	-	-	-	+	+	+	-	+	+	-	+
	Mangmetong	+	-	-	-	+	+	+	+	+	+	-	+
Chloroform	Khar	-	-	+	-	+	+	+	+	-	+	-	+
	Asangma	-	-	-	-	+	+	+	-	-	+	-	+
	Mangmetong	-	+	-	-	+	+	+		-	+	-	+
Dichloromethane	Khar	+	+	-	-	+	+	+	+	+	+	-	+
	Asangma	+	-	-	-	+	+	+	+	+	+	+	+
	Mangmetong	+	-	-	-	+	+	+	+	+	+	+	+
Aqueous	Khar	+	-	-	-	+	+	+	-	+	-	+	-
	Asangma	-	+	+	+	+	-	+	+	+	-	+	+
	Mangmetong	+	+	-	-	+	+	+	+	+	+	-	+
Ethyl Acetate	Khar	-	-	-	-	-	-	+	-	-	-	-	+
	Asangma	-	-	-	-	-	+	+	-	-	-	-	+
	Mangmetong	-	-	-	-	-	+	+	-	-	-	-	-

**Table 6 - Phytochemical analysis of *Persicaria chinensis***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Plb	CHO	Qui	Xthp
Methanol	Khar	-	-	+	-	+	-	+	-	+	-	-	-
	Asangma	+	-	-	-	+	+	+	+	+	-	-	+
	Mangmetong	+	-	-	-	+	+	+	+	+	-	-	-
Chloroform	Khar	-	-	+	-	+	-	+	-	-	+	-	+
	Asangma	-	-	-	-	+	-	+	-	-	+	-	+
	Mangmetong	-	-	-	-	+	-	+	-	-	+	-	+
Dichloromethane	Khar	+	-	-	-	+	-	+	+	-	+	-	+
	Asangma	-	+	-	-	+	-	+	+	+	+	-	+
	Mangmetong	+	-	-	-	+	-	+	+	-	+	+	+
Aqueous	Khar	-	-	-	-	+	-	+	-	+	-	+	+
	Asangma	+	-	-	-	+	-	+	-	+	-	-	-



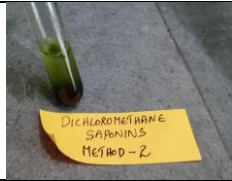

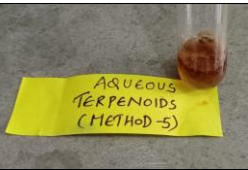
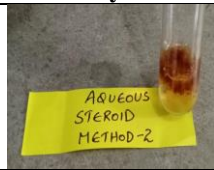
	Mangmetong	+	-	-	-	+	+	+	-	+	-	-	+
Ethyl Acetate	Khar	-	-	-	-	-	-	-	-	-	-	-	+
	Asangma	-	-	-	-	-	-	+	-	-	-	-	-


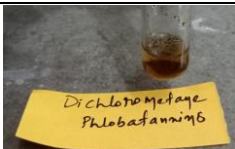

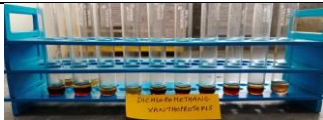

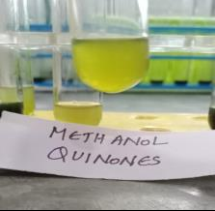

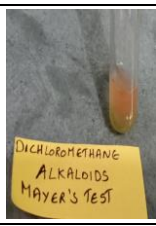
**Table 7 - Phytochemical analysis of *Drymaria cordata***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Pib	CHO	Qui	Xthp
Methanol	Khar	-	+	-	-	+	+	+	+	+	+	+	-
	Asangma	+	+	-	-	+	+	+	+	+	+	+	-
	Mangmetong	+	-	-	-	+	+	+	+	+	-	+	-
Chloroform	Khar	-	+	+	-	+	+	+	-	-	+	-	+
	Asangma	-	-	+	-	+	+	+	-	-	+	-	+
	Mangmetong	-	-	-	-	+	+	+	+	-	-	-	+
Dichloromethane	Khar	+	+	-	-	+	+	+	+	+	+	-	+
	Asangma	-	+	-	-	+	+	+	-	-	+	-	+
	Mangmetong	+	-	-	-	+	+	+	-	-	+	-	+
Aqueous	Khar	-	-	-	-	+	+	+	-	+	+	-	-
	Asangma	+	-	-	-	+	+	+	-	+	+	+	-
	Mangmetong	+	+	+	-	+	+	+	-	+	-	+	-
Ethyl Acetate	Khar	-	-	-	-	-	+	+	-	-	-	-	+
	Asangma	-	-	-	-	-	+	+	-	-	-	-	-
	Mangmetong	-	-	-	-	-	+	+	-	-	+	-	-

**Table 8 - Phytochemical analysis of *Pseudognaphalium luteoalbum***

Solvent	Village	Al	Ter	St	TRPs	Sap	Fl	Tan	Gly	Pib	CHO	Qui	Xthp
Methanol	Khar	-	-	+	-	+	+	+	-	+	-	+	-
	Asangma	+	-	-	-	+	+	+	-	+	-	+	-
	Mangmetong	+	-	-	-	+	+	+	+	+	-	+	-
Chloroform	Khar	-	-	-	-	+	+	+	-	-	+	-	+
	Asangma	-	-	-	-	+	+	+	+	-	-	-	+
	Mangmetong	-	-	-	-	+	+	+	+	-	-	-	+
Dichloromethane	Khar	-	-	-	-	+	+	+	+	-	+	-	-
	Asangma	-	+	-	-	+	+	+	+	-	+	-	+
	Mangmetong	+	+	-	-	+	+	+	+	-	+	-	+
Aqueous	Khar	-	-	-	-	+	+	+	-	+	-	-	-
	Asangma	+	-	-	-	+	+	+	-	+	-	+	-
	Mangmetong	+	+	+	-	+	+	+	-	+	-	+	+
Ethyl Acetate	Khar	-	-	-	-	-	-	+	+	-	-	-	+
	Asangma	-	-	-	-	-	+	+	-	-	-	+	+
	Mangmetong	-	-	-	-	-	+	+	-	-	-	+	+

	
<b>Figure 2 - Plant extract of <i>Artemisia nilagirica</i> showing presence of saponins</b>	<b>Figure 3 - Plant extract of <i>Ageratina adenophora</i> showing presence of carbohydrates</b>
	
<b>Figure 4 - Plant extract of <i>Erigeron karvinskianus</i> showing presence of terpenoid</b>	<b>Figure 5 - Plant extract of <i>Ageratina adenophora</i> showing presence of steroid</b>

	
<p><b>Figure 6 - Plant extract of <i>Erigeron karvinskianus</i> showing presence of tannin</b></p>	<p><b>Figure 7 - Plant extract of <i>Persicaria chinensis</i> showing presence of phlobatannins</b></p>
	
<p><b>Figure 8 - Plant extract of <i>Erigeron karvinskianus</i> showing presence of glycoside</b></p>	<p><b>Figure 9 - Plant extract of <i>Plantago major</i> showing presence of Xanthoproteins</b></p>
	
<p><b>Figure 10 - Plant extract of <i>Pseudognaphalium luteoalbum</i> showing presence Flavonoid</b></p>	<p><b>Figure 11 - Plant extract of <i>Drymaria cordata</i> showing presence of quinones</b></p>
	
<p><b>Figure 12 - Plant extract of <i>Houttuynia cordata</i> showing the presence of triterpenoids</b></p>	<p><b>Figure 13 - Plant extract of <i>Drymaria cordata</i> showing the presence of alkaloids</b></p>

#### 4. CONCLUSION

The results revealed the presence of medicinally important constituents in the plants studied. Many evidence gathered in earlier studies which confirmed the identified phytochemicals to be bioactive. The selected medicinal plants are the source of the secondary metabolites i.e., tannins, saponins, flavonoids, alkaloids, terpenoids, steroids, phlobatannins, quinones, carbohydrates, triterpenoids, xanthoproteins and glycosides. Medicinal plants play a vital role in preventing various diseases. The anti-inflammatory, antianalgesic, antidiabetes, anti-bacterial, anti-malarial, antidiuretic, anti-cancer and antifungal activities of the medicinal plants are due to the presence of the above mentioned secondary metabolites. Out of all the secondary metabolites tannins, flavonoid and saponins are found to be abundant in almost all the plant species studied. Therefore, extracts from these plants could be seen as a good source for useful drugs. So, the accepted available information should be documented in detail for future application and scientific investigation. Therefore, the continued traditional practice of these medicinal plants is encouraged as well as it is suggested that further work should be carried out to isolate, purify, and characterize the active constituents responsible for the activity of these plants.

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## Changes Detection in Land Use/Land Cover Patterns Using Geospatial Technology of Yadgir District, Karnataka, India

**Chandrakala Linganna**

Department of Environmental Science Gulbarga University, Kalaburagi

**Prakash Kariyajjanavar**

Department of Environmental Science Gulbarga University, Kalaburagi

**M. Lingadevaru**

Department of Geology, School of Earth Science Central University of Karnataka, Kadambari

### Abstract

*Land Use/Land Cover (LU/LC) studies are crucial for understanding human interactions with ecosystems and the environment, making it critical to identify changes in order to preserve a sustainable environment and biodiversity. The Objective of the study was to examine LU/LC patterns and the influence of biophysical and socio-economic forces in order to discover changes and their impact on the environment in the Yadgir district of Karnataka, India. Also, the study helps to identify the trend, type, rate, location, and to predict the study area's past and future LU/LC patterns. The data was examined at two different intervals between 2000 and 2020. The study was done using Arc GIS software with the survey of India toposheets, thematic imagery, and satellite pictures. According to the study's findings, the LU/LC has altered dramatically through time, resulting in biodiversity loss. According to statistics, human pressure is quickly lowering forest/vegetation cover. The research area is a swarm of development activity.*

**Keywords:** Land Use, Land Cover, Yadgir District, GIS software.

### 1. INTRODUCTION

The land is the most fundamental natural resource on the earth's surface. It meets nearly all human requirements for food, clothes, habitation, and energy. In addition to meeting the necessities of human wellbeing, activities that contribute to this goal alter the essential land characteristics dependent on its use. Alteration in land use/land cover affects changes in plant patterns in an environment. These changes are mostly the result of population increase, urbanization, habitat destruction, climate change, pollution, and resource exploitation and overuse. It is currently one of the key driving factors of global environmental change, making it a critical aspect in ensuring a region's long-term growth (Ayyanna et al., 2018). It has a wide variety of environmental, ecological, resource usage, water quality, ecosystem functioning, and climatic implications on the earth's surface. The most proper and effective approach to investigate these changes is through remote sensing. It's also a cutting-edge technology that allows for the detection of vegetation changes using geographical data and real-time data with temporal precision. Vegetation indexes, among other remote sensing approaches, have proven to be beneficial in tracking vegetation changes. Land use/land cover assessments are a key aspect in understanding human involvement with ecosystems and the environment, making it critical to identify alterations to preserve an eco-friendly environment and biodiversity (Basavarajappa et al., 2019). The current study was carried out in Karnataka's Yadgir district to better understand how land usage and land cover vary over time. LU/LC and other thematic maps will be created using a GIS platform using multi-dated satellite data. The data was examined at two points in time, 2000 and 2020. The toposheet from the Survey of India (SOI) will be used as the basis map throughout.

#### Study Area

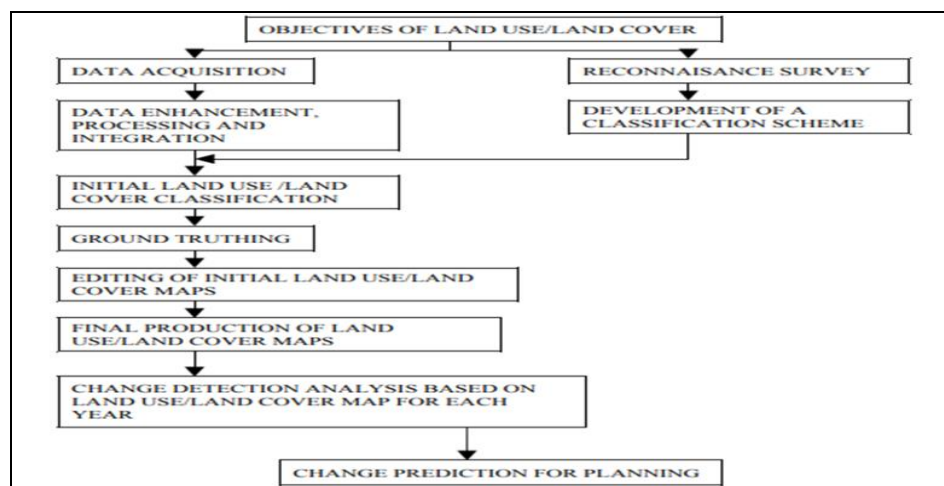
Yadgir District is located in northeastern India, bordered by Kalburgi to the north, Raichur to the south, Vijayapur to the west, and Telangana to the east. It is the state's smallest district, with three taluks: Yadgir, Shahapur, and Shorapur. Yadgir is the district headquarters. Yadgir is located at 16°20' to 17°45' North latitude and 76°4' to 77°42' East Longitude. The area is usually hot, with maximum temperatures of 45°C and minimum temperatures of 22°C (min). The net-sown area of the district is 85.1 per cent of the total cultivable land area of 13,821.94 square kilometers. It is mostly an agricultural area with two agroclimatic zones: the eastern transition and the northeastern dry zone. The district's net sown area is 72.1% of the total cultivable land area of 3239.1 square kilometers.



**Figure 1 - Geographical location of the Study area**

### *Materials and Methodology*

The materials utilized in this study will include LU/LC and other thematic maps created on a GIS platform utilizing multi-dated satellite data. These software applications assist us in the creation of maps and the managing of data. Using these software models, data editing and analysis may be completed in less time. The Survey of India (SOI) toposheet will be utilized as the foundation map throughout this investigation. Meteorological variables would be obtained from the Meteorological Station (Govt. of India) for a decade and documented in all seasonal variations for the research term at bimonthly intervals using the approved standard techniques (World Meteorological Organization, 2002, 2008). The approach used in this study provides the foundation for calculating land-use dynamics statistics and, eventually, the results. The figure below illustrates a flow chart for the procedures utilized to detect land cover changes in the Yadgir district.

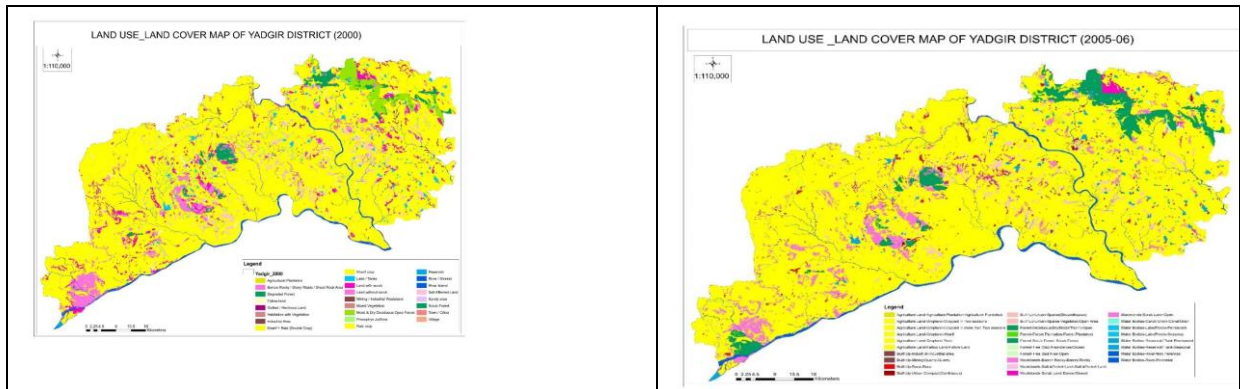


**Figure 2 - Cartographic Model**

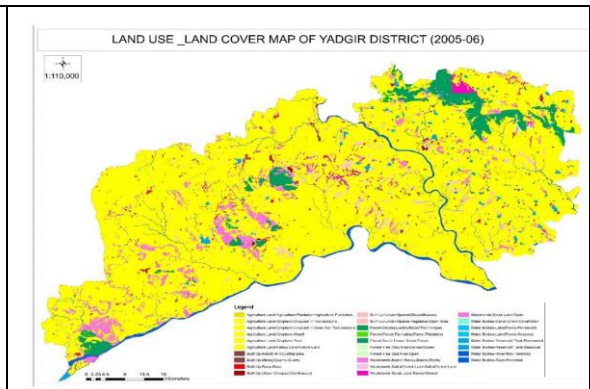
For the study, multi-dated satellite data of Yadgir district were acquired for five Epochs: 2000, 2005, 2011, 2015 and 2020 using the GIS platform. Meteorological variables will be obtained from the Meteorological Station (Govt. of India) for a decade and will be recorded in all seasonal variations for the research term at bimonthly intervals by following the stipulated standard methods (World Meteorological Organization, 2002, 2008).

## **2. RESULT AND DISCUSSION**

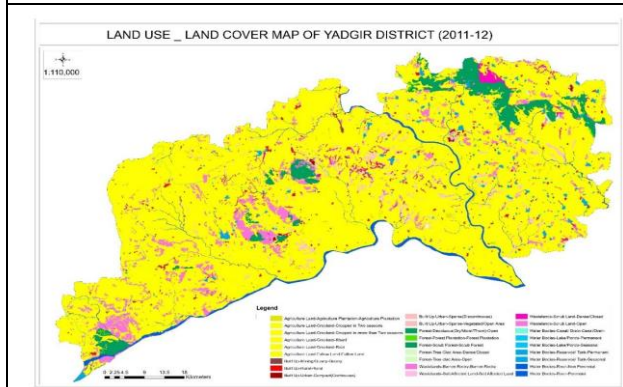
LU/LC mapping of Yadgir district was carried out using satellite data for the years 2000, 2005, 2011, 2015 and 2020. The dominant LU/LC groups observed in this area based on screen digitization of satellite data were agricultural land, wastelands, forest, water bodies, and built-up areas. Tables 1 and 2 show the total area of these groups. The area within each group was computed after preparing the LU/LC maps. As spatial information, satellite data sets from Yadgir district's semi-arid region were employed. LU/LC maps demonstrating the effect of many variables that produced the current landscape were created using digital elevation data and satellite images from various timeframes (from 2000 to 2020).



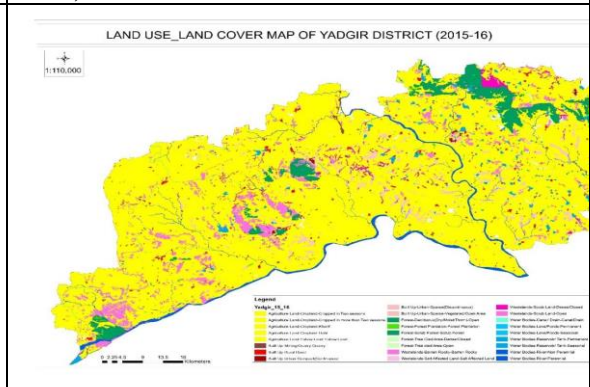
**Figure 3 - LU/LC Map of Yadgir District (2000)**



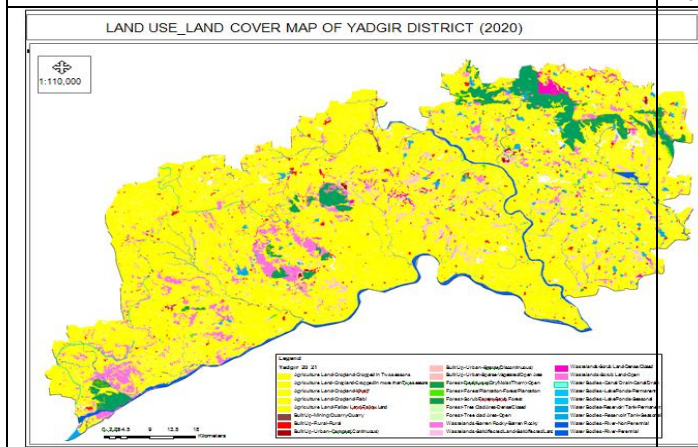
**Figure 4 - LU/LC Map of Yadgir District (2005-2006)**



**Figure 5 - LU/LC Map of Yadgir District (2011-2012)**



**Figure 6 - LU/LC Map of Yadgir District (2015-2016)**



**Figure 7 - LU/LC Map of Yadgir District (2020)**

The Survey of India (SOI) toposheets of 1:110,000 scales, corresponding to the research location are utilised for the geo-referencing of satellite photos and ground truth procurement. Remote sensing and GIS are perfectly effective in research findings of LU/LC & its planning and control. The current LU/LC finding highlights the necessity and usefulness of GIS-based information systems, as well as the capabilities of satellite remote sensing techniques for the creation of more up-to-date and accurate data. At the national, regional, and local levels, LU/LC is an essential factor in determining economic, demographic, and environmental policy. All productive and economic activities are determined by the relationship between man and land. LU/LC mapping of Yadgir district was carried out using satellite data for the years 2000, 2005, 2011, 2015 and 2020. The dominant LU/LC groups observed in this area based on screen digitization of satellite data were agricultural land, wastelands, forest, water bodies, and built-up areas. Tables 1 and 2 show the total area of these groups. The area within each group was computed after preparing the LU/LC maps.

**Table 1 - Change Detection (2000-2005) Year**

SI. NO	Description	2000 Year		2005 Year	
		Area In Ha	Percentage (%)	Area In Ha	Percentage (%)
1	Built-up land	4876.2	0.924323412	5179.0	0.981735762
2	Agricultural land	426901.6	80.92341365	436748.0	82.78989562
3	Forest	19779.4	3.749379197	20763.2	3.935869322
4	Wasteland	59124.4	11.20761794	46059.5	8.731025018
5	Waterbodies	16856.2	3.195265799	18788.1	3.561474283
Total Area		<b>527537.8</b>	100	<b>527537.8</b>	100

In 2005, a considerable rise in land use by subcategories such as built-up industries-ash/cooling pond/ effluent, agricultural land-Fallow Land, Forest Scrub, Water Bodies Reservoir/Tank Permanent, and Water Bodies-River-Perennial occurred in the Yadgir District's Total area utilisation, which subsequently leads to increase in area to 527537.8 Ha.

**Table 2 - Change Detection (2011-2015) Year**

SI. NO	Description	2011 Year		2015 Year	
		Area In Ha	Percentage (%)	Area In Ha	Percentage (%)
1	Built-up land	7878.9	1.493531	8642.4	1.638259
2	Agricultural land	438520.3	83.12585	428769.9	81.27757
3	Forest	22325.7	4.232065	21332.0	4.043694
4	Wasteland	40263.8	7.63241	50171.5	9.510512
5	Waterbodies	18549.0	3.516142	18621.9	3.529968
Total Area		<b>527537.8</b>	100	<b>527537.8</b>	100

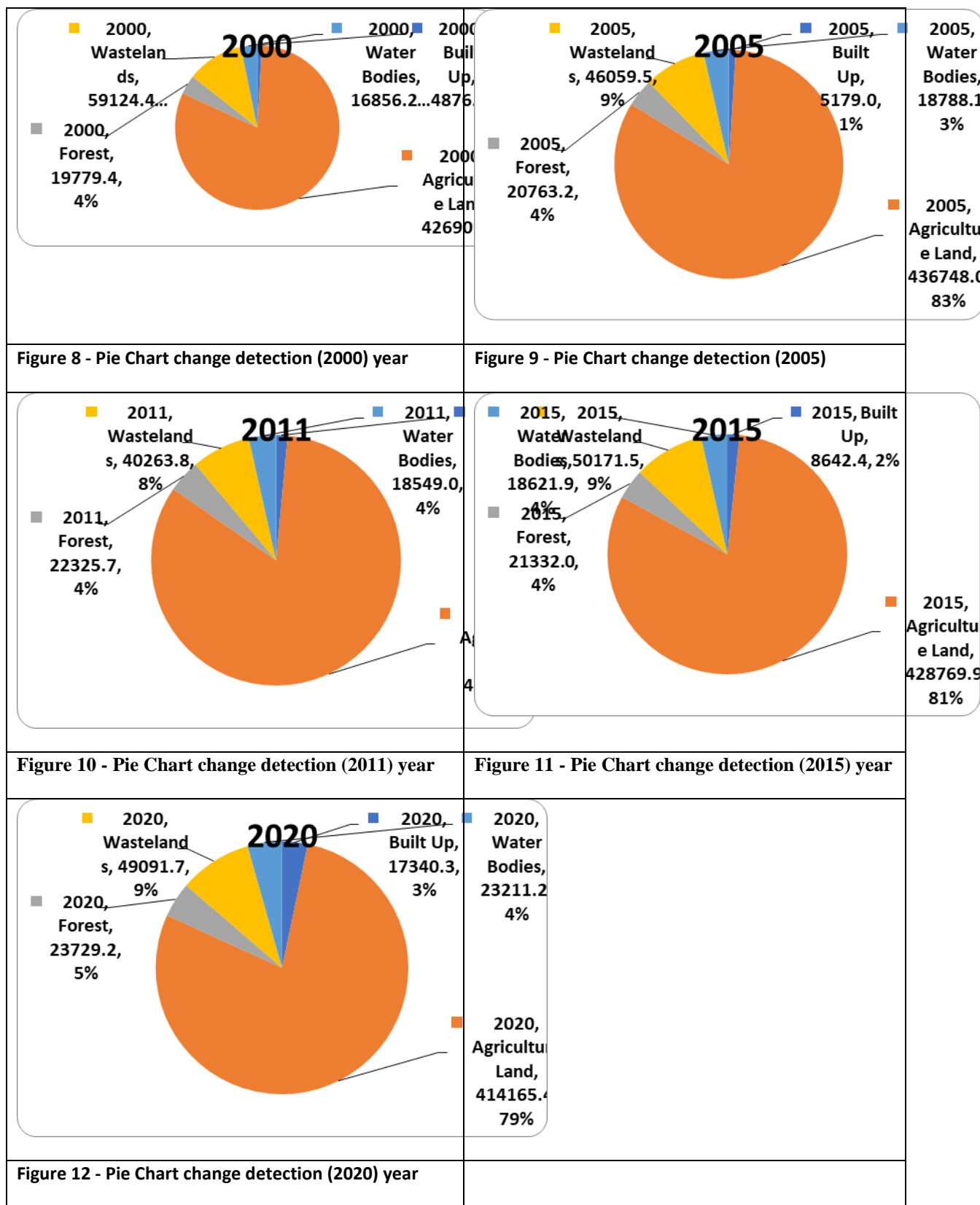
**Table 3 - Change Detection (2020) Year**

SI. NO	Description	2020 Year	
		Area In Ha	Percentage (%)
1	Built-up land	17340.3	3.287027
2	Agricultural land	414165.4	78.50915
3	Forest	23729.2	4.498095
4	Wasteland	49091.7	9.305808
5	Waterbodies	23211.2	4.399915
Total Area		<b>527537.8</b>	100

The analysis was done across two time periods, 2000 and 2020, to better understand how land use and land cover changed as a result of several characteristics. According to the findings, agricultural land was 80.92 per cent in the 2000s and climbed to 78.50 per cent in 2020. Wasteland, on the other hand, fell by 4.6 per cent from 11.2 per cent in 2000 to 9.3 per cent in 2020. Aside from many social and economic factors, another possible cause is that farmers are abandoning their farmlands rather than cultivating them on a regular basis. The area under built-up lands increased from 0.92 per cent in the 2000s to 3.28 per cent in 2020. The vegetation parameter/forest area occupied 3.7 per cent of the total area in 2000 but has now climbed to 4.4 per cent of total land area in 2020, resulting in a gain of 0.7 per cent of total vegetation cover. The vegetation in semi-arid zones is sparse, with fewer species.

In a dryland environment, water bodies serve a critical role in improving local people's livelihoods; yet, due to climatic factors, the tanks are drying out, affecting aquatic biodiversity. A high number of water bodies were detected in the research area, both visually and with satellite imagery. From 2000 (3.19 per cent) to 2020, satellite data revealed little change in the area beneath water bodies (4.39 per cent). As spatial information, satellite data sets from Yadgir district's semi-arid region were employed. LULC maps demonstrating the effect of many variables that produced the current landscape were created using digital elevation data and satellite images from various timeframes (from 2000 to 2020). Agriculture occupies 83.2% of the overall studied area, indicating that agriculture occupies a significant amount of the land. Wasteland also has scant vegetation, with a few numbers of tree species that develop slowly.





### 3. CONCLUSION

The current study found that the LU/LC has altered dramatically over time, resulting in biodiversity loss. According to the findings, human pressure is quickly lowering forest cover/vegetation cover. The study region is

a hotbed of development activity. This is especially true now that Yadgir is a separate district. Furthermore, water sources are dwindling owing to a variety of circumstances. Climate change has resulted in a massive rise of fallow land. High population increase, rising temperatures, decreased rainfall, and resource overuses are the key risks driving changes in land use patterns in the study region.

#### 4. SUGGESTIONS

The report advises that essential actions be taken to conserve the vegetative cover. For environmental development, it is also necessary to protect biodiversity. However, in order for the environment to be sustainable in the future, these changes must be continuously monitored.

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## Micro Teaching: Nurturing Genius Through Tangible Real Experiences and Reflections

Rajkumar Nanaware

Assistant Professor. Dept. of PG Studies in Education and Research, R V Teachers College (IASE), Bangalore

### Abstract

*Using a series of small activities referred to as "teaching skills," microteaching is a popular teacher training technique utilized across the globe. A proven remedy for novice and veteran teachers is that it helps foster on-the-job training. Microteaching's core features, such as presentation and reinforcement, assist inexperienced teachers in swiftly and thoroughly mastering the teaching skill. This method applies to various subjects, including health sciences and other fields. Participants in the Micro teaching (n = 140) were asked about their views and reflections on their experiences as pre-service teacher education trainees. In this study, microteaching is referred to as an Efficient Teaching Technique. Change in behaviour brought about by action, education, or experience is the definition of learning at any age. When a person gains more experience, learning becomes more efficient. The ability of participants in microteaching sessions to give and receive constructive criticism while keeping an open mind is an essential trait they possess, as is their ability to attain practical teaching and learning objectives. Creating a warm and friendly atmosphere helps teachers feel more confident in their abilities. It was shown that pre-service teachers benefited from microteaching, although the experience was challenging. The most widely-recognized flaw in the training of student teachers was their inability to adapt to the realities of the classroom. According to the findings, microteaching should be supplemented with various educational experiences and practices.*

**Keywords:** *Micro Teaching, Teacher Training Technique, Teaching Skills, Teaching Competencies, Feedback.*

### 1. INTRODUCTION

Human resource excellence is critical to any nation's economic growth and prosperity, and the development of human resources refers to the professional skills they hold (Bakir, S., 2014). As a result, having a pool of highly qualified teachers to transmit these skills to aspiring teachers is essential. It is also critical that the teachers imparting these competencies can fulfil their tasks efficiently with the acquired necessary competencies. A teacher's effectiveness is measured by how well their students understand what is being taught. Only more structured and less expensive methods of faculty development can supply teaching pedagogic skills (Folly, 1974). The dearth of scientifically validated or successful practices to follow in teacher training programmes was overcome roughly five decades ago with the advent of microteaching (Elliot, 1982). Micro-teaching, which employs a "scaled-down teaching technique," enables novice or ab-initio teachers to learn the art of teaching by practicing specific skills through a "scaled-down teaching approach." (Allan & Wang W., 1969).

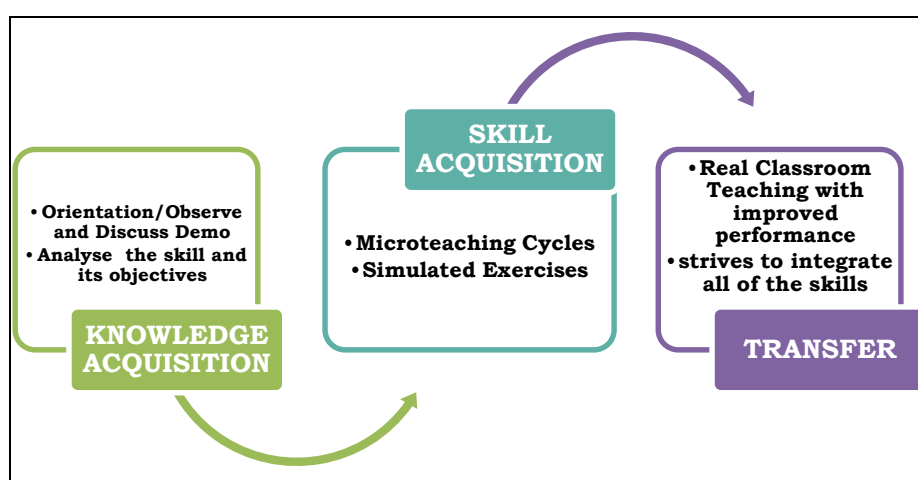
### 2. THE CONCEPT

Microteaching started at Stanford in the 1960s and is now used in teacher training programmes (Cruickshank et al., 1996, p. 105). Evoked by the landslide success of Sanford's experience in the 1960s, microteaching's prevalence in teacher education is widely spread (Clifford & Edwards, 1975), becoming a key component of many teachers' preparation programmes until the 1990s, when its presence waned (Grossman, 2005). According to Passi, BK, and Lalitha, MS (1976), microteaching is a training approach that challenges student teachers to teach a particular concept to a limited number of students in a short period utilizing a specific teaching skill. According to Flanders, Ned. A. (1970), the Microteaching programme is organized to exhibit the trainees to an organized curriculum of miniature teaching episodes, moving from the easier to the more complex. It is a systematic, scaled-down simulation of teaching in which a student teacher teaches a small group of peers (Table, 2015). The complexity of a regular teaching encounter is reduced, allowing teachers to focus on specific teaching actions and practice in a controlled setting. In order to prepare novice teachers to teach, the teacher preparation curriculum stresses various levels of what Cruickshank (quoted in Brent, Wheatley, and Thomson, 1996) called "real tangible experiences." It has proved to boost educational tactics (Ismail, 2011). Teacher educators must enhance theory-to-practice Integration by preparing pre-service teachers to teach effectively and reflect on their teaching activities.

*The Conceptual Framework***Figure 1 - The conceptual framework***Phases of Micro-teaching*

Prof. BK Passi, the Indian pioneer of microteaching, and Clift (1976) identified the three phases of microteaching: knowledge acquisition, skill acquisition, and skill transfer. They also outline the ten most essential phases in a microteaching session.

- i. "Pre-active phase" (knowledge acquisition phase).
- ii. "Interactive phase" (skill acquisition phase).
- iii. "Post-active phase" (Transfer phase)

**Figure 2 - Micro Teaching Phases***Pre-Active phase: The Knowledge acquisition phase*

This orientation phase is preliminary, in which the ab-initio teacher is instructed about the skills and structural components of teaching through lectures, discussions, illustrating with examples, and demonstration of the skills by experts. The trainee teacher gains a theoretical and practical grasp of the competence and emphasizes the comprehension of the teaching skill to be learned by the teacher trainee. The steps are as follows:

- i. Discussion of teaching skills with their components and teaching behaviour.
- ii. Presentation of modern demonstration lesson by the teacher educator.
- iii. Observation of the model lesson and criticism by the teacher trainee.

*Interactive phase: The Skill acquisition phase.*

In this interactive or skill acquisition phase, the teacher outlines a plan of micro-lesson for practicing the demonstrated skills. Colleagues and peers can be constructive evaluators, enabling them to modify their teaching-learning practices (Benton-Kupper J., 2001). The trainee teacher plans a micro-lesson for practising the demonstrated skills, implements the microteaching cycle, and evaluates the practised skill (Feedback). Re-plans, re-teaches, and re-feedbacks until the desired level is attained.

- i. "Feedback".
- ii. "Re-planning".
- iii. "Re-teaching". Repetition of the micro-teaching cycle. Skill is achieved in this way. The main goal of the phase is to enable the teacher trainee to practice the teaching skill following the micro-teaching cycle. The steps are:

- i. Preparation of micro-lesson plan for the related teaching skill.
- ii. Creating microteaching settings.
- iii. The practice of teaching skills.

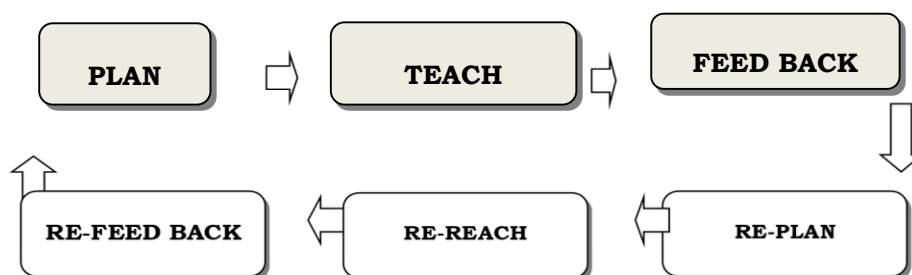
The teacher can reinforce necessary actions and skills while deferring undesirable ones. Finally, they will be able to combine and adapt their newly acquired skills and abilities from simulated teaching setting to actual classroom instruction (Passi BK., 1976).

*Post-active phase: Also called the Transfer phase*

This phase allows teacher trainees to use their teaching skills in a real classroom. Integration of teaching skills is the selection, arrangement, and use of diverse teaching skills to produce an effective pattern for achieving instructional objectives in a teaching-learning context (Nirmala, n.d.). After comprehending its principles and components, the participant should develop a micro-lesson for each core teaching skill and then sequentially execute one skill in each microteaching session. Weekly or monthly setups can be done with minimum departmental facilities (Mathew, 2018). Adequate and suitable constructive criticism encourages re-teaching and re-implementing skills. Feedback data may be utilized, and all basic teaching abilities can be integrated into a macro lesson and, eventually, classroom teaching or medical education programmes (Brent et al., 1996). The whole faculty trains and evaluates, and this increases teacher evaluation. The competent capacity to analyze and deliver constructive comments rises with the number of sessions (Higgins & Nicholl, 2003). In this phase, the trainee teacher implements newly gained abilities in the classroom.

*The Micro-Teaching Cycle*

The six phases involved in the micro-teaching cycle are depicted below diagrammatically. The variations are possible depending on the objectives of the practice session.



**Figure 3 - Micro Teaching Cycle.**

*Core Skills*

Critical thinking skills are the core part of a microteaching activity. (Isa & Jusoff, 2011). Along with that, constructive feedback from colleagues also plays a critical role in improving general teaching competence (Chawla & Thukral, 2011). The core techniques involved with microteaching are based on the certitude that teaching can be analyzed and estimated using various simple teaching tasks/skills, which are a set of behaviour or acts of the teacher that facilitates learning (directly or indirectly). During the origin of microteaching, almost 20 teaching skills have been identified. Nevertheless, it has now increased to 37 or even more. Listed below are some essential teaching skills (Applebee, 1976).

- “Skill of Introduction”.
- “Skill of Probing Question”.
- “Skill of Explanation”.
- “Skill of Illustrating with Examples”.
- “Skill of Stimulus Variation”.
- “Skill of using Black Board” and
- “Skill of Integration”.

## 2. OBJECTIVE

The present endeavor aims to investigate the influence of microteaching on pre-service teachers' teaching abilities and reflections on microteaching's positive and negative consequences.

### 3. RESEARCH QUESTIONS

- i. Does microteaching have a significant effect on pre-service teachers' teaching skills?
- ii. How does microteaching affect teaching skills?
- iii. What are the pre-service teachers' perspectives on the beneficial aspects of microteaching?
- iv. What are the pre-service teachers' perceptions of the detrimental impacts of microteaching?

### 4. MATERIALS AND METHODS

*Research Instrument:* This survey aims to determine how student teachers perceive and reflect on microteaching applications. The data was collected using a researcher-devised and standardized Questionnaire ( $\alpha=0.89$ ). Initially, the scale was devised with 32 items. Following the content validity, expert's opinion and total Item Statistics, six items were removed from the scale leaving 26 with nine constructs to be examined. Some of the scale's items were phrased positively, while others had their meanings inverted from the overall direction of the positive ones. Individual replies to positive items were given numbers ranging from 5 to 1, indicating how strongly they agreed or disagreed. From strongly agree to disagree strongly, the reversing ones were given numbers 1-5. In the study, the scale's results are presented in three sections.

*Data Collection:* This research aimed to determine how potential teachers felt about micro teaching as a teaching approach at RV Teachers College (IASE) Bangalore, with particular emphasis on their General Preparedness and Teaching Competencies, Ability to observe learners, Motivation, and Sense of Efficacy as prospective teachers. We requested prospective teachers to respond to a self-designed and standardized questionnaire that covered all essential teaching skills and ideal behaviours. We analyzed the findings' ramifications and compared them to another research. Twelve Micro-teaching groups consisting of 10-12 students' appx. In each selected for this study, a total of 141 students took part. These groups were further divided into teams of 05-06 as students and teachers. Veteran teachers well executed theoretical aspects and demonstrations. After the first presentation of lessons in a micro-teaching session, to assess this perception, participants were asked to record their opinions, reflections and feelings on various components of microteaching. The quantitative methods were used to document student teachers' perceptions and reflections on micro-teaching. The components and the number of questions were as follows.

*The Scale:* A Self Developed Standardised Questionnaire having nine components, consisting of a five-point Likert Scale was used to record their responses

Sl. No	Component	Question Numbers
01	General Preparedness and Teaching Competencies	1,2,3,4,5,23,26
02	Skill of Introduction	6,7,8,9,
03	The skill of Probing Question	10,
04	Skill of Explanation	11,12,13
05	The skill of Illustrating with Examples	14,15
06	The skill of Stimulus Variation	16,17
07	Skill of Integration	18,19
08	Attitude And Personal Feeling	20,21,22,24
09	Time Management	25

*Demographics and Reliability Statistics of the Scale:* Using SPSS Ver 26.0, the desired statistical analysis was carried out, which is as follows:

		N=141	Mean	SD
<b>Descriptive</b>	Age	Range (16-46)	24.73	3.74
	Stream	Arts-50 Commerce-16 Science-75	2.1773	0.92
	Locale	Urban-95 Rural-46	1.3262	0.47
	Gender	Male-28 Female-113	1.80	0.40

<b>Reliability statistics of the Scale: all variables</b>	Cronbach's alpha- 0.89, No. of items-26, Participants - 141
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The researcher focused on the effect of the scaled-down approach on student teachers' components –general readiness and teaching, skills and competence, attitude and personal feelings, and time management as future teachers.

**Table 1 - Item-Total Statistics**

Item No	Scale Mean if Item Deleted	Scale Varianceif Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if ItemDeleted
Q1	111.62	120.86	.70	.89
Q2	111.65	119.61	.68	.88
Q3	111.71	118.59	.68	.88
Q4	111.68	120.24	.68	.89
Q5	111.70	120.95	.69	.89
Q6	111.62	121.05	.69	.89
Q7	111.63	119.99	.74	.88
Q8	111.68	120.38	.71	.88
Q9	111.70	122.13	.56	.89
Q10	111.64	122.15	.61	.89
Q12	111.65	126.34	.26	.89
Q14	111.54	121.27	.74	.89
Q11	111.73	120.57	.71	.88
Q13	111.73	124.12	.42	.89
Q15	111.61	121.17	.71	.89
Q16	111.59	123.85	.60	.89
Q17	111.61	123.13	.65	.89
Q18	111.62	120.44	.78	.88
Q19	111.65	121.40	.72	.89
Q20	112.39	118.22	.34	.90
Q21	112.52	117.53	.40	.89
Q22	112.52	118.38	.34	.90
Q23	111.91	120.47	.54	.89
Q24	114.05	129.66	-.03	.91
Q25	111.73	120.42	.65	.89
Q26	112.10	122.27	.26	.90

*The Findings:* To assess this perception, participants were asked to record their opinions, reflections, and feelings on various components of microteaching. The quantitative methods were used to document student teachers' perceptions and reflections on micro-teaching. The findings were as follows.

**Table 2 - General Preparedness and Teaching Competencies (Component-01).**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
01	Microteaching helped me to acquire the professional skills required for macro teaching.	0.7	0	2.9	15.8	80.6
02	It encouraged me a lot to develop confidence in my teaching.	1.4	0.7	2.1	16.3	79.4
03	It helped me to develop my strengths and identify my weaknesses	1.4	0.7	6.4	14.3	77.1
04	It helped me to develop essential teaching skills.	0.7	0	5.8	17.3	76.3
05	It allowed me to learn by observing others.	0.0	0.7	4.3	22.9	72.1
23	I learned to give constructive feedback.	2.2	0	9.4	29	59.4
26	Micro Teaching is a teacher training technique and not a teaching technique.	8	2.9	8.7	18.8	61.6

**Table 3 - Skill of Introduction (Component 02)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
06	It allowed me to link previous knowledge to new knowledge	0.7	0.7	2.1	17.9	78.6
07	The skill of introducing a lesson helped me to begin my lesson effectively.	0	0.7	5	14.3	80
08	It helped to make use of appropriate devices while introducing a lesson	0.7	0	3.6	22.1	73.6
09	The questioning skill helped me to seek further information and elicit more correct responses.	0	1.4	4.3	21.4	72.9

**Table 4 - Skill of Probing Question (Component 03)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
10	I learned to probe the questions to check pupil understanding.	0.7	0	2.1	21.4	75.7

**Table 5 - Skill of Explanation (Component 04)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
11	I learned to use explaining links effectively.	0	0.7	5.0	26.2	68.1
12	The skill of explanation helped me logically organize my thoughts.	0	0.7	4.3	19.3	75.7
13	The skill of explanation helps sequentially present the subject matter.	0.7	0	4.3	22	73

**Table 6 - Skill of Illustrating with Examples (Component 05)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
14	The skill of Illustrating with examples helped me to give simple, exciting and relevant examples	0.7	0	2.9	12.1	84.3
15	Illustrating with examples helped me to teach abstract ideas and concepts using the inductor-deductive approach.	0	1.4	2.9	16.4	79.3

**Table 7 - Skill of Stimulus Variation (Component 06)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
16	Components of stimulus variation help to deliver content effectively.	0	0	2.9	19.3	77.9
17	The stimulus variation contributed to the pleasant experience and positive reinforcement.	0	0	2.9	22.1	75

**Table 8 - Skill of Integration (Component 07)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18	The integrated lesson was a stepping stone for the macro lesson	0	0	2.1	20.7	76.4
19	It helped me to plan skills in isolation and use them in the Integration	0	1.4	0.7	24.5	73.4



**Table 9 - Attitude and Personal Feeling (Component 08)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
20	It made me feel embarrassed in front of my peer group	10.1	10.1	10.1	15.8	54
21	The feed Back provided by student teachers was inadequate	10.1	7.9	15.8	25.2	41
22	Re-planning and Re Teach sessions are not required.	10.8	9.4	12.2	20.9	46.8
24	Feedback provided by the supervisor was harsh and discouraging.	50	15.2	8	10.1	16.7

**Table 10 - Time Management (Component 09)**

S.No	Description of item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
25	I learned to organize my time.	0	0	5.1	22.6	71.5

## 5. RESULTS AND DISCUSSION

### *Component 01: General Preparedness and Teaching Competencies:*

Lesson planning entails creating a logically-ordered micro-lesson. The material should be succinct, relevant, and fit the timeframe. General Preparedness and Teaching Competencies entail explaining things clearly and correctly. Teacher excitement, a beginning statement or theme phrase, good explanation, deliberate repetition, and finishing remarks or critical messages with an explanatory summary. Nearly 80% of student teachers believed that lesson planning helped them exhibit comprehension and depth of the topic and express it to students while gaining the professional skills necessary for macro teaching. Nearly 79% said that it helped them acquire teaching confidence. 77.1% say it helped them build skills and recognize weaknesses. 76.3 per cent said it helped build teaching abilities and maintain topic knowledge. Lesson study also helped them design standards-based lessons or units and provide constructive feedback (59.4%); 61.6% agreed that Micro Teaching is a teacher training technique rather than a teaching technique and that it demonstrates high-quality teaching and learning content through a scaled-down approach and correctly applies a vast repertoire of instructional practices/strategies.

### *Component 02: The Skill of Introduction:*

Table 02 shows lesson-introduction skills. It involves developing rapport with pupils, increasing their attention, introducing crucial ideas, and relating their past knowledge to the issue. 78% thought it helped them connect current knowledge with new information. 80% said they could start class appropriately because of our lesson introductions. Using adequate tools to explain a topic benefited 73%. 73% gained more knowledge and more accurate answers by asking questions.

### *Component 03: The Skill of Probing Question:*

The probing skill is depicted in Table 03; allowing and encouraging fellow trainees to ask structured inquiries and explain misconceptions is critical. This talent requires tremendous redirection, refocusing, and increased critical awareness. Students can use probing questions to think deeply about many aspects of a topic, helping them comprehend the subject. Allowing and encouraging other trainee teachers to ask structured questions and clear up misconceptions is vital. This ability necessitates refocusing, redirection, and increased critical awareness. Seventy-five per cent strongly agreed that they learned to probe the questions to ensure that the students understood them.

### *Component 04: The Skill of Explanation*

Effective teaching strategies include teacher enthusiasm, explanation, storytelling, explanations and examples, careful repetition, and stimulating group debate. The trainee instructor should provide straightforward, relevant, and exciting examples to help youngsters learn. 67% agreed they knew how to utilize explanation links. 75.7% said explaining helped them organize their thoughts logically. Explaining skills help organize topic content. 73% agree.

*Component 05: The Skill of Illustrating with Examples*

To boost learners' understanding, the teacher trainee should be able to correctly explain the idea using simple, relevant, and fascinating examples. Because of the ability to demonstrate using examples, 84 per cent of teacher trainees believed that they were able to offer simple, intriguing, and relevant examples. It was discovered that providing examples assisted 79 per cent of students in learning abstract ideas and concepts using the inductor-deductive technique.

*Component 06: The Skill of Stimulus Variation:*

A competent teacher must hold pupils' attention. Gestures (hand, face, body) Change in speech pattern Voice variation and modulation (pitch, volume, speed) Change in interaction pattern Focusing Pausing movement, Emphasis on crucial points. This skill increases student engagement in instructional development. This skill requires favourable verbal and nonverbal signals. A competent teacher must keep students' attention. Gestures, voice patterns, and interaction styles are effective components. Reinforcement includes recognizing students' difficulties, listening, and encouraging participation and responding. This talent relies on verbal and nonverbal clues. Stimulus variety helps convey material, said 79%. 75% believed stimulus variation led to positive reinforcement and pleasure.

*Component 07: The Skill of Integration:*

The integrated lesson served as a springboard for the macro lesson to 76%. It aided 73% in planning abilities in isolation and putting them into practice in Integration.

*Component 08: Attitude and Personal Feeling:*

It made 54% feel humiliated in front of their peers. The feedback provided by student teachers was insufficient, and 41% agreed. There is no need for re-planning or re-teaching sessions, says 46%. The supervisor's feedback was harsh and discouraging, and only 16% agreed to it.

*Component 09: The Time Management:*

Providing proper instructions, restricting inappropriate behaviour, and calling the learners by name are essentials of this skill. 71% learnt to manage their time effectively during their micro-teaching sessions.

*Impact of Microteaching*

The participants were eager to talk about their microteaching expectations and anticipations and to comment on how helpful the experience had been and how much they had learnt.

*Efficient technique and effective teaching:*

Microteaching can be practiced with a tiny piece lesson or a single concept and a smaller number of students. It scales down the complexities of fundamental teaching, as immediate feedback can be obtained after each practice session. (Bell & Mladenovic, 2007) Modern-day multimedia equipment, such as audio-video recording devices, has a crucial role in learning (MacLeod & McIntyre, 1977). Observing a fellow teacher and using trial-and-error in own teaching sessions are prevalent ways of self-training. Nevertheless, both of them have their demerits. On the other hand, microteaching helps eliminate errors and builds more vital teaching skills for beginners and senior teachers (Roush, 2008). Microteaching increases self-confidence, improves in-class teaching performances and develops classroom management skills (Hasan et al., 2015). Microteaching, a highly personalized training technique to create competent teachers, is a relatively new concept in teacher education. Microteaching is similar to traditional teaching but focuses on improving teaching abilities (Reddy, 2019). Microteaching gets its name because it allows trainee instructors to put themselves "under the microscope" in front of a small group of people, allowing them to see all of their teaching flaws and receive constructive feedback, as well as monitor and remark on the performance of others. The trainee teacher is involved in a scaled-down teaching environment in microteaching (Singh & Sharma, 1987).

### *Merits and demerits*

Microteaching play a vital role in teacher education training programmes, contributing significantly to a better knowledge of the teaching process and its intricacies. According to a case study on microteaching that included aspects of Japanese lesson study with microteaching technique, the pre-and post-lesson plans successfully increased teachers' understanding of teaching (Fernández, 2010). Microteaching not only assists in developing novice teachers' abilities but also compares the efficacy of one microteaching variation with another (Popovich & Katz, 2009). Microteaching has the potential to improve problem-solving, critical thinking, questioning, and reflective thinking abilities. It enhances learning through actual applications (Singh, 2011). Other significant advantages of this approach included the following: the transformation of complex concepts into learnable chunks, the use of advanced organizers, the Integration of the lecture with topic-specific applications, and the use of appropriate questions and pauses.

In teacher education and medical and health sciences, the microteaching idea has proven to be more effective in modern teaching than traditional teaching strategies (Make, 1980). Jonatha Vare (1993) demonstrated the behaviourist phenomena of microteaching via a Neo-Vygotskian theoretical lens, using a case study of two groups of potential teachers being trained by a professor and clinical teacher. With developments in social learning theory and metacognitive learning methodologies, the new microteaching model conceptualizes the teacher education programme. Proper practice is crucial for teacher education programmes since it allows trainees to obtain their first teaching experience while developing knowledge, abilities, and attitudes (Griffiths, 1976).

However, time remains a significant barrier to microteaching sessions in medical education training programmes. As a result, only some skills nor all trainees are given a chance to re-plan and re-teach activities. Unless the instructor gains the skill of successful student teaching, the training is ineffective (Mehta & Muthu Krishnan, 2019). The following are some of the consequential drawbacks of microteaching: When the class size is enormous, more attention must be paid to content, skill reliance, and administrative/logistic issues. This can be reduced by carrying out the tasks sequentially at the departmental level. When instructors are well-equipped with essential competencies, extensive training programmes are available. These programmes may then be used to learn new skills efficiently and strengthen and elaborate on current ones. As a result, instructors must have a deeper awareness of the complexity of the teaching process.

## **6. CONCLUSION**

The study's conclusion is based on information gathered from student teachers in the second semester of their micro-teaching cycle. Microteaching is an effective learning strategy for successful teaching. This paper goes into great detail on microteaching. This excellent teaching strategy works as a focused instrument that helps to practise essential teaching skills safely and effectively at any age. Participants must provide and accept constructive feedback with an open mind and attain suitable teaching-learning objectives. In a courteous and equanimous setting, the teacher's self-confidence is boosted. Microteaching is unquestionably a practical instructional training approach that should be introduced to teachers' pedagogical arsenal to assist their proteges in acquiring and developing their unique professional/occupational knowledge, skills, and attitudes. Microteaching, according to the survey respondents, is a straightforward method to shift from teaching your acquaintances to learning, giving you a stepping stone rather than accidentally being pushed into a classroom. For several reasons, microteaching is underestimated and underutilized in India, but using more cost-effective, more straightforward methods of microteaching will help the country produce better teachers.

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## Rethinking Tourism: Inclusive Growth of Rural Areas

Chandan V.

Assistant Professor of Tourism Studies, Government Ramnarayan Chellaram College of Commerce and Management, Bengaluru

### Abstract

*The stagnation of development, unemployment, poverty, and environmental deterioration are the major problems in the rural areas of India. India's poverty issues are centered in rural areas. Inclusive growth is the only way to uplift rural areas. The key to interpreting and quantifying such growth is Rural Tourism. However, the attention devoted to the inclusive growth of rural areas in India is still lacking. Because of its connections to numerous economic activities and the resulting myriad of business options, Rural Tourism has the potential to balance local economic growth and socio-cultural change. These chances help to provide income and jobs. Rural areas face continued urban migration which is changing the demography. Rural young generation is most vulnerable due to the lack of employment opportunities and entrepreneurial opportunities in rural areas and related rural economic activities. Only a comprehensive, inclusive planning strategy built on a multi-action, multi-stakeholder participatory approach will ensure the sustainability of Tourism in rural areas. With a multiplier effect on other industries that support rural development, Tourism has demonstrated to be a powerful employment generator and a tool for economic diversification. The objective of this paper is to create an indicator system that measures the inclusive growth of rural areas through Rural Tourism based on the 17 Sustainable Development Goals adopted by the United Nations and Rethinking Tourism under four aspects, namely, local economic growth, socio-cultural equity, environmental sustainability, and infrastructure.*

**Keywords:** *Rethinking Tourism, Inclusive Growth, Socio-cultural Change, Sustainability, Economic Diversification*

### 1. INTRODUCTION

Tourism is bouncing back and growing like never before after Covid-19 pandemic. The theme of World Tourism Day-2022 is '**Rethinking Tourism**' which rightly suits the current situation where all the stakeholders of the Tourism Industry need to innovate Tourism business with the aim of inclusive growth of rural areas. The term "inclusive growth" describes economic expansion that provides equal opportunity to all members of society. Rural Tourism is associated with local landscapes, knowledge systems, biological and cultural diversity, local values, and activities (agriculture, forestry, livestock and/or fisheries), including their gastronomy. India is land of villages. The very backbone of the Indian economy depends on agriculture. Agri-Culture-Tourism makes a great combination for the tourists who come from urban areas to experience Rural Tourism. The unique experiences of Indian villages and closely related niche areas of Tourism such as Eco-tourism, Farm Tourism, Adventure Tourism and Community-based Tourism provides a great opportunity to promote sustainable and responsible Tourism.

### 2. LITERATURE REVIEW

1. "Rethinking Educational Tourism: Proposing a New Model and Future Directions" Christine A. McGladdery & Berendien A. Lubbe, Department of Tourism Management, University of Pretoria, Pretoria, South Africa

This article makes the case that there is a lack of agreement on the characteristics and market niche of educational tourism. An alternative process-driven and outcomes-based conceptual model of educational tourism is presented in this study. It suggests a typology to aid in the hybridization of the phenomenon with other industries and identifies opportunities for future research in educational institutions and foreign travel for learning. Finally, it addresses how incorporating global learning into tourist activities can help promote peace through educational tourism. The authors consider Ritchie's (2003) segmentation model of educational tourism as the international standard on the subject. To avoid excluding sectors of the industry in which learning may be a significant activity, Pitman et al (2010) propose a process approach for defining educational tourism. Richards (2011) moves the concept further by suggesting that educational tourism be conceived as a transformative experience, while Stoner et al (2014) recommend that global citizenship be considered a learning outcome of educational travel. This study argues for a reassessment of what defines educational tourism and provides a conceptual process-driven and outcomes-based model of educational tourism by combining research in the disciplines of educational tourism, international education, experiential learning, and global learning.

2. “Rethinking Tourism as a Pathway for Development” Angela Lusigi UNDP Resident Representative in Ghana.

This article talks about building resilience in the tourism sector with specific reference to African countries. The idea is to build forward better and recover faster from the Covid 19 crisis. The emphasis is on repositioning tourism in society to fully realise its potential for fostering inclusive growth and long-term development. The article discusses the fact that only a few African countries are at the forefront of sharing their culture, heritage, wildlife, environment, and natural resources through tourism. Many people still associate tourism with foreigners travelling to far-off exotic locations to amuse themselves. Local communities, keepers of natural resources and cultural heritage, have not benefited from this type of tourism. These towns lack the resources necessary to participate in the tourism sector as employers or suppliers. The focus should be on the domestic and regional tourism market as an engine of development. The article also focusses on sustainable, profitable and inclusive tourism.

3. “Tourism and Inclusive Growth: Evaluating a Diagnostic Framework” Martin Bakker, Rene van der Duim, Karin Peters & Jeroen Klomp Published Online: 26 Nov 2020.

This article focuses on defining a mixed-method methodology that includes identifying 96 indicators and applying the framework to the tourism sector of North Macedonia. The study evaluates the Tourism-Driven Inclusive Growth Diagnostic concept in practise with the goal of advancing theoretical and practical understanding of tourism and inclusive growth. Testing the diagnostic and analysing its advantages and disadvantages revealed that this is a promising strategy since it can isolate the potential binders to tourism-driven inclusive growth from a wide range of potential factors. As a result, it can help build a method for deliberately and openly prioritising policies to create a development strategy tailored to a particular setting when resources are scarce. There is a growing need for instruments that may be used for evidence-based policy making for tourist development, hence this study is timely and pertinent for those who design tourism policy.

4. “Rethinking Tourism Beyond the Economic and Environmental Impact” Isabela del Alcazar.

The article looks at how the tourism industry in Spain has been badly affected Spain due to the Covid 19 pandemic. The article provides insights on sustainability and ethical practices in order to maintain natural ecosystems and create more harmony between people and the planet. According to the World Tourism Organization, Spain attracted the second-highest number of visitors of any nation in 2019. Spain has consistently maintained its status as one of the most alluring travel destinations in the world. The geopolitical unrest in the key Eastern Mediterranean rival destinations has contributed to its ongoing expansion. But it soon became apparent that Spain's tourism industry would not escape the coronavirus's several weeks of lockdown and restricted borders undamaged. According to the author, Spain should step up conservation efforts, if not just out of duty to protect the environment, then at the very least to stop losing tourists to rival places like Thailand and Mexico that have greater environmental protection. The author also establishes a link between deforestation, loss of biodiversity, and the risk of transmission of infectious diseases. Giving the example of The Amazon, where exposure to sunlight from humid (formerly shady, tree-covered) areas facilitates the spread of the malaria-transmitting mosquito and the intensive agriculture of the United States which facilitates the spread of the American blackbird, a preferred host of the West Nile virus, the author emphasises on the need for conservation.

5. “Rethinking Tourism Cluster Development Models for Global Competitiveness” Namhyun Kim & Bruce E. Wicks, University of Illinois at Urbana-Champaign

This article seeks to build a tourism cluster development model for international competitiveness. This newly proposed model, which highlights the shortcomings in existing clusters and tourism competitiveness models, considers three crucial issues: the interconnection between cluster actors, the separation of cluster actors, and the role of transnational corporations in the development of tourism clusters. In order to better take into account global competition, this article expands the present tourism development model from one that primarily focuses on a domestic context. The authors critique the existing models and propose a new tourism cluster development model based on Porter's diamond model which includes many of variables identified by both Crouch and Ritchie's and Dwyer and Kim's models, but there are three additions: the importance of Transnational Corporations, the emphasis on networks between all cluster actors, and the division between cluster actors and conditions of the business sector. The article also emphasises on both the individual and the system level and reiterates the fact that the cluster's primary components enhance the competitiveness of tourism locations. These variables serve as indicators of the local and regional contexts where tourist destinations are found and the tourism cluster is

established. They consist of essential assets and draws, destination management, ancillary circumstances, and demand circumstances.

6. “Conceptualising Networks in Sustainable Tourism Development” Thi Quynh Trang Nguyen, Tamara Young, Patricia Johnson & Stephen Wearing *Tourism Management Perspectives*. Vol.32, October 2019.

The implementation of the UN Sustainable Development Goals (SDGs) at the destination level is the focus of this paper's contribution to the sustainable tourism research agenda. This article creates a conceptual framework by fusing together three theories: actor-network theory (ANT), stakeholder theory, and social network analysis (SNA). The integration process exposes a blended strategy that enables a re-evaluation of stakeholder responsibilities to further examine the nature, dynamics, and operations of tourist networks as they strive to achieve SDGs. As a model, Tourism Scapes is used to scaffold data and shed light on the subtleties of destination networks. This study assesses this idea's potential to reframe tourism research and spark a fresh round of inquiry. This study conceptualises tourism stakeholder interactions, in particular those networks pursuing similar goals at the destination level, such as SDG 17, which seeks to increase mechanisms of implementation through partnerships. It is firmly grounded in critical tourism studies.

7. “Rethinking Tourism Industry in Pandemic COVID-19 Period” Anca Antoaneta Varzaru, Claudiu George Bocean & Marian Cazacu, 21 June 2021.

The article examines how the COVID-19 epidemic has impacted the tourism sector and the overall economic performance. The article enumerates how the SARS-CoV-2 virus pandemic (COVID-19) has had a major impact on the travel and tourism sector. Emergency procedures and restrictions had been implemented in tourist areas, affecting people's ability to move about freely. Cities were deserted, people's movements had ceased, and travel between the various territories was rigorously regulated. Beaches and resorts were vacant. Quarantine brought on by COVID-19 has hurt the global economy and the livelihoods of many individuals. The article also discusses a number of ways to guarantee the tourism sector's resilience during the COVID-19 pandemic phase based on research findings and exploratory literature research.

8. “Rethinking Tourism in Saudi Arabia: Royal Vision 2030 Perspective” Mohammad Abuhjeeleh, PhD, Department of Tourism Management, Middle East University, Jordan.

This article aims to offer a comprehensive overview of the Kingdom of Saudi Arabia's tourist industry in connection to cutting-edge tourism projects that are based on the nation's 2030 goal. The KSA, which was not known for tourism investment before, has started to invest in the tourism sector in order to diversify their economy from being a single oil-based economy. The article emphasises on the potentialities of KSA as a virgin and undiscovered country that can capitalize on tourism to earn more income. This article examines the literature on themes related to tourism and KSA tourism initiatives and activities in order to accomplish its objectives. The author was able to comprehend the advancements KSA has achieved in attempts to improve tourism activities by the information found in the literature and other secondary sources (such as newspaper articles, government publications, articles, and books). However, the country also wants to shift from an oil dependent economy to a more tourism driven economy and this transformation is likely to send shock waves among the KSA's neighbours.

### **3. RURAL TOURISM: INCLUSIVE GROWTH**

The Rural Tourism industry interlinks with a range of activity types, thus bringing economic benefits to a variety of areas. This is demonstrated through the Sustainable Rural Tourism Development Goal Chart.

#### *Individual Tourism Business*

Rural Tourism gives opportunities to start up individual Tourism businesses for all categories of individuals. It can create job opportunities in retail shops, transportation, hospitality, and other tourist services. It can also generate jobs additionally to farmers through Agritourism. Rural-based job retention is possible through Rural Tourism which will help the viability of small communities; and it goes without saying that it is critical for the survival of marginal areas. Job creation typically occurs in the accommodation and catering sectors; moreover, it can also take place in transporting, guiding, and arranging trek trails. For instance, Homestay is a type of establishment in which the owner will be residing within the property. There are few jobs which can be done by people like provision of support services to the tourists like getting the food preparation items, auto/cab drivers etc. Local people can be recruited to guide the tourists to the local farms/tourist destinations, involve them in activities like gardening, and arrange transportation and other supporting facilities and services. All these are the



areas which generate employment when the individual decides to start a Homestay. Furthermore, individual farming families along with the local communities will get employment. Handicrafts shops can be opened at the property, which the farming family can manage. The local handicrafts family can rent a shop or just supply handicrafts to the Agritourism family. At this stage, generating employment will be beyond the individual family. And this is where the Community-based Tourism comes to play.

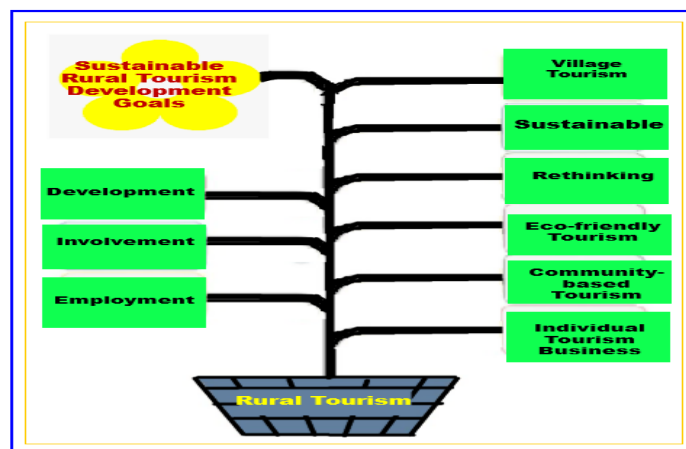


Figure 1 - Sustainable Rural Tourism Development Goal Chart

#### *Community-based Tourism Business*

Community-based Tourism generates employment in a combined way. Different communities get involved and contribute to the development of Rural Tourism. Employment opportunities can be generated in the field of agriculture, handicrafts, living art performance, road-side amenities, food court, parking, guiding, tourist facilitation etc. In fact, Rural Tourism has immense scope for starting up Community-based Tourism. The host provides tourists with an authentic experience. In addition, Rural Tourism encourages Cultural Tourism and cultural exchange. Many people from a range of destinations will travel to rural areas for Tourism. This provides opportunities for the locals and the tourists to get to know each other and to learn more about each other's cultures. There are several positive social impacts of such exchange of cultures. One impact is that rural areas are encouraged to share their traditions and customs with the people who are coming to visit the area. This, in turn, encourages the revitalization and preservation of traditions, customs and crafts. Community-based Tourism is often found in rural areas. This is because they are often a closely connected community.

Community Tourism fosters the growth of locally owned and managed businesses. It also encourages businesses that are directly involved in the Tourism industry (i.e., a Homestay) to work with other local businesses (i.e., Agritourism). Partnerships between local businesses helps to maximize the economic advantages of Rural Tourism and minimize economic leakage in Tourism. Rural Tourism helps local communities access the financial benefits instead of corporations or a third party. Community-based Tourism also gives importance on resource conservation.

Women Empowerment is also possible through Community-based Tourism. This type of Tourism can provide opportunities to support women in areas where unemployment is high or where inequalities have previously kept them from entering the workforce. Women can cook, maintain their homes, and guide tourists around the village. When visitors start coming to the community, women in the community can take advantage of increased job opportunities. Both Individual and Community-based Tourism Businesses employ Eco-friendly practices in which nature and culture co-exist to achieve sustainable goals.

#### *Eco-friendly Tourism Business*

Eco-tourism is a type of Tourism which is conducted responsibly to conserve the environment and sustain the well-being of the local people. Its benefits include building environmental awareness, providing direct financial benefits for conservation and providing financial benefits and empowerment for local people. For instance, one can start an eco-friendly restaurant. A restaurant is considered eco-friendly if it uses sustainable materials and management practices, places a strong emphasis on animal welfare, and serves only sustainable cuisine. Several

consumers today prefer green restaurants, which makes it a viable business venture. Opening an eco-friendly restaurant involves:

- Usage of fresh ingredients from local sources to make seasonal food.
- Ensure the suppliers use biodegradable materials for their deliveries and assist in timely packing and shipping to reduce fuel emissions.
- Provide portions based on actual consumption levels to reduce waste.
- Keep track of stock and expiration dates to avoid wastage.
- Implement a good labelling and storage system to reduce waste.
- Usage of chemical-free products for cleaning.

While on the one hand, Individual Tourism Business and Community-based Tourism Business can engage in Eco-friendly Tourism practices, on the other hand, one is forced to think of strategies to enhance the Tourism sector by “rethinking Tourism” and get hold of Sustainable measures for improving the Village Tourism Business. Thus, we arrive at a solution of sorts for augmentation of Tourism Businesses in general.

### *Rethinking Tourism*

Rural Tourism challenges all the stakeholders of the Tourism industry to rethink on how uniquely we can do Tourism business in the current situation and for future. Tourism providers should treat everyone accessing their goods, facilities, or services fairly, regardless of their age, gender, race, disability, gender reassignment, religion or belief, and guard against making assumptions about the characteristics of individuals. One may trust the theme of World Tourism Day - 2022 which is “Rethinking Tourism” and which will focus on looking at the Tourism Industry in a new dimension. The tagline is appropriate in the given circumstances: **“Tourism’s relevance has never been clearer. The time is now to seize this opportunity to rethink how we do Tourism”**.

One of the ways in which the rethinking can be done is by appropriating Sustainable Tourism practices for the greater good.

### *Sustainable Tourism*

Sustainable Rural Tourism is an activity that contributes to positive economic, social-cultural development and eco-friendly nature-based activities in rural areas. Tourism is the combination of several types of industries, stakeholders, and unskilled people to the skilled person thereby offering opportunities for rural entrepreneurship to the local community. Rural Tourism entrepreneurship is concerned with offering local products and services to tourists. This is most especially beneficial to women who often have rare opportunities to earn income away from home. Rural Tourism, in fact, needs sustainable concepts for holistic development and preservation of both Nature and Culture. Rural Tourism usually relies on the environment that is being visited, thereby the emphasis is often schemes to be put in place to protect and conserve areas. This includes giving an area reserved forest status or declaring it an area of outstanding natural beauty. It also includes implementing management processes, such as reducing visitor numbers or condoning particular areas. How else do we achieve sustainability than by employing the theoretical ideas and concepts in a Village? Here, Village Tourism attains its ever-widening significance in the whole domain of Tourism industry.

### *Village Tourism*

Rural Tourism is a cluster of village Tourism where each village has a unique background and local traditions and customs that can be showcased in a broader way than Rural Tourism. Village Tourism happens when the whole village is involved in Tourism-related activities. Different people from different occupations come together on one platform called Tourism and coordinate with each other for the betterment of life. The picture that comes to everybody’s mind when we think of Village Tourism is this: children on the back of buffalo wandering in the fields, women wearing traditional clothes with water gourds balanced on their heads, cooking in the traditional way, reclining cow chewing on a cabbage, several elders of the same village sitting around the *Harali Katte* (Pipal Tree) and discussing matters of importance. Tourists can actually involve themselves in the everyday work like helping farmers in milking the cow or cooking the traditional cuisines or making pottery. The tourists can sit in the shade of a banyan tree beside a small temple or can just walk through the village or stop to talk to the locals who pass by, after achievement of the basic levels of growth and progression in the Tourism Business growth, one needs to focus on the results achieved by the process. The output is visible in the areas of Employment, Involvement and Development which further helps in the achievement of the Sustainable Rural Tourism Development Goals.

### *Employment*

Rural Tourism works on inclusive growth concepts in which employment opportunities are for all. These opportunities can be easily identified by categorizing it as Attractions, Accessibility, Accommodation, Amenities and Activities. In Attraction, local communities can get a chance to be guides for tourists to walk through villages, visit the nearby agriculture areas, and trek in hills and forests. As part of Accessibility, the local community can be involved in providing transportation services through cabs or tuk-tuks or any other means of traditional transportation like bull cart rides. Accommodation plays a major role in Rural Tourism as it gives a chance to experience the local life by staying with local communities in their home through the Homestay concept. Other such establishments provide employment like cooking, housekeeping, gardening, providing security etc. Amenities are very essential as it creates a comfortable environment in and around Tourism destinations. Rural population can be involved in providing parking facilities, toilets, refreshment centers, interpretation centers, information centers, cycle rental shops and other Tourism-related accessory shops. Activities allow tourists to spend more time and money on Tourism destinations. Rural Tourism activities include rural games, boating, angling, trekking, kayaking, hiking, bird watching, photography, village walks, bicycle tours etc. Producing handicrafts, selling refreshments and tender coconuts could be a great opportunity too. Employment is generated at various establishments like Homestays, Art Museums, Transportation, Handicrafts production, restaurants, parking areas at tourist destinations etc.

### *Involvement*

Rural Tourism involves all kinds of people who are involved in various occupations. This will create a sense of belongingness for the Rural Tourism Businesses among local communities. One individual can decide to be involved in the Tourism business which will inspire everybody else. Homestay is an appropriate example where an individual can easily start and take his/her family members to be part of it. Once the family members are involved, slowly people from outside can be recruited and involved in the Homestay. Local Panchayat and other such authorities may also involve themselves as the business grows and thus, rules and regulations can be designed accordingly. Local farming communities and local community people will get involved in facilitating the tourists. Several departments like the Department of Agriculture, Department of Horticulture, Department of Animal Husbandry, Tourism Department, and the Local Panchayat can provide a helping hand in the Agritourism concept. Individual and family members, local residents, local community, Panchayat and State-level governing bodies come into picture here. It involves different communities involved in various occupations within the village. Every individual who is involved in Village Tourism will get his/her own responsibility. The involvement of the Local Panchayat will boost the development and attract external investment from both the private bodies and the government. The Department of Tourism can play a major role in formulating policies, providing guidelines, and monitoring appropriately.

### *Development*

Rural Tourism gives a chance to develop individual, community and whole villages at various levels. Development of the agricultural land will happen as the hosting family accommodates the tourists. Organic Farming can be developed. Both the traditional and modern types of farming including the use of farming tools and techniques can be showcased to the tourists. A boost in the economy among the farming community will be noticed. On the other hand, it will also lead to development in related areas like roads, proper sign boards, marketing of fruits/seeds, farm tools etc. At this stage of Rural Tourism Development, individual family members and the local people get economic benefits. Homestay and the property will be developed to meet the tourists' requirements. Relevant Sign boards and initial promotions will make sure that the rural community receives several tourists and this would lead to the development of infrastructure slowly involving the local Panchayat. When tourists visit the individual Homestay, they not only spend money within that Homestay, but also outside the Homestay; for instance, in buying tender coconuts, snacks, tea, locally produced food, handicrafts etc. Rural Tourism will often require the development of new infrastructure and facilities. It often results in the construction of new transport networks and infrastructure, among other public facilities and services. This is beneficial not only for the tourists who travel to that place, but also for the local communities. In order to maximize the positive impacts of Rural Tourism and minimize the negative impacts, it is imperative that appropriate management techniques are adopted. This leads us to the Sustainable Rural Tourism Development Goals which are directly inspired by the Sustainable Development Goals proposed by the United Nations.

*Sustainable Rural Tourism Development Goals*

The Global Goals is a collection of 17 interlinked goals designed to be a "shared blueprint for peace and prosperity for people and the planet, now and into the future". The SDGs were set up in 2015 by the United Nations General Assembly and are intended to be achieved by 2030. Rural Tourism needs to grow in a very planned way to achieve sustainable goals which is the need of the hour. A journey of the local community with a rich culture and tradition to showcase to the world starts from the ideas which involve everyone around. Inclusive growth is the only way to achieve sustainable goals. The below Flow Chart showcases how Rural Tourism can achieve the Sustainable Goals by adopting various business ideas and techniques.

<b>Rural Tourism</b>		
Partnership for the Goals		
<b>Individual Tourism Business</b>	<b>Employment</b>	<b>Rethinking Tourism</b>
Homestay, Travel Agency Tourist Guide Service, Parking	Guide, Agent, Parking , House Keeping, Gardener	Local People-Local Resources- Local Products-Local Governance
<b>Community-based Tourism Business</b>	<b>Involvement</b>	<b>Sustainable Tourism</b>
Women Empowerment, Decent work and economic growth, Reduced Inequalities	Equal Opportunities, Gender Equality	Managing Local Resources, Conservation of Nature and Culture
<b>Eco-friendly Tourism Business</b>	<b>Development</b>	<b>Village Tourism</b>
Responsible Consumption and Productions, Climate Actions	No Poverty, Zero Hunger, Quality Education, Innovation and Infrastructure	Health & Hygiene, Lifestyle Improvement, Clean Water and Sanitation
<b>Sustainable Rural Tourism Development Goals</b>		
Peace, Justice and Strong Institutions		

**Figure 2 - Rural Tourism**

**4. CASE STUDIES**

*Analytics in Smart Tourism Designs: Concepts & Methods*

--Editors: Zheng Xiang & Daniel R. Fesenmaier (Springer, Virginia, 2017)

This book emphasizes the fact that there is a huge prospect in developing big data analytics in Travel and Tourism. Tourism, in particular, demands a deep grasp of what today's visitors need and want, how they move through and interact with physical and social environments, and what leads to their delight, contentment, and realization of personal values. This book brings together some of the prominent authors with a variety of experiences, interests, and expertise in data analytics to shed light on the nature, scope, and characteristics of Analytics in Tourism in order to develop this area of research. The authors also believe that analytics in Travel and Tourism is still in its early stages, with existing publications focusing on a small number of issues. The book highlights that Tourism is an important component of many national and local economies. While Tourism management success is dependent on a variety of legislative and managerial factors, it is becoming increasingly dependent on a thorough grasp of the ever-changing consumer behaviour in order to mobilize the resources needed to meet their requirements and desires. The Tourism Industry thrives on information, captured in standard databases that can provide researchers, managers, and policymakers with the data-driven evidence needed to make decisions. Personalized marketing and targeted product designs are extremely powerful opportunities for Tourism. In order to most effectively win at true personalization, large travel companies must work across information databases to gather the countless data points created by a consumer at different points. The next valuable application of Tourism big data is the customer-centric experience. The customer should be at the center of all big data efforts. The book proves the concept of Data lying at the core of all smart Tourism activities, and the utilization and

exploitation of big data resulting in new business models and industry-wide innovations in Travel and Tourism. The book also identifies the issues and challenges ahead in using big data like privacy and Information Governance. The book is worth reading for the explanation of concepts in its pages that can find direct application in the Indian Scenario.

#### *Ecotourism*

---David A. Fennell, (Fourth Edition, New York: Routledge, 2015).

David A. Fennell discusses the nature of Ecotourism and how it differs from other types of Tourism, the core criteria used to define Ecotourism, and the main topics and issues that are important to Ecotourism both in theory and practice in this book. The author also focuses on the facilities, accommodation, transportation and attractions, being an inevitable part of Tourism attractions in order to enhance the tourist experience. Research on Tourism identifies a remarkable range of social and ecological problems brought about by the Tourism industry. He takes the example of The Great Barrier Reef that generates AUS\$5 billion in income per year from almost 2 million visitors. However, one should remember that this book was published in 2015. Several changes have happened since then. The author also predicts the economic impact of Ecotourism on a global level. The discussion of land value, marketing, and new technologies demonstrates how such knowledge has enabled operators in remote regions to capture a portion of the market, while de-marketing is defined as a tactic that intentionally discourages consumers from acquiring a product. The book also argues that one cannot fully understand the complexity of issues taking place in Ecotourism without a broader discussion on development, governance and policy. It also outlines the various strategies that should be employed in the establishment of Ecotourism policies, as well as a policy framework that covers a wide variety of concerns and factors linked to the proper implementation of Ecotourism. Successful Ecotourism is based on the policy which can balance the economic, social and economic elements. The book has, indeed attempted to project a realistic approach to the foundations, concepts and issues of Ecotourism as they existed in 2015.

#### *Food, Agri-culture and Tourism, Linking Local Gastronomy and Rural Tourism: Interdisciplinary Perspectives*

---Editors: Katia Laura Sidali, Achim Spiller, Birgit Schulze, Heidelberg: Springer, 2011

This book explains the interrelationship between Food, Agriculture and Tourism by considering several criteria like Food and Wine change, in which the authors talk about several aspects of innovation and opening up of models like typical products, farmers' markets, and the consumption of local products to their place of origin, Agricultural changes, wherein the authors explicate the scarce profitability and the dependence on sources of external funding and the integration of agriculture with Tourism that can re-define the entire gambit of agriculture; and Tourism changes, where the authors are acknowledging the fact that there are several new tendencies in contemporary Tourism, followed by media attention, some of which are accessible Tourism destinations, the focus on environmental stability, farm holidays, beautiful landscapes etc. The book enlightens the readers with the inter-connected transformation with mutual benefits in all the three areas discussed above. The individual chapters focuses on Farm Tourism in Germany and Italy, Perspectives of emotional food communication for farm operators, Policy options for sustainability, Agritourism as a productive option, opportunities of cooperative marketing, online and sensory marketing and e-business horizons in Tourism industry. The editors of the book conclude that farmers should endeavour to address these demands by putting their facility in a position to meet these aims, as diverse interpretations of nature correlate to different needs of persons. This book's contributions will expand the knowledge of the intricate interactions between agrarian life and culture, rural and farm Tourism, and culinary challenges.

#### *Linking Urban and Rural Tourism: Strategies in Sustainability*

---Edited by Susan L. Slocum and Carol Kline, UK: CABI, 2017

This book encourages readers to look at the links that exist between communities and the networks that have developed inside them. The amount of locally owned and provided Tourism, which is a major focus of this book, determines how much Tourism benefits communities and reduces poverty. Collaboration and partnerships will be critical for the Tourism sector to drive a global response to climate change, but it must begin at the local level – establishing partnerships, infrastructure, and relationships that can support locally sourced Tourism products, be it food, art, or culture, is a positive step in the right direction. Partnership opportunities exist through many mechanisms, as demonstrated in this text through case studies and literature, such as direct Community-based Tourism development, stimulating small businesses for long-term partners, and purchasing from a Community-based Tourism organisation or local tour operator. This book covers three key thematic areas: rural-urban linkages, fringe tourism, and sustainable tourism strategies, all of which include case studies and literature to help the reader gain a better understanding of complex yet real-world endeavours that will help us gain new insights into

innovative solutions and take realistic action on the Sustainable Development Goals in the coming years. The first chapter looks at the mutual benefits that can be derived from features that exist in both rural and urban settings. It also reveals a growing interest in this field, despite a dearth of considerable academic production, which opens up future prospects for broad and trans-disciplinary study lines. The chapter on Fringe Tourism challenges us to think about the off-the-beaten-path regions that explorer-type tourists have sought within inner cities, and to apply these ideas to a new area of research on urban areas. The chapter on Sustainability implies that complementary activities and places are important in enhancing and strengthening a destination's rural to urban scale. This chapter also explains a better understanding of the relationship between the arts and poverty; that the arts can play an important role in disadvantaged communities, both now and in the future.

*Development, Globalization and New Tourism in the Third World*

---Martin Mowforth and Ian Munt, New York: Routledge, 2016.

This book focuses on the development of Tourism in Third World countries. Travelling to many Third World countries has been promoted, especially among the middle classes, as an opportunity for adventurous, "off-the-beaten-path" holidays as well as a means of preserving fragile, exotic, and threatened landscapes and providing a culturally enriching encounter, with the attraction of environmental beauty and ecological and cultural diversity. This is primarily a book on development and how it is reflected in Tourism. In the backdrop of accelerating globalisation processes, this book focuses on new and ostensibly sustainable types of Tourism to Third World sites. The book indulges in several studies of Tourism, particularly Tourism in the Third World, emphasizing on the economic, environmental, and societal consequences of traditional package Tourism. Sustainability as being employed and applied to new kinds of tourism, such as Ecotourism, a relatively new form of Tourism, is also being discussed. One of the primary ways in which our "worldviews" are shaped is through Tourism. This is due not only to our vacations, but also to the way destinations are portrayed in travel reviews, travel programmes and documentaries, travel brochures and guides, advertising, and the way we describe and share our vacation experiences. Many of the challenges and controversies around various facets of new Tourism are presented as questions in this book. The methodologies commonly employed to define, assess, and quantify tourist sustainability are critically explored. The book's second section expands on the connections between sustainability, development, and new forms of Tourism as they relate to the major players and issues: tourists, the socio-environmental movement, industry operators, destination communities, and national governments and international consortia that make decisions affecting Tourism's development. A variety of environmentalist perspectives, as well as the ways in which sustainability and new Tourism are linked to them, is also being discussed.

*Rural Tourism Development: Localism and Cultural Change*

---E. Wanda George, Heather Mair and Donald G. Reid, Toronto: Channel View Publications, 2009

This book focuses on the fact that locations fluctuate over time and throughout geography, therefore, the specific manner in which Tourism can be developed in rural areas cannot be simplified. To prove this, the authors have taken up few case studies; while the case studies in this book are all Canadian, there is much that can be learned from them and applied globally. Firstly, two cases from Canada's Eastern Atlantic region show attempts at rural tourist development along the country's periphery, as well as the unique ways in which Tourism has been constructed as a vehicle to encourage development in coastal, fishing-dominated, and relatively underdeveloped communities. Secondly, a case study from Southern Ontario, Canada's heartland and economic centre, demonstrates how Tourism might be used as part of a strategy to combat the loss of long-standing manufacturing jobs. Thirdly, a case study from Canada's Western area demonstrates an innovative method used by one rural Alberta community to develop its Tourism potential. These examples show the various ways in which Tourism is positioned as a local response to political and economic upheavals in a country that is undergoing significant change both continentally and worldwide. The growth of contemporary Tourism in rural areas is based on four major themes, which run throughout this book. These themes include (1) Tourism in a globalising society; (2) Cultural transformation and rural community commercialization processes; (3) The value of resistance; and (4) The rural attractiveness. While there are distinctions, in many respects, the villages detailed in the book are similar to others around the world as they attempt to use Tourism as a means of survival.

## 5. CONCLUSION

Rural Tourism happens when tourists visit rural settings to experience the rural lifestyle at its purest. These rural areas are clusters of villages with unique culture and traditions followed in each village. Every village will have different communities who are involved in various age-old family skills, a tradition which is unique to nativity. Rural Tourism is an important part of the Tourism industry around the world specially for uplifting the quality of

life in rural areas. One cannot deny the fact that Rural Tourism is closely associated with the concept of Sustainable Tourism. The Sustainable Rural Development Goal Chart provides a comprehensive, inclusive planning strategy built on a multi-action, multi-stakeholder participatory approach to ensure the sustainability of Tourism in rural areas. With a multiplier effect on other industries that support rural development, Tourism has demonstrated to be a powerful employment generator and a tool for economic diversification. The Chart presents an indicator system that measures the inclusive growth of rural areas through Rural Tourism based on the 17 Sustainable Development Goals adopted by the United Nations and Rethinking Tourism under four aspects, namely, local economic growth, socio-cultural equity, environmental sustainability, and infrastructure. In fact, Rural Tourism offers the local communities who are struggling to create sustainable livelihoods for their residents with important business and employment prospects. If these chances are not available, people could be pushed to move to more populated places, which frequently splits up families and causes economic leakage in the neighborhood. Inclusive Growth can be achieved in rural areas by following the balanced approach through Sustainable Rural Tourism Practices.

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# Impact of Employee Engagement on Organizational Citizenship Behaviour with Reference to Employees Working in IT Companies in Chennai

**Dr. Anita Raman**

Associate Professor & Research Supervisor, Anna Adarsh College for Women, Chennai

**A. Lydia Arockia Mary**

Assistant Professor & Research Scholar, Stella Maris College, Chennai

## Abstract

*Employee Engagement is a concept which has its relevance and significance in the recent times. The concept is very important in today's business world as the employee's engagement level has an impact on the performance and productivity of the organization. As the employees are engaged they exert voluntary positive behaviour beyond their job description which ultimately creates an impact on the overall productivity of the organization. The Purpose of this paper is to analyse the impact of employee engagement on organizational citizenship behaviour with respect to employees working in IT sector. Descriptive analysis has been adopted for the study. Convenience sampling has been used. Data has been collected through standard questionnaire. Various statistical tools have been used to analyse the data and the results has been interpreted.*

**Keywords:** *Productivity, Employee engagement, job description, organizational citizenship behaviour.*

## 1. INTRODUCTION

Employee Engagement is the mental strength and connection which an employee has towards his or her work, their teams and their organization. It is a human resource concept which reveals the dedication and enthusiasm which an employee shows towards his job. Employees who are highly engaged and dedicated always care for their work and their performance as their efforts makes a difference in the overall productivity of their organization. Employee Engagement is a critical aspect for a company's success which creates an impact on job satisfaction and employee morale. Organization can create employee engagement in many ways which includes communicating their expectations clearly, providing rewards and promotions for their efficient work, keeping the employees informed about their overall performance and providing regular feedback.

### *Process of Employee Engagement*

The Future of the business success, profitability and revenue will no longer depend on the capital management but depends on the human capital management. Those companies who have understood this fact long before are the ones who are highly successful and most productive organizations and those companies who have not understood this are struggling to establish their reputation in the industry. The following are the steps involved in the process of employee engagement. They are:

- **Prepare and Design:** The first step in the process is to identify the requirements of the organizations and decide the priorities. After this a customised design has to be designed. It is then recommended to seek advice from the expert management to ensure it has been done in the right manner.
- **Employee Engagement survey:** Select the appropriate questions for the survey and deploy it with the help of suitable media. Based on the evaluation process the survey can be either in printed mode or online mode.
- **Result Analysis:** It is the important step in the whole of the process. The results have to be analysed to find out what exactly motivates the employees to find their best and what disagrees with them and makes them to leave the organization. The results can be delivered through presentations.
- **Action Planning:** Coaching of line managers and HR professionals which tells them how to make appropriate actions to engage employees. They should also be informed about the do's and don'ts so that they can successfully implement the changes.
- **Action follow up:** This follow up is done to find out the right action has been performed and whether desired result is produced.



*Elements of Employee Engagement:* There are basically four elements of employee engagement. They are:

- **Commitment:** It refers to the degree to which the individuals associate themselves with their job, their responsibilities and their organizational objectives. Engaged employees are those who are fascinated by their work and committed to undergo every challenges to attain their goals.
- **Motivation:** Achievement results in more motivation. If employees put 100 percent efforts to take their organization to next level their attained status motivates them to do more than anything for the goodwill of the organizations. Proper rewards and recognitions motivates them to achieve more and more for their organization. Motivation and achievement go together and acts as a fuel in the success of the business organization.
- **Loyalty:** Actively engaged employees are more loyal to an organization. These kind of people need less attention and focus of their managers as they themselves own their job responsibilities. These employees may turn to be a disengaged employee when no proper reward system is followed. Recognition is the basic need to remain focused in their organization.
- **Trust:** High level of engagement can be fostered only when trust prevails in the organization from both the employee and employer side. Employees must be given the freedom to perform their task on their own way. They should not be restricted to perform according to specific rules instead motivate them to perform in a different and innovative manner.

*Organizational Citizenship Behaviour:* It refers to all voluntary and positive behaviour of an employee which is not part of their job description. It is something which employees do out of their own will to support their colleagues and their organization as a whole. OCB is a behaviour that is not part of their contractual task.

*Types of Organizational Citizenship Behaviour*

- **Altruism:** It is a workplace behaviour which an employee exerts by helping and assisting other employees which expecting anything in return. This kind of behaviour is helpful in increasing employee morale, productivity and effectiveness.
- **Courtesy:** It is a polite and courteous behaviour exercised by the employees towards their other co-workers and team members.
- **Sportsmanship:** It is about an employee's ability to deal with situations that don't go as planned. It is a behaviour where employee never reacts negatively when things do not go as planned.
- **Conscientiousness:** It is a behaviour that involves a level of self-control and discipline and that goes beyond the minimum requirements. It is an act where the employee has to work for long hours despite their working hours.
- **Civic Virtue:** It means how well an employee represent their organization they work for. It is a sense of community and camaraderie which an employee shows towards their organization.

*Impact of Employee Engagement on Organizational Citizenship Behaviour*

When there is a strong citizenship behaviour among the employees it strongly correlates to the psychological attachment to the organization. This behaviour happens due to the motivation and engagement provided by the organization towards their employees. Thus when there is high level of engagement there will be high level of citizenship behaviour by the employees.

## **2. NEED FOR THE STUDY**

The Information Technology sector employs numerous employees and undertakes many projects as part of their business operations. Managing huge number of employees and retaining the workforce is a major task. Various engagement practices keep them engaged and motivated to accomplish their work. As they are motivated and dedicated they exert voluntary behaviour in their work. This has called the need for the study to analyse the work engagement and organizational citizenship behaviour of IT companies.

## **3. OBJECTIVES OF THE STUDY**

1. To study the demographic profile of the respondents
2. To analyse the perception of employees towards the factors of employee engagement.
3. To analyse the perception of employees towards the factors of Organizational Citizenship behaviour
4. To analyse the impact of Employee engagement on Organizational Citizenship Behaviour.

### Limitations of the study

1. The study is limited with a sample size of 50 respondents.
2. The study was restricted only to IT sector employees.

## 4. REVIEW OF LITERATURE

Moges Addisu Maru, Amanpreet Singh (2020) aimed to examine the differences existing among engagement and organizational citizenship behaviour among the employees of public and private insurance companies. Stratified random sampling has been adopted in the study. The findings reveal that employees working in private sector had greater level of engagement and organizational citizenship behaviour than employees working in public sector. Secondly every component of employee engagement such as vigor, dedication and absorption had positive and significant relationship with OCB in both public and private sector employees. Yadav, S. & Morya, K. K. (2019) aimed to analyse the relationship between employee engagement and organizational citizenship behaviour in the Indian hotel industry. Data has been collected through survey method which revealed a response rate of 25.5% on employee engagement and 13.75% on organizational citizenship behaviour. The findings of the study revealed that employee engagement has a significant impact on organizational citizenship behaviour. Secondly firms should enhance the organizational citizenship behaviour by engaging their employees more effectively. Sahoo, S. R. & Mohanty, S. (2019) reviewed the literature on the impact of employee engagement on organizational citizenship behaviour. By using different techniques and analysis the findings revealed that there is a strong and positive relationship among the dimensions of employee engagement and organizational citizenship behaviour.

## 5. RESEARCH METHODOLOGY

The present research has been undertaken using the information collected from IT employees working in Chennai. Convenience sampling has been adopted in the study. Sample size taken for the study is 103. 5 point Likert's scale has been used for the study. Standard questionnaire on employee engagement and OCB has been used to collect the data from the respondents.

## 6. ANALYSIS AND INTERPRETATION

Objective 1 deals with the Demographic Profile of the respondents

**Table 1 - Demographic Profile of IT employees**

Particulars	Category of Respondents	Percentage (%)
Gender	Male	64
	Female	36
Age	20-30	57
	30-40	26
	Above 40	17
Qualification	UG	48
	PG	52
Monthly salary	10,000-20,000	16
	20,000-30,000	16
	30,000-40,000	17
	40,000-50,000	7
	ABOVE 50,000	44
Experience	0-10 years	60
	10-20 years	40
Designation	Senior Project Manager	5
	Project Manager	5
	Team Leader	28
	Staff/ Specialist	62

**Objective 2** aims to analyse the perception of IT employees on the dimensions of employee engagement.

**Table 2 - Factors of Employee Engagement**

Dimensions of Employee engagement	Mean Value
<b>Vigor</b>	
Full of energy at work	3.15
Job makes strong and vigor	3.63
Liking for job every morning	3.24
Capacity to work for long period of time	3.32
Job makes resilient mentally	3.37
There is perseverance when things are difficult	3.48
<b>Dedication</b>	
Meaning and purpose in the work done	3.73
Enthusiasm in the job done	3.71
Job inspires	3.68
There is pride in the work done	3.75
Job is challenging	3.55
<b>Absorption</b>	
Time flies away while working	3.87
Job makes to forget everything while working	3.23
Job creates happiness while working	3.60
My work immerses me fully into it	3.59
Full involvement in the job done	3.24
No sense of detachment in my job	3.13
<b>Overall Weighted Mean</b>	<b>3.49</b>

Table 2 reveals the perception of IT employees towards the various dimensions of employee engagement such as vigour, dedication and absorption. The overall weighted mean is 3.49, which shows that the level of engagement of IT employees is found to be moderate. This shows that IT companies have to use more of employee engagement practices in order to improve their engagement level with their companies. The weighted mean reveal that the employees of IT companies are not completely dedicated, absorbed and vigour in their doing their work.

**Objective 3** aims to analyse the perception of IT employees on Organizational citizenship behaviour.

**Table 3 - Factors of Organizational Citizenship Behaviour**

Variables of OCB	Mean Value
Willingness to help others on work related issues	3.85
Adjusting the work schedule to accommodate others request	3.67
Giving time to help others on work or non-work problems	3.56
Assisting others in their duties	3.79
Participating in activities that builds the image of the organization	3.06
Offering ideas to improve the functioning of the organization	3.52
Taking actions to protect the organization from potential problems	3.58
Supporting the organization when other employees criticise it	3.51
<b>Overall weighted mean</b>	<b>3.57</b>

Table 3 deals with the factors of Organizational citizenship behaviour at individual level and at organizational level. The first four variables deal with individual OCB and the next four deals with organizational OCB. The overall weighted mean is 3.57 which reveals that the organizational citizenship behaviour in the IT companies were found to be moderate. The IT companies should strive to improve the engagement level of employees which in turn increases their satisfaction level and thereby creates citizenship behaviour towards the organization which will reduce the turnover intention.

**Objective 4** aims to analyse the impact of employee engagement on organizational citizenship behaviour.

H<sub>0</sub>: There is no significant impact of employee engagement on Organizational citizenship behaviour.

**Table 4 - Model Summary showing the impact of employee engagement on OCB**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501 <sup>a</sup>	.251	.244	4.349

**Table 5 - ANOVA Table showing the impact of employee engagement on OCB**

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	641.238	1	641.238	33.906	.000 <sup>b</sup>
	Residual	1910.121	101	18.912		
	Total	2551.359	102			

Source: Primary Data

**Table 6 - Coefficients table showing the impact of employee engagement on OCB**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.429	2.012		8.664	.000
	EE	.191	.033	.501	5.823	.000

Significant at 1% level

Table 4 found that R square value is 0.251, adjusted R square value is 0.244 and standard error of the estimate is 4.349. This implies that employee engagement factors in IT companies are able to create only 25% impact on OCB. From the table 5 F value is 33.906 and p=0.000 which means it is statistically significant at 5% level and hence the null hypothesis is rejected. From the table 6 it is found that Employee engagement factors have a positive and significant impact on organizational citizenship behaviour. This implies that as the level of employee engagement in IT companies' increases, the organizational citizenship behaviour among the IT employees will naturally be present with them.

## 7. FINDINGS

1. The overall weighted mean of the factors of employee engagement is 3.49 which reveals that the level of engagement among the IT employees working in Chennai is moderate.
2. The overall weighted mean of organizational citizenship behaviour is 3.57 which also reveals that the perception of IT employees towards citizenship behaviour shown towards their organization is moderate.
3. There is a significant difference between employee engagement and organizational citizenship behaviour which shows employee engagement has a positive and significant impact on OCB.

## 8. CONCLUSION

The present study proves that employee engagement has a positive and significant impact on organizational citizenship behaviour henceforth organization should focus on vigour, dedication and absorption to keep their employees engaged with their work as well as with their organization. In this competitive world where employees are required to be more committed and dedicated to the organization, this study has become really important and need of the hour. The study has proved that when IT companies concentrate more on increasing the level of engagement among their employees, citizenship behaviour among them will automatically fall in place.

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## An Analysis of Using Blockchain Technology for the Security of Electronic Health Record System

Abida Khanam

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh

Mohd Faizan Farooqui

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh

### Abstract

*Recent developments in technology are changing how we use and perceive things and affecting many facets of our existence. The healthcare industry is being improved by technology in the same way that other aspects of life have been. The major benefits of technology innovation include enhanced user experience, security, and other facets of the healthcare industry. Electronic Health Records (EHR) provide these advantages. Electronic health record systems, which are often used for the exchange of health information across healthcare stakeholders, has come under fire for centralizing control, malfunctions, and attack spots with sending data custodians. While following privacy, security, and some other regulatory limitations, EHRs have suffered in the face of multi-stakeholder and system needs. For a very long time, blockchain technology has been a fascinating research topic, and many different businesses have taken use of its advantages. Similar to other industries, the healthcare industry has a lot to gain from blockchain technology because of its security, privacy, secrecy, and decentralization. By offering safer techniques for medical data interchange in the healthcare business and safeguarding it across a decentralized peer-to-peer network, it could revolutionize the way patients' electronic health records are exchanged and kept. In this paper, we carried out a thorough literature assessment in order to identify the study gaps and potential future paths of blockchain technology in healthcare research.*

**Keywords:** Healthcare, Electronic Health Records, Interoperability, Data breach, Blockchain.

### 1. INTRODUCTION

Nowadays, the healthcare industry has undergone massive shifts all around the world. Furthermore, generational, economic, social, and technological shifts are compelling us to rethink what we know about health care. Not only is health care getting more linked, but data is also becoming larger and more sophisticated. The health sector is a data-intensive enterprise which regularly creates, shares, and accesses vast volumes of data on a daily basis. In 2013, 153 exabytes of global health data were produced [1]. Nearly all EHRs nowadays are web-based or client-server-based and often rely on database technologies. EHRs are created, utilized, examined, and edited by a number of different entities at the same time, including physicians, healthcare facilities, and patients. In a patient's diagnosis, online medical data and diagnostic equipment are being used to prescribe drugs. The healthcare sector has transformed as a result of virtual consultations, clinician-patient communications, and telemedicine. XML communication protocols are now being used to send the health parameters of patients to clinicians via remote devices. Electronic health records (EHRs) have the accessibility that paper-based records do not, since doctors can update a patient's EHR from a distance. Since digital systems can be easily hacked, the issue of security in EHR management is still not fully resolved. As patient data loss from paper-based records decreases, new security-related problems appear. The information contained in stolen electronic health records (EHRs) may be sold or otherwise made public, posing a risk to millions of patients [2].

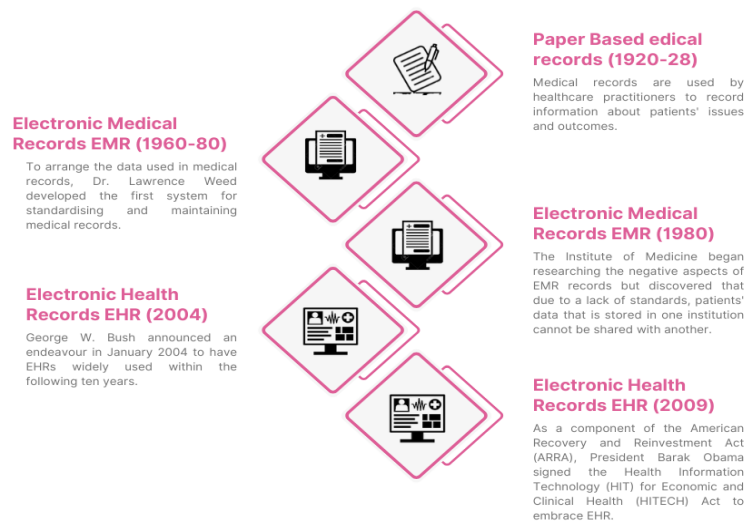
A quarter of patients were concerned about the confidentiality of their health data, and nearly one-quarter of the patients did not tell their doctors because they were afraid of a security breach. Because of the sensitivity of the information included in an EHR, it is vital to implement robust measures to safeguard it, such as strong password requirements, regular password resets, encryption keys, and so on [3]. Since EHRs meet the criteria for protected healthcare information, data privacy is a top priority when it came to their management. EHR systems, which contain a lot of personal data and are increasingly targeted by hackers, need to be better protected. This information might be readily used by a cybercriminal to buy things, get medical care, and change records. As a result, effective security methods are required to prevent data from being stolen. The only method to do this is to limit data access to only those who are permitted [2]. A blockchain is referred to as a linked list of data which is in the form of blocks, that are chained with each other in a distributed ledger, each of which contains a pointer to the data block before it is in the chain. Each block is identified by a hash code. Each peer-to-peer (P2P) network node in a blockchain serves as a keeper of data blocks and an assessor of proper access and privileges to the content. Each node has the ability to add additional blocks to the list and run evaluation rules for each interaction. Together with the other nodes, these checks are carried out to create the consensus protocol. Another idea used in

blockchain technology is smart contracts, which are scripts or business rules included in platform processing. A "collection of promises, expressed in digital form, includes procedures wherein the parties perform on such promises," as defined by, is what is meant by a smart contract. Smart contracts are frequently used to confirm the legality of agreements between two or more contract participants [4].

*History of Health Information System and its evolution to HER*

All clinical information was manually preserved and handled in the 1920s using paper-based documentation. In the medical record room, information on patient visits, histories, diagnoses, test results, medications, and any other details were manually kept on paper. In the 1980s, the Joint Commission on Accreditation of Hospitals began regularly inspecting hospitals and other care facilities to evaluate the standard of medical care by utilizing records as a resource. With these initiatives, the hospital experienced the most progress in terms of standardizing the medical record sector with established regulations [5].

The problem-oriented medical record, that specifically focuses on specific concerns that patients face, is one such approach utilized for the recording of patient data in medical records. POMR, which stands for the most proactive approach to documenting patient care, was first described by Dr. Lawrence Weed in the 1950s. A method for entering patient data into POMR is called SOAP (subjective, objective, assessment, and plan). SOAP enhances patient care and assists medical staff in delivering organized care and treatment. The ability to arrange for the electronic recording of medical records has been made possible by using computers in the medical industry and other technological breakthroughs. In this era of technological growth, organizations benefit from the electronic technique of preserving health information. With more hospitals employing computers, several departments within the healthcare system have begun utilizing legacy health information systems (HIS). EMR is one such system that permits the exchange of health information across healthcare professionals within the same company and gives medical practitioners instant access to patient information [6]. The HITECH Act is the law that oversees the major transition from electronic medical records to electronic health records, which took place in 2009. In order for patients to receive better care, the primary goal of the HITECH Act would be to encourage the use of EHR systems [5].



**Figure 1 - History of Health Information System and its evolution to EHR**

**2. LITERATURE REVIEW**

S. Amofa et al. [7] developed an architectural framework built on blockchain that safeguards the control over exchanging patients' personal medical records among various healthcare providers. The given architecture allows for the lowest threat to information by establishing a data control technique. The author asserts that, when compared to the current approach, the health services provider may guarantee stronger data management security by adopting the proposed architecture. Jack Huang et al. [2] introduced a blockchain-based EHR system that allows healthcare practitioners and patients to store and access medical information while maintaining confidentiality. Patients seem to be able to regularly update patterns of patient data stored by the MedBloc system. For access control, the provided framework uses a smart contract for access control approach and encryption.



Ayesha Shahnaz et al. [8] explained how blockchain could be used to effectively revolutionize the EHR system and provide various solutions to these concerns. The authors introduced an architecture based on blockchain for EHR in the medical industry, which provides a secure and effective way to store patient-related information. The architecture also addresses the scalability concerns that blockchain technology faces. The methodology suggested in this study creates a safe EHR system with the added advantages of scalability, security, and integration with a blockchain-based solution. By utilizing the unique qualities of blockchain, Theodouli et al. [9] propose a design that enables parties to share information safely. Equipment protection has improved by encouraging the legitimacy of accessing records with the proposed design. To provide an interoperable and effective transaction system, this system employs the consensus concept. To improve cooperation between nodes throughout blockchain networks, the system is constructed on a tripartite structure at several levels, including the blockchain architecture, and application interface.

Budida et al. [10] recommend a healthcare network that is collaboratively connected to the Internet for patient monitoring. The suggested concept focuses on generating data from clever, energy-efficient biosensors, sending it to micro-controllers, and inserting the data in database servers. This essential data and clinical records, which is accessible to healthcare providers and patients all over the world, must be tracked, collected, processed, and documented using effective methods. The creators of the given solution did not investigate any security features. To increase diagnostic accurateness using artificial systems, Wang et al [11] suggested a new medical system built on the blockchain network concept. The newly developed Artificial Health System has the potential to create and comprehend a system that works in tandem with real people and computer-simulated doctors to provide a therapy that the patient offers that is consistent with the concept. Nelay et al. [12] presented a ubiquitous and linked jargon system and paradigm. Based on sensors and other linked devices, Dey et al. [13] described a blockchain-based medical transaction management system. The proposed framework avoids problems pertaining to the conventional IoT method, such as high-cost server computers and single points of failure. Jayneel Vora et al. [14] suggested a Blockchain-based system for EHR storage and management that is both efficient and secure.

N. Poonguzhali et al. [15] presented an architecture that is based on blockchain technology. It is a two-step process that first focuses on block formation and then uses the Elliptic Curve Cryptography (ECC) Algorithm to protect the data. In addition to discussing the various EHR standards, specifications, and issues, Faheem A. Reegu [16] provides a comparison of existing blockchain-based EHR systems and the various EHR requirements. Finally, it offers a blockchain-focused interoperable EHR solution. To ensure the safety of electronic medical records, Mohammad Tabrez Quasim [1] proposes a secure solution utilizing blockchain (EHR). Databases, the Internet of Things, sensors, and other computing services are all part of the architecture. By utilizing encryption and decentralization, Ahmed I. Taloba [17] suggests a blockchain-based security architecture to protect the EHR and give patients, their caregivers, and physicians a secure means to access their clinical data. On the platform of the wireless network, Dinh C. Nguyen et al. [18] suggested a revolutionary EHR sharing platform based on the blockchain. The work reported here develops a safe access control method for sharing electronic health records (EHRs) between patients and healthcare providers. In real-world data exchange scenarios using cloud technology on a mobile application, the authors demonstrated an Ethereum blockchain prototype.

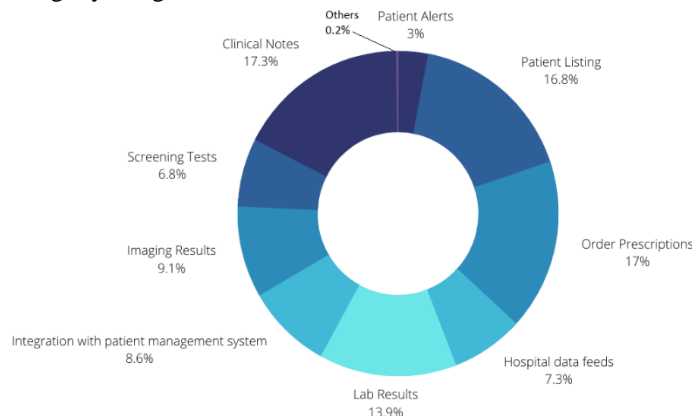
### 3. THEORETICAL BACKGROUND

#### *Electronic Health Records (EHRs)*

An electronic health record (EHR) system is a record of a patient's medical history that a healthcare professional keeps for a period of time. It contains all essential administrative medical data related to the care that a person receives from a particular provider, including progress reports, problems, medications, vital signs, health history, immunization reports, laboratory test results, and radiology reports. [19]. The International Organization for Standardization defines an EHR as "a repository of information describing the health status of a patient in care, in computer usable form," according to ISO/TR 20514:2005. EHR systems are designed to save people's health and treatment histories, enabling a more thorough understanding of their health. Records may be accessed by authorized providers, including medical professionals, pharmacies, laboratories, insurance providers, and other facilities [20].

The distinction between an EHR and an EMR can be confusing at times. An EMR is a less upgraded version of an EHR and relates to anything that would be found in a paper file, such as medical history, diagnostics, allergies, and vaccine dates. As a result, the phrase "electronic health record" (EHR) is used to refer to the electronic storage of all of the aforementioned information and more. An EHR system also enables the sharing of up-to-date information and the retrieval of information from outside the practice. Fig. 2 shows the parameters of EHR. As a

result, the conventional method for distinguishing between different types of EHR systems is to assess where the data-storage servers are situated—who owns the data. These are a few examples: Physician-hosted - The EHR data is stored on the physician's server, indicating that they have bought the necessary gear and software and are in charge of data upkeep and security. Remotely-hosted - Because the records are stored on a third-party server, the server's upkeep and data protection are the responsibilities of the server's third-party owner. The three types of remotely hosted systems are as follows: Subsidized - The EHR is financed by a third party, such as a hospital, with which a doctor has a legally obligated connection.



**Figure 2 - Parameters of EHR**

Dedicated - The vendor's hosting providers hold the data from electronic health records. The records are saved in the cloud, which means that the EHR software is not installed on the physician's PC and is instead accessed via the vendor's website [21].

*Standards for EHRs*

The EHR requirements have been tried to be standardized by several organizations and authorities. The foundation for health data exchange is provided by EHR standards. They provide a single reference framework to promote uniformity in the identification and specification of health system components. However, Table 1 provides a summary of some of these requirements.

**Table 1 - Standards of EHR**

Standards of EHR	Description
HITECH	The HITECH Act invests in developing medical information technology in order to improve the method by which services are supplied to patients. Offering a financial reward for using EHR to uphold the security and privacy of individuals' information encourages healthcare workers. In addition, there will be consequences for breaking the established security and privacy norms [22].
HL7	The HL7 is also known as the "EHR System Functional Model." It lists the important tasks and says that a system for EHR must be regulated. Through the creation of user profiles, this paradigm provides a common description and interpretation of procedures simply in medical-care settings. It offers a structure for directing the demands for high standards as well as a standardized technique for implementing actions relating to patient care, and prioritization, and is adopted by each and every state[23].
C-CDA	Consolidated Clinical Document Architecture is an implementation instruction that details the template library and recommends using it to gather particular types of documents [24].
HIPAA	Patients have access to all types of personal medical data under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). The HIPAA Security Rule was developed to call for clear safeguards to protect patients' electronic health records and claims. Providers are required to take particular actionable steps to uphold the security of confidential health information and conform with the Privacy Act [25].

THE OWL	The OWL is used to handle many terminology and informatics issues related to the disruption and provenance of variables for qualitative recounting from health records in EHR systems. It facilitates scattered web-based processing of unique healthcare data and is exact in meaning and reusable [26].
OPEN-EHR	The management, gathering, recovering, and sharing of medical data in electronic health record systems are defined by the open standard specification (EHRs). It is a brand-new e-health tool that includes particularizations that have been exposed, clinical software, and frameworks that might be used to create standards and data with solutions for interoperability in healthcare [27].
SNOMED CT	It is a widely used therapeutic phrase that specifically supports "multilingual translation." Approximately fifty states currently use it. SNOMED-CT enables the operational, significant portrayal of medical data, with the goal of giving EHRs more significant meaning. It demonstrates the critical role that patient access to affordable, high-quality healthcare plays in global activity [28].

*Comparative Study of Some of the EHR Standards*

This section describes a comparative study of EHR standards, including the advantages, disadvantages, and limitations of these standards.

**Table 2 - The EHR standards comparison study [16].**

Standard Name	Pros	Cons	Limitations
HITECH (Health Information Technology for Economic and Clinical Health Act)	It increases the efficiency, protection, and quality of healthcare services.	It doesn't make healthcare workers more worried about responsibility.	Using misleading information leads to deception
HL7 (Health Level7)	It improves healthcare delivery, reduces ambiguity, and increases workflow.	There is a syntax complexity issue, which results in subpar implementation.	It doesn't deal with digitizing images.
HIPAA (the Health Insurance Portability and Accountability Act)	It safeguards patient data against unauthorized users.	In cases of infractions, providers frequently have to pay fines. It only gave patients access to vital record information.	More personnel are needed to uphold the HIPAA rules.
CEN/ISO EN13606	It ensures improved patient data security.	A digital rights management issue exists.	It primarily concentrates on the centralized data repository.
SNOMED CT (Systematized Nomenclature of Medicine—clinical terms)	It ensures reliable, multilingual medical records.	It is challenging to adapt it natively due to numerous concepts.	It reduces the integrity and produces inconsistent data.
DICOM (Digital Imaging and Communications in Medicine)	It ensures the seamless integration of medical-related images from equipment made by diverse manufacturers.	It takes a long time to complete because there are too many choices in each field selection.	Modern sensor systems are needed to handle digital images.

*Issues that the EHR system encounters include the following:*

In research done in Finland to learn about medical staff's experiences with EHRs, It was found that EHR systems have downsides such as being unstable and unfriendly to users [29]. Additional problems with the EHR system are listed below:

*Interoperability*

This is a technique for various platforms and devices to exchange messages among one another. The information must be usable and transferable for future purposes. Health Information Exchange (HIE), or data exchange in general, is a key feature of EHR systems. There is no internationally recognized standard because the EHR systems used in various institutions use a diversity of terminology, approaches, and functional capabilities. Additionally, the transferred medical records must be comprehensible on a technological level, and that interpreted sort of data might be utilized again [6].

**4. INFORMATION ASYMMETRY**

Information asymmetry, characterized by critics as one party having greater accessibility than the alternative, is currently the most significant issue facing the healthcare industry. Due to the fact that doctors and hospitals have access to the patient's information, which makes it the center of the problem, this issue affects both EHR systems and the general healthcare business. It will take a long time and be inconvenient for a patient to request access to his medical records. The data is solely accessible to a certain healthcare organization, and only those institutions or organizations have control over it. [19].

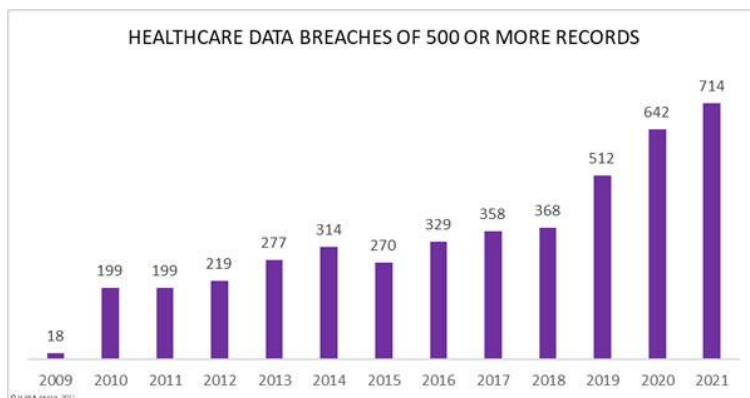
**5. DATA BREACHES**

In the last five years upwards of 10 billion records from various industries were made public. Medi, BSF, BSO, Education, NGO, and Govt were among these sectors. The healthcare industry alone has more than 3912 confirmed incidences of data breaches. The greatest percentage of all industries, over 43.38 percent of health records was exposed in between last 5 years. Hacking was the source of the majority of EHR data breaches. According to statistics, from 2009 to 2021, upwards of 64% of health information was compromised. This demonstrates a concerning shift in the way that hackers target healthcare organizations [30].

The need for a more reliable infrastructure is highlighted by data breaches in the healthcare sector. According to research that examined security flaws in EHR systems, around 173 million documents and data had been affected since October 2009 in such systems. Healthcare has been the victim of cyberattacks, according to a different study by Argaw et al. [31], and the experts saw a rising tendency while conducting this study, indicating that much research effort has been put into this field. The fact that many EHR systems were not developed with patients' needs and preferences in mind further raises issues of inefficiency and inadequate system adaptation [8].

*Data Breaches in Healthcare Sector of more than 500 records*

In this section, the HIPAA journal's data on healthcare breaches were collated from 2009 to 2021. The information was sourced outside of HIPAA and examined in various monthly, annual, and other reports. Since it is not feasible to list all of the references of the HIPAA journal that is being used to compile the data, only primary references of those reports have been mentioned. These citations verify the accuracy of given data. The information is displayed in Figure 3 [32].



**Figure 3 - HIPAA reported Healthcare Data Breach**

Overall, per year, the quantity of documents made public has been increasing, with a sharp rise in 2015. With more than 114.30 million pieces of data stolen or inappropriately shared, 2015 was the most disastrous year ever for healthcare data breaches. Three significant data breaches at health plans Anthem Inc., Premera Blue Cross, and Excellus made 2015 particularly awful.

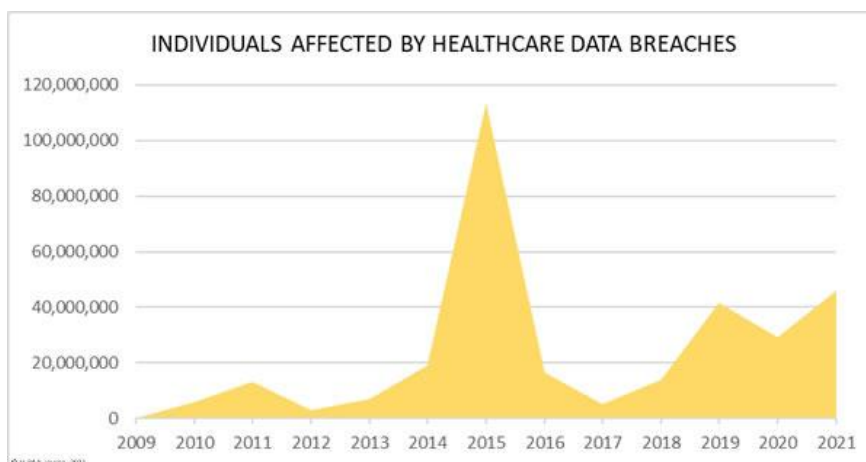


Figure 4 - Healthcare Data Breaches

*Rank-wise Data Breach in the Healthcare Sector*

The compilation of some of the most significant cybersecurity incidents in the medical industry, sorted by effect level has been shown in the table below [33].

**Table 3 - Rank wise Data Breach in Health sector.**

Rank	Year	Entity Name	Record Lost	Method of Leak
1	Sep 2011	Tricare	5 million	Stolen
2	Apr 2014	CHS (Community Health System, Inc)	4.5 million	
3	Jul 2015	UCLA Health	4.5 million	
4	Aug 2013	Advocate Health	4.03 million	
5	Jul 2015	Mie (Medical Informatics Engineering)	3.9 million	
6	Jul 2016	Newkirk Products, Inc.	3.8 million	
7	Aug 2016	Banner Health	3.62 million	
8	May 2020	Trinity Health	03.3 million	
9	Mar 2022	Shields Healthcare Group	2 million	
10	Jan 2022	Broward Health	1.3 million	
11	Feb 2022	Morley	521,046	
12	Feb 2022	ARCare	345,000	

*Concerns about EHRs records' privacy and security*

Numerous surveys have shown that there is significant concern regarding the privacy of medical records. Win [34] found that just 39 percent of respondents think that patient records are safe and secure, while almost two-thirds of customers are concerned regarding the confidentiality of their medical records. In several cases, respondents showed minimal concern for and confidence in the protection of their personal data. In a survey done

by Perera et al. [35], Concerns about the privacy of personal data being sent via the internet were voiced by 50% of respondents. In a study by Ancker et al. [36], more than 50% of the research participants thought that sharing their health information may adversely affect their privacy. Individual worries about data privacy were shown to be crucial in the creation of successful electronic health records technology, according to several studies that examined them.

### *Integration of Blockchain with HER*

A blockchain is a distributed ledger that allows a network of peers to share data. It was released in tandem with Bitcoin and solved a long-standing issue known as the double-spend problem. This is accomplished in Bitcoin by a majority of the mining nodes reaching a consensus and legitimate transactions being added to the blockchain. The initial use of blockchain technology was in bitcoin. However, introducing a coin is not required to use blockchain and construct decentralized apps [37]. Blockchain is a technique for keeping data in a way that makes it difficult or impossible to change, hack, or fraudulently use. It is a clone of a digital ledger of transactions that is disseminated throughout the whole computer network that makes up the blockchain. Every time a new transaction takes place on the blockchain, a history of that transaction is recorded for each member in the ledger. A number of transactions make up each block on the chain. A decentralized database is managed by several persons using distributed ledger technology. Blockchain is a sort of distributed ledger technology that records transactions using hashes, an immutable cryptographic signature [38]. There are three essential components of blockchain technology. Smart contracts, which give efficiencies and commercial value transactions, and cryptography-based data structures that make it secure and tamper-resistant. Consensus methods allow it to function accurately and without the need for a centralized authority or a third party. [20]. The following are some of the important advantages of blockchain that, when properly applied, significantly reduce the risks and overcome the limitations of traditional verifying solutions [39].



**Figure 5 - Key features of Blockchain**

- **Increased Capacity:** It is Blockchain's first and imperative feature. The capacity increase offered by Blockchain technology is its most striking feature. There are fewer gadgets where things are centralized since several computers are cooperating to generate power.
- **Distributed Ledger:** Transaction information and participants are made public through public ledgers. However, private or federated ledgers, which can also be connected to a blockchain system, do not lack privacy or authority. This is true since numerous other network users are responsible for maintaining the ledger. The processing power was distributed among the computers to get a better outcome. The distributed ledger makes the whole process visible and dependable by allowing anyone with the necessary access to observe the ledger.
- **Decentralized System:** This technology allows you to keep your valuables in a network without having to rely on the oversight and management of a single person, company, or entity. While using a credential that is tied to the account, the user has full control over their account, giving them the ability to transfer their assets to anybody they desire. Blockchain has proven to be a remarkably successful technology for decentralizing the web, and it has the potential to revolutionize the internet.
- **Immutability:** The establishment of immutable ledgers is among the main benefits of blockchain technology. Any centralized database is destined to be hacked and defrauded since it relies on a third-party middleman to keep the database safe. Another fact is that transaction blocks cannot be modified

once they have been recorded in the ledger. No one within the network would be able to add, remove, or modify it as a result.

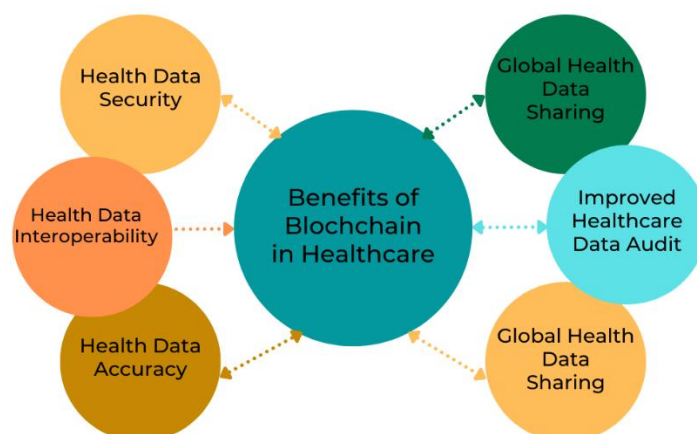
- **Enhance Security:** Blockchain technology is said to be more extremely secure than its rivals since there is no one point of failure. Data is always transmitted by several nodes since blockchain is built on a distributed set of nodes, guaranteeing that the authenticity of the original information is not threatened if one node is hacked or damaged in any way.
- **Consensus:** Blockchain technologies are particularly effective due to the consensus algorithm. It is an essential component of every blockchain and, in fact, a distinguishing trait. To put it another way, A consensus is a method of decision-making for the current nodes of the network. In this situation, the nodes may reach consensus instantly and quite quickly [40].

## 6. DISCUSSION

Blockchain will modernize the way that electronic health records are exchanged and processed by safeguarding them through a distributed peer-to-peer link and offering a secure method for transmitting medical data in order to improve healthcare efficiency. The Blockchain technique is recommended to support and ease the process of comprehending the scattered technologies of the ledger [3]. Blockchain was primarily proposed to incorporate digital records of cash-related transactions independent of central authorities or monetary alliance claims. This cutting-edge blockchain technology is fueled by innovations to deliver improved transactions, like insurance bills, health information, and smart contracts. It permits permanent data input and verification in addition to having a dispersed transaction record. Data exchangeability the blockchain substructure encompasses the entire life cycle of a product and includes greater access to health records, framework monitoring, and other features. In addition to other emerging technologies like Cloud Computing and the Internet of Things (IoT), blockchain will be leveraged to provide more reliable EHR solutions. IoT devices may gather various health-related data, including blood pressure, blood sugar levels, temperature, and electrocardiograms, and records can be stored in the cloud to improve resource scalability and use [41]. The capabilities of security, durability, immutability, and interoperability will be covered by blockchain. To dispense medications, access to health data is required; blockchain is suitable. The system of healthcare services will experience a rapid and significant boost. Using blockchain technology, many alternatives for enhancing current weaknesses in medical systems have been obtained in earlier experiments [16]. The key advantages of using blockchain technologies for healthcare data processing are shown in Figure 6. The following subsections go into further detail about each of these advantages.

### *Health data security*

Numerous healthcare institutions have been the target of cybersecurity assaults in the last ten years that may have been avoided. For the management of digital medical records, several healthcare companies use manual systems based on centralized infrastructure. Based on data encryption principles, the immutability feature of blockchain can help to lessen or even completely eliminate the risk of data theft or improper management. Health data stored in the blockchain is indeed secure from damage brought on by natural disasters or the collapse of medical facilities as the same data is saved in multiple locations without a point of failure. [42].



**Figure 6 - Benefits of using blockchain technologies for healthcare data processing.**

### *Health data interoperability*

Information sharing between systems created by various manufacturers is referred to as interoperability. A variety of clinical technologies are used in the majority of EHR/EMR packages. Because they were created to satisfy certain demands and preferences of a health care institution, many EHR systems developed on the same platform aren't even compatible. In order to make EHR systems interoperable, messages should be transmitted using standardized coded information [43]. This limitation can be overcome by utilizing an Electronic Health Record (EHR) system that uses blockchain technology. Every EHR/EMR saved on the blockchain system adheres to a standardized data coding, making it simple for any healthcare provider to access and use.

### *Health data accuracy*

All of a patient's data must be automatically merged in order to provide an accurate picture of their whole medical history. All patient medical information can be kept on the blockchain, which always keeps records that are up-to-date, traceable, and impenetrable [11]. This makes it possible for medical practitioners to treat patients effectively, promptly, and appropriately.

### *Global health data sharing*

In order to develop more effective treatment plans, clinicians might use the patient's medical history to assess a variety of factors, including past medication use, drug allergies, and details of prior therapies. However, because the majority of modern healthcare management systems rely on manual storage facilities techniques, they do not provide capabilities for worldwide access and traceability [44]. With the use of blockchain technology, these functionalities can be accomplished.

### *Improved healthcare data audit*

Through rigorous and impartial evaluations, an auditing process aids in determining how effective a follow the health and safety plan is. The majority of medical data management systems in the market are manual and devoid of sophisticated coordination and integration features. By facilitating the handling of data in a verifiable, impermeable, and long-lasting manner, blockchain technology helps healthcare companies show the validity of recorded health data.

### *Health data handling costs*

Another significant issue brought up by the current healthcare systems is the high handling costs related to patient data retrieval and transfer. A patient's medical file is typically spread out throughout several healthcare facilities. It can take too much time and money to gather all of the patient's medical records from manual or unorganized medical records systems [45]. Using blockchain technology, it is possible to lessen the administrative burden that third parties in the present healthcare system place on the system.

## **7. CONCLUSION**

This study looked into the most recent developments in research on blockchain technology in electronic health records systems. Finding out the state of blockchain research and its use in EHRs was the study's main objective. Because of the sensitive nature of the data being processed and maintained, technology presents a decentralized network and is seen to have significant potential for usage in the healthcare industry. Further analysis was then conducted on these. Our findings demonstrate the development of blockchain technology research and its application to healthcare. According to current trends in blockchain research in healthcare, other uses of the technology, such as managing supply chains or managing prescription medicine orders, are much less common than data exchange, access control, and health records. As a result, blockchain still has a lot of untapped potential. The majority of research uses blockchain technology in EHRs and proposes a novel framework, architecture, or paradigm. The majority of studies might additionally offer a prototype system or, at the very least, talk about some implementation specifics. In the area of healthcare, blockchain technology is still relatively young, thus there is still room for new applications and studies. In conclusion, blockchain must continue to be used in circumstances where it makes sense and is required.



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## **An Investigation on an Hour-Hand Strategy for Human Performance Technology among Manufacturing Industry in Chennai**

**Dr. M. Lavanya**

Associate Professor, School of Management studies, Sathyabama Institute of Science and Technology, Chennai

**Dr. Dhivya Sathish**

Associate Professor, School of Management studies, Sathyabama Institute of Science and Technology, Chennai

### **Abstract**

*Through E-HRM, human resources may be reached in a more effective way. A substantial data maintenance system highlights and formally records the policies, responsibilities, and obligations of an employee. Plans may be in electronic format, but considerable human force is required for implementation. The progress of human performance technologies and employee engagement are required to slide from the opposite side. In E-HRM, attempts are made to strike a balance between management and intended results. The practice of personal management in manufacturing industries has been revitalized by electronic human resource management. It is only possible when the reachable goal is conveyed and a proper work environment is developed to produce a quality product can the employee feel as though they are sailing towards organisational upliftment in connection to personal growth. Both primary and secondary data were utilized to radar the target. 200 respondents' responses to questionnaires were used to gather primary data. The findings were evaluated using the t test, Chi-square test, and Friedmen test, and the data was presented as a table. According to the study, when a suitable workload pattern is chosen and there is excellent teamwork for job execution, employees are likely to contribute to quality output.*

**Keywords:** E-HRM, Manufacturing sectors, Human Performance Technology, Personal Management.

### **1. INTRODUCTION**

E-HRM is a methodical, scientific means of electronically managing human resources in the new contemporary era. Accurate potential realization and upliftment of human force play a significant role in opening the door to competitive human force at a worldwide standard when it comes to digitally handling personnel and boosting employee productivity. E-HRM connects human forces electronically, making it simpler to have stronger interaction with employees. Technology that improves employee networking has a tremendous potential to economically benefit E-HRM by producing higher-quality output. Adopting Human Performance Way Forward technology enhances employee connectedness and links throughout the organization, allowing the goal of the concept to be accomplished in a way that is increasingly cost-effective. Given that manufacturing accounts for 17% of India's GDP, human performance technology is the key to measuring industrial performance. The key to achieving great deliverables by keeping the employee's healthy working conditions is adopting an outstanding standard for development and creating fossils for future reference. The hour hand of the clock stands long to demonstrate the true flow of time, hence special attention is paid to hour hand strategy. Similar to that, this piece pioneers a bigger emphasis for the time-tested method of producing superior items.

**Human Performance Technology:** Human performance technology is a concept that improves the working environment of the business by identifying the needs and abilities of the employee and then assigning duties in a way that encourages them to provide their best. The employee will contribute to their better potential as a result, which in turn aids in more successfully reaching corporate goals. **Hour Hand Strategy:** Strategy and knowledge are essential for carrying out any work. The hour hand is regarded as a dependable and long-lasting hour standard. Therefore, the hour hand strategy is built on a notion where the work protocol is aligned in a model where it remains lengthy and practical for new and existing employees to provide the product with excellent quality, so co efficiency and effectiveness can be reached.

### **2. STATEMENT OF PROBLEM**

While just 18% of workers in other industries leave their jobs, 22% of those in the manufacturing industry do. Employees in other sectors frequently seem to be alarmed by the manufacturing sector's organisational structure. E-HRM is extensively employed in the service sector, but when it comes to manufacturing, the technology-human performance interface is fraught with controversies, and there isn't much of a record to make history and identify geometrical patterns in employee performance. Efficiency, technical expertise, and the dedication of manufacturing unit staff to delivering high-quality goods remain undetected and unappreciated.

This calls for the creation of a human clock mechanism where the history of effective performance, the journey taken to supply high-quality goods easily, and will be recorded and kept as a stigma for the benefit of future process flow. According to a recent survey, employees in the manufacturing industry leave their employers because they are unaware of the reason they are employed and because there is a significant gap between organisational and professional ambitions. For the company to keep its assets and to preserve employee branding, this goal-oriented part must be handled.

### 3. REVIEW OF LITERATURE

*Curt R. Johansson and Martin Emauelsson (2000)*. The usefulness of developing objectives while taking into account a number of elements is demonstrated via research on deploying goals and evaluating effectiveness in an academic institution. Separate teams were established to define the organization's goals, and timely communication of those goals is essential to achieving agreed-upon results and quantifiable performance inside the business.

*Matthew Neale, Mark Griffin, and Andrew Neal (2001)*. The efficacy of task performance and contextual performance: The author makes an argument on the connection between task performance and contextual performance after looking at the role of situational constraints. He also discusses how an individual's inherent performance, or contextual performance, is impacted by the task that the organization expects them to do. The study concluded that situational elements are essential to producing the result effectively.

*Franconi and Caillaud, L. (2010)*. The research looked at labour costs, critical thinking, and new opportunities offered by the industries. Workload regulation of human resource to production management. The organization is placing a heavy workload on the employee as a result of the cutback in hours. Flexibility is required in this situation, as is giving employees the right tasks to do. By doing so, skill requirement planning may be established and the organization's goal can be more successfully attained.

*Serguei Netessine and Tom Fangyun Tan (2014)*. What hours does the Devil Make? The speed and performance of employees working in restaurants were examined in an empirical research on the effect of workload on worker productivity. According to the study, when an employee had a light burden, sales increased since they were working more effectively. Higher efficiency may be attained with comparatively lower labour costs when the workload is designed properly.

### 4. RESEARCH METHODOLOGY

Descriptive research design was the study approach employed for data gathering and analysis. The sampling strategy employed was the Convenient Sampling Technique under Non- Probability Sampling, with a sample size of 200 employees in Manufacturing companies as the targeted participants in Chennai City. While secondary data was gathered through reviewing books, websites, and other sources of literature, primary data was gathered via a questionnaire. One of the study's flaws is that it only had 200 responders in its sample size. A structured, predetermined set of questions are used in the research. This inquiry is based on science. The form tables displayed the data that had been gathered. The study's hypotheses were tested using statistical techniques such the t test, Chi-square test, and Friedmen test.

### 5. OBJECTIVES OF THE RESEARCH

- To evaluate the value of outlining realistic goals to produce high-quality goods.
- To use situation awareness as a tool for carrying out tasks.
- To outline the pattern of intentional burden that must be distributed to workers in order to produce quality products.

### 6. HYPOTHESIS FRAMED

H<sub>01</sub>: Level of awareness on objectives of Organization is not equal to Average Level.

H<sub>11</sub>: Level of awareness on objectives of Organization is equal to Average Level.

H<sub>02</sub>: There is no association between Gender and level of acceptance regarding the situation awareness for task execution.

H<sub>12</sub>: There is an association between Gender and level of acceptance regarding the situation awareness for task execution.

H<sub>03</sub>: There is no significant difference among mean rank towards level of acceptance regarding the willful workload.

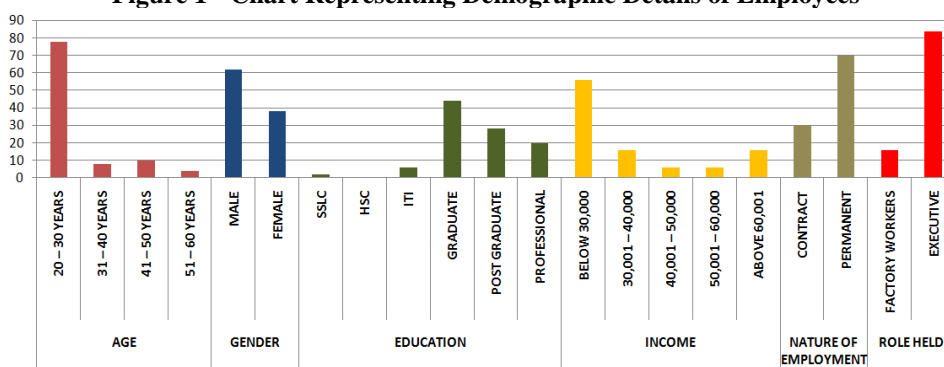
H<sub>13</sub>: There is a significant difference among mean rank towards level of acceptance regarding the willful workload.

### 7. DATA ANALYSIS

**Table 1 - Table Indicating Demographic Details of Employees**

DEMOGRAPHIC FACTORS	PARTICULARS	FREQUENCY	PERCENTAGE
AGE	20 – 30 YEARS	156	78
	31 – 40 YEARS	16	8
	41 – 50 YEARS	20	10
	51 – 60 YEARS	8	4
GENDER	MALE	124	62
	FEMALE	76	38
EDUCATION	SSLC	4	2
	HSC	0	0
	ITI	12	6
	GRADUATE	88	44
	POST GRADUATE	56	28
	PROFESSIONAL	40	20
INCOME	BELOW 30,000	112	56
	30,001 – 40,000	32	16
	40,001 – 50,000	12	6
	50,001 – 60,000	12	6
	ABOVE 60,001	32	16
NATURE OF EMPLOYMENT	CONTRACT	60	30
	PERMANENT	140	70
ROLE HELD	FACTORY WORKERS	32	16
	EXECUTIVE	168	84

**Figure 1 - Chart Representing Demographic Details of Employees**



Inference: From Table & Chart 1, It implied that 38% of the respondents taken into account for the current study are Male, Majority 78% belongs to age group of 20 – 30 years, Majority 44% are graduates, Majority 56% earn below Rs.30,000, Majority 70% are permanent employees and Majority 84% are executives.

**Table 2 - Table Indicating Level of Awareness on Objectives of Organization**

H<sub>01</sub>: Level of awareness on objectives of Organization is not equal to Average Level.

H<sub>11</sub>: Level of awareness on objectives of Organization is equal to Average Level.

Level of communicating attainable objective to derive quality product	Mean	S.D	T value	P value
Adequate inputs and know how is given to execute the task	4.45	1.038	32.722	0.001**
Proper training mechanism exist for performing the task	2.29	1.507	11.111	0.001**
Employees are aware regarding the task to be done for the day	2.13	1.491	13.654	0.001**
If there is a change in target, the same is communicated well in advance	1.63	1.067	30.103	0.001**
You take change in target with ease	4.83	0.669	64.214	0.001**
Feedback o performance boost your morale	4.29	0.752	66.149	0.001**

**Inference:** From Table & Chart 2, It is inferred that Since P Value is less than 0.01, the null hypothesis is rejected at 1% level of significance with regard to the Level of communicating attainable objective to derive quality product. Hence the opinion regarding all the statements on Level of communicating attainable objective to derive quality product are not equal to average level. Based on the mean score it is proved that the essence of communicating organizational objectives has greater impact in deriving quality products.

**Table 3 - Table Indicating Chi-Square Test for Association Between Gender and Level of Acceptance Regarding the Situation Awareness**

H02: There is no association between Gender and level of acceptance regarding the situation awareness for task execution.

H12: There is an association between Gender and level of acceptance regarding the situation awareness for task execution.

Level of acceptance regarding the situation awareness for task execution	Male	Female	Total	Chi square value	P value
New mechanization of process and its working is accessible and user friendly	60	40	100	13.712	0.002**
Prevalence of required resource always exist	75	25	100		
Additional resource is provided at the right time	55	45	100		
Existence of skilled employees enables easy completion of tasks	35	65	100		
Peer support is an added advantage during the situation of crisis	76	24	100		
Keen knowledge on available resources contributes towards greater success	57	43	100		

**Inference:** From Table & Chart 3, it revealed that Since P Value is less than 0.05, the null hypothesis is rejected at 5% level of significance. Hence it is concluded that there is an association between Gender and level of acceptance regarding the situation awareness for task execution. It is found that the opinion level differs between the gender of the respondents in the study area.

**Table 4 - Table Indicating Friedman Test for Significant Difference Among Mean Rank Towards Level of Acceptance Regarding the Willful Workload**

H03: There is no significant difference among mean rank towards level of acceptance regarding the willful workload.

H13: There is a significant difference among mean rank towards level of acceptance regarding the willful workload.

Level of acceptance regarding the willful workload	Mean rank	Chi square value	P value
Supervisor considers the workload before assigning a task	3.55	23.174	<0.000**
Assigned work and time for execution is realistic	3.37		
Relaxation from routine work exist in case of top priority work	3.92		
Reasonable break is given during the working hour	3.47		
Work is assigned within your responsibility border	3.37		
You have adequate authority to carry out your responsibility	3.21		

Inference: From Table & Chart 4, it inferred that Since P Value is less than 0.01, the null hypothesis is rejected at 1% level of significance. Hence concluded that there is significant difference among mean ranks towards level of acceptance regarding the willful workload in the study area. Based on the mean rank, the level of acceptance was highest on option to relax from routine work in case of top priority job (3.92) followed by supervisor considers your workload before assigning a task (3.55) and Reasonable break given during the working hour (3.47), followed by Assigned work and time for execution is realistic & Work is assigned within your responsibility border (3.37). Finally, the least factor was you have adequate authority to carry your responsibility (3.21).

## 8. SUGGESTIONS

- Management refers to the management of people, not of things.
- Instead of relying on rules of thumb, it is important to use scientific technique while implementing the art of management and the wealth of human performance technology.
- To comprehend the employee's ability and willingness to make a contribution that is 100% accurate, better management practices are required.
- When giving an employee a task, a manager should give them twice as much time to make sure they understand what is required of them.
- The process flow should not be affected by ladder creep, and neither should the performance of jobs by male and female personnel.
- The primary principle of the process flow should be the glow of team spirit and essence of sharing.
- The right performance and feedback mechanisms are a crucial driver of great performance.
- The essence of willingness should be taken into account when assigning any short-turnaround tasks, and alternate forces to support the process flow should also be used.
- Employees should be aware of their working environment and the tools that will make it easier for them to complete the task before beginning it.
- Employees should focus on understanding the need of process sharing and standardization in order to take advantage of the human performance clock.

## 9. CONCLUSION

Through this study, it is demonstrated that in order to create an appropriate human performance clock, communicating the target to all levels of staff early on is essential to producing quality work for the company, which can then be completed with cost effectiveness and efficiency. Employees in the manufacturing industry are being trained on how to utilize modern mechanized tools, the proper sequence for completing jobs, and the volume of work already being done within the company. However, there is a disparity between male and female related situation awareness, which has widened as a result of the relative underrepresentation of female workers in the industrial sector, tight team dynamics, and a lack of information sharing among female employees. This necessitates improved efforts to collaborate and achieve the goal of the organisational journey. When there is a lot of work to be done, employees in the manufacturing industry are forced to work on the highest priority tasks. This is a fantastic second-hand strategy to increase job devotion and ensure on-time product delivery. This idea

has existed since the dark mode era, and it calls for increased Bansformation among the top managers, since border personnel believe they lack the power to carry out their duties.

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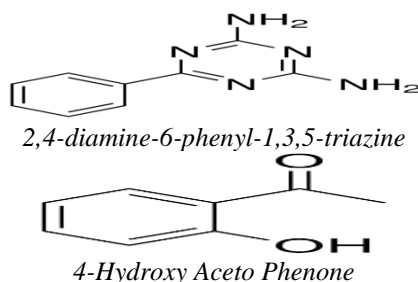
## Synthesis and Spectral Characterization Biological Active Transition Metal Complexes with Neutral and Anionic Mixed Ligands using Microwave Heating

S. Balasubramaniyan

PG & Research Department of Chemistry, Government Arts College (Grade - I),  
Bharathidasan University affiliated College, Ariyalur – 621 713.

### Abstract

The Co(II) and Ni(II) mixed ligand complexes were synthesized by 2,4-diamine-6-phenyl-1,3,5-triazine and 4-Hydroxy Aceto Phenone and thiocyanate ion in 1:2:2 (M:L1:L2) molar ratio. The metal complexes were characterized by elemental analysis, Molar conductivity measurement, magnetic susceptibility, PXRD and FT-IR, UV-visible spectroscopic studies. Molar conductivity measurement indicates that all the metal complexes are non-electrolytic nature. The magnetic susceptibility and electronic spectra are proposed to the octahedral geometry for Co(II) and Ni(II) complexes. The Powder X-ray diffraction patterns suggest an orthorhombic system for each of metal complexes. Antimicrobial activity of ligand and their metal complexes have screened against Gram-positive bacteria (*S. aureus* and *B. subtilis*), Gram-negative bacteria (*P.aeruginosa* and *E.coli*) and fungus (*Aspergillusnigre* and *C.albicans*) species. Thus the metal complexes have shown more antimicrobial activity than ligand. The results obtained from spectra and elemental analyses indicated the tetrahedral geometry around Co(II) ion and square-planer for nickel(II), copper (II), palladium(II) and platinum(II) complexes. However, the linear geometry for Ag(I) complex was adopted. The thermal analyses (TG-DSC) were screened for some selected complexes and the observed data indicated their stability and the expected chemical formula. The biological activity of the prepared compounds in DMSO was tested against some negative and Positive-Gram bacteria and the results obtained from inhibition zone diameters proved the greatest activity of silver(I), palladium(II) and platinum(II) complexes when compared with the other complexes and the free primary and secondary ligands. The free ligand and their metal complexes have been tested for In-vitro antioxidant activity by DPPH assay. The result shows that an In-vitro antioxidant activity of metal complexes more active than that ligand.



**Keywords:** HAP, SCN, Co(II), Ni(II), Antimicrobial and DPPH assay

### 1. INTRODUCTION

Synthesis of metals and ligand coordination Metal complexes play an important role in many biological systems<sup>1-4</sup>. It has been observed that metal ions have considerable effect on the antimicrobial activity of antibiotics<sup>5-9</sup>. Metals have played a significant role in biological systems over the years. Several of these metals like Fe, Co, Cu, and Ni etc., Many are important to our diets in varying quantities, although people have only recently realized their significance. Introducing metal ions into a biological system may be carried out for therapeutic or diagnostic purposes, although these purposes overlap in many cases. Metals not only provide path for synthesis, but they also introduce functionalities that enhance drugs action.<sup>10-12</sup>

The 2,4-dinitrophenylhydrazine is an important material for biological applications and constituent in various biomedical, pharmaceutical products and in toxicology.<sup>13</sup> The 2,4-dinitrophenylhydrazine is an analogue of hydrazine and an important class of drugs.<sup>14</sup> The oxygen and nitrogen may be involved in coordination providing a useful model for bioinorganic processes. These compounds are also of interest due to their pharmaceutical applications and biological activities.<sup>15</sup> The linear thiocyanate group can be present in compounds as an anion or as a ligand a mono-dentate ligand coordinated to sulfur or nitrogen, or a bridging ligand. The great coordination ability of the thiocyanate group and a great variety of its bonding modes are responsible for the existence of a relatively great number of coordination compounds in liquid and solid state in which this group occurs.<sup>16</sup>

The present paper describes the preparation and characterization of Fe(III) and Cu(II) complexes formed 2,4-dinitrophenyl hydrazine and thiocyanate and their structural studies by IR and electronic spectral, magnetic susceptibility, Conductivity measurements and elemental analysis. The biological activities of complexes studied in antimicrobial activity of the metal complexes were screened against *Bacillus subtilis*, *Staphylococcus aureus*, *Candida albicans* (Gram positive) and *Escherichia coli*, *Pseudomonas aeruginosa*, *Aspergillus Niger* (Gram negative) bacteria and fungi. The radical scavenging evaluations of DPPH assay in antioxidant activity study.

## 2. EXPERIMENTAL

### *Materials*

All the chemicals were obtained from commercial sources and were used without further purifications ( $\text{FeCl}_3 \cdot 4\text{H}_2\text{O}$ ,  $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$  and KSCN) from Merck. 2,4-dinitrophenylhydrazine was purchased from sigma Aldrich and solvent viz., DMF, DMSO Methanol and Ethanol used as a AnalaR grad.

### *Instrumentations*

The elemental analysis was carried out Elementar Vario EL III CHN analyzer. The electrical conductivity measurements were carried out in DMF medium ( $10^{-3}\text{M}$ ) using a digital conductivity bridge (Equip – Tronics, EQ-660A) at  $30^\circ\text{C}$ . The FT-IR spectra were recorded using Agilent spectrophotometer with the range of  $4000 - 400 \text{ cm}^{-1}$  range based on KBr pellet technique. The UV-Visible spectra were recorded on Jasco V-630 wavelength ranging from  $200 - 800 \text{ nm}$  with optical resolution  $1\text{nm}$ . Melting points were determined in open capillary tubes in a Electrical Melting Point Apparatus, The magnetic susceptibility measurements were obtained using Guey's Balance Magnetic Susceptibility Model MsB-MK1. The pharmacological studies of 2,4-dinitrophenylhydrazine and the metal complexes.

### *Synthesis of metal complexes*

The metal complexes of were synthesized by 2,4-dinitrophenyl hydrazine with metal chloride in ethanol medium. The mixture was stirred reflection for about one hour. Afterwards potassium thiocyanate was dissolved in de-ionized water added and the whole reaction mixture was stirrer refluxed for about six hour. The obtained metal complexes were filtered and washed with several times in ethanol solution and dried under vacuum desiccators over anhydrous  $\text{CaCl}_2$ .

### *Antimicrobial activity*

The metal complexes and free ligand have been screened for their antimicrobial activity by using different species of pathogenic bacteria/fungi's, such as, gram positive: *Bacillus subtilis*, *Staphylococcus aureus* and *Candida albicans*, Gram negative: *Escherichia coli*, *Pseudomonas aeruginosa* and *Aspergillus niger* using disc diffusion method. Each of the metal complexes and free ligand is dissolved in DMSO and the solutions of the concentrations ( $250, 500$  and  $1000 \mu\text{g/mL}$ ) were prepared separately. The paper discs soaked in the desired concentration of the complexes and free ligand solutions were placed aseptically in the petri dishes containing nutrient agar media seeded with each bacterial/fungi serums separately. The petri dishes were incubated at  $37^\circ\text{C}$  for  $24 \text{ h}$  for bacteria and  $48 \text{ h}$  for fungi then the inhibition zones were recorded. The antibacterial activity of a common standard antibiotic tetracycline was also recorded using the same procedure as above at the same concentrations and solvent.

## 3. ANTIOXIDANT ACTIVITY

### *DPPH Assay*

DPPH (1,1-diphenyl-2-picryl-hydrazyl) radical scavenging activity evaluation is a standard assay in antioxidant activity studies. It is a rapid technique for screening the radical scavenging activity of specific compounds [19]. The free radical scavenging effects of all the metal complexes and ligand fwith DPPH radical were evaluated with various concentrations ( $100, 200, 300, 400$  and  $500 \mu\text{g/mL}$ ) of the test compound in  $1\text{mL}$  DMF and were added to  $1.0\text{mL}$  of  $0.4\text{mM}$  methanol solution of DPPH and were stirred thoroughly. After  $30\text{min}$  incubation period at room temperature, the scavenging ability determines the antiradical power of an antioxidant by measuring the decrease in the absorbance of DPPH at  $517\text{nm}$ . Ascorbic acid (vitamin C) are used as standard

drugs. Resulting from a color change, the absorbance decreased when the DPPH is scavenged by an antioxidant, through donation of hydrogen to form a stable DPPH molecule. All tests samples were performed with three replicates to obtain mean  $\pm$  S.D. The percent of inhibition (%) of free radical production from DPPH was calculated by using the following equation:

$$DPPH \text{ scavenging ability } (\%) = \frac{\text{Abs control} - \text{Abs sample}}{\text{Abs control}} \times 100$$

#### 4. RESULT AND DISCUSSION

##### Microanalysis

The elemental analysis data of the complexes (Table 1) show the formation of the complexes in the ratio of 1:2 for [M: L] is corresponding to a [Metal: DNPH: SCN]. It is found that the calculated values are in agreement with the found values.

**Table 1 - Analytical data of the metal complexes**

Complexes	MW	Color of the complexes	Elemental analysis Found/ (calculated) %						$\Lambda_m$ $\Omega^{-1}\text{cm}^2\text{mole}^{-1}$
			%C	%H	%N	%O	%S	% Metal	
[Fe(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	568.27	Blood red	29.59	2.13	24.65	22.52	11.28	9.83	12.9
			29.52	2.10	24.59	22.46	11.23	9.75	
[Cu(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	575.97	Yellow	29.19	2.1	24.32	22.22	11.3	11.03	15.8
			29.12	2.2	24.27	22.11	10.98	10.95	

All the synthesized metal complexes were stable at room temperature to be characterized by different analytical and spectroscopic methods.

##### Molar conductance

The complexes are dissolved in DMF and the molar conductivity values of  $10^{-3}$  M solutions at  $25 \pm 2^\circ\text{C}$  are measured and the values are exhibited in Table – 1. It is concluded from the results that the mixed ligand DNPH complexes have the molar conductivity values in the ranges of 12.9 and 15.8  $\Omega^{-1}\text{mol}^{-1}\text{cm}^2$  Complex which indicates the nonionic nature of these complexes and they are considered as non-electrolytes. From the conductivity measurements, it is inferred that the thiocyanate ions are coordinated to metal ions, indicating that they are ligands and not simple ions [1].

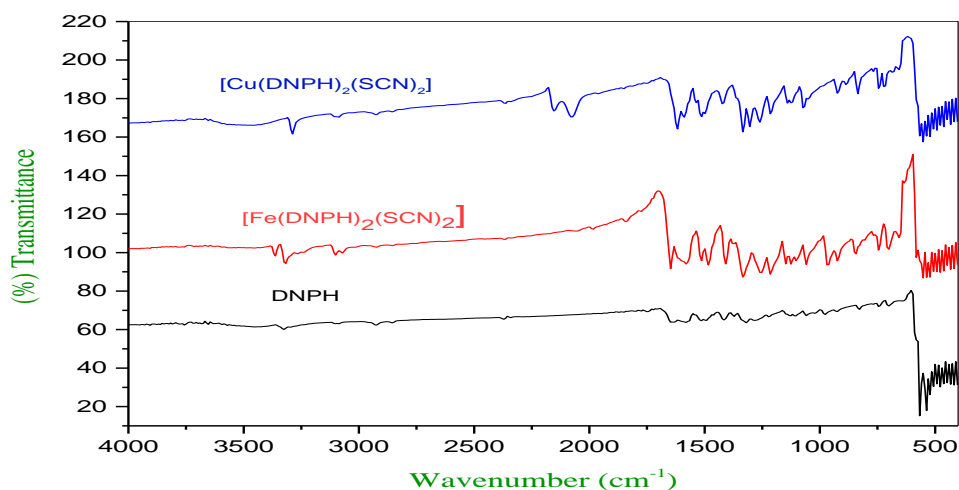
##### FT IR spectra analysis of metal complexes and ligands

The FTIR spectrum of the free ligand and its metal Complexes were carried out in the range of  $4000\text{--}400\text{ cm}^{-1}$ . FT IR spectra of the ligand showed a sharp peak at  $3324$  and  $1635\text{ cm}^{-1}$  assigned the NH Stretching vibration on the free ligand. In these metal complexes Strong adsorption band with attributed NH group of 2,4-dinitrophenyl hydrazine, which renders to attribute to the involvement of coordinate. The stretching vibration of the DNPH nitrogen  $\nu(\text{C-N})$  was observed intense band at  $1282\text{ cm}^{-1}$  in the free ligand. The 2,4-dinitrophenyl hydrazine  $\nu(\text{N-H})$  in the free ligand were shifted to higher frequency in the metal complexes assigned to the impregnations through nitrogen atom, so that higher frequency of  $\nu(\text{C-N})$  band was shifted to lower frequencies indicating that involvement of Nitrogen coordinate to the metal ion [2,3].

This is further supported by the appearance of new band at ( $551 - 581\text{ cm}^{-1}$ ) formed. due to nitrogen to metal stretching vibration of the metal complexes. The band at  $1319\text{ cm}^{-1}$  in the ligand is still in the same position in the complexes indicating the non-involvement of the  $\text{NO}_2$  in coordination. The FTIR spectrum of thiocyanate complexes showed a high intensity  $\nu(\text{C-N})$  band at ( $2152$  to  $2117$ )  $\text{cm}^{-1}$  and ( $2076$  to  $2050$ )  $\text{cm}^{-1}$  that frequency provides the formation of coordination from Nitrogen to metal ions bonded to  $\text{NCS}^-$  in the iso-thiocyanated mode [4]. The FTIR spectra indicate that behaves as DNPH and SCN the coordination sites being aromatic primary and secondary amine and thiocyanate nitrogen atom involve the coordination sides.

**Table 2 - Selected IR bands of the ligands and its metal complexes (cm<sup>-1</sup>).**

Compound	$\nu(\text{N-H})$	$\nu(\text{N-H})$	$\nu(\text{C-N})$	$\nu(\text{NO}_2)$	$\nu(\text{SCN})$	$\nu(\text{N-M})$
DNPH	3324	1635	1282	1319	-	-
[Fe(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	3364	1647	1259	1320	2117, 2050	581
[Cu(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	3288	1618	1261	1320	2152, 2076	551

**Figure 1 - Selected IR bands of the ligands and its metal complexes**

### Electronic Spectra and Magnetic Moments

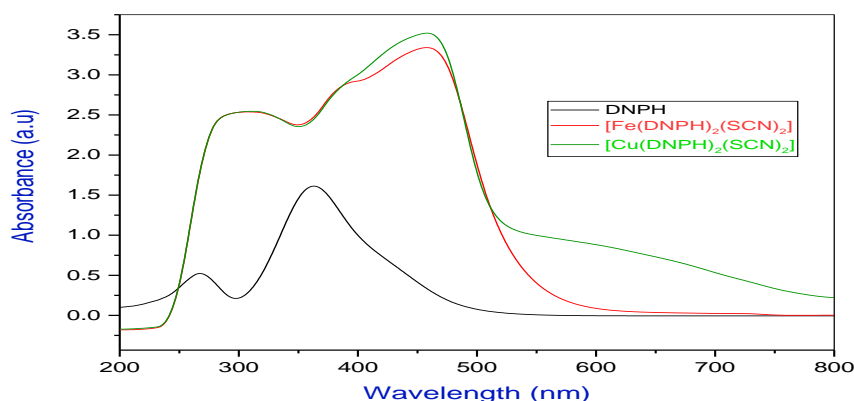
The electronic spectral data of the 2,4-Dinitrophenyl hydrazine (DNPH) and its metal complexes in DMF is given in Table 2, which contains absorption regions, band assignments and the proposed geometry of the complexes. The electronic spectrum of 2,4-dinitrophenyl hydrazine and complexes are given in Fig – 2 The ligand shows two strong peaks at 267 and 363 nm. The two strong bands at 267 and 363 nm are attributed to  $\pi - \pi^*$  and  $n - \pi^*$  transitions respectively. In the metal complexes this band is shifted to a longer wavelength with increasing intensity. This shift may be attributed to the donation of lone pair of electrons of nitrogen atom of the 2,4-dinitrophenyl hydrazine to the metal ion (M – N).

The electronic spectrum of the Fe(III) complex exhibits three absorptions at 308, 388 and 458 nm, which are assigned to  $\pi - \pi^*$ , LMCT and  ${}^6\text{A}_{1g} - {}^4\text{T}_{1g}$  transitions respectively, suggesting an octahedral geometry. The observed magnetic moment value of 5.91 BM is in accordance with the high spin six coordinated octahedral arrangement around the iron complexes [5].

The electronic spectrum of the Cu(II) complex exhibits three absorptions at 301, 457 and 621 nm, which are assigned to  $\pi - \pi^*$ ,  ${}^2\text{E}_g - {}^2\text{T}_g$  and  ${}^2\text{B}_{1g} - {}^2\text{B}_{2g}$  transitions respectively, suggesting a distorted octahedral geometry. The observed magnetic moment value of 1.9 BM is in accordance with the six coordinated octahedral arrangement around the copper complexes [6].

**Table 3 - Electronic Spectral Data**

Complex	$\lambda_{\text{max}}$ (nm)	Band assignments	$\mu_{\text{eff}}$	Geometry
DNPH	267 363	$\pi - \pi^*$ $n - \pi^*$	-----	-----
[Fe(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	308 395 458	$\pi - \pi^*$ LMCT ${}^6\text{A}_{1g} - {}^4\text{T}_{1g}$	5.91	Octahedral
[Cu(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	301 457 621	$\pi - \pi^*$ ${}^2\text{E}_g - {}^2\text{T}_g$ ${}^2\text{B}_{1g} - {}^2\text{B}_{2g}$	1.9	distorted Octahedral



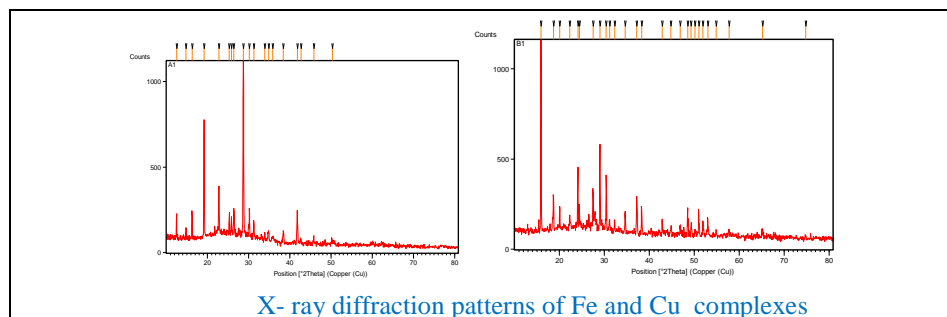
**Figure 2 - Electronic Spectral Data**

### *X-ray Diffraction Analysis*

The X-ray powder diffraction analysis of the complexes has been performed in order to determine the structural information of polycrystalline material as it was difficult to isolate suitable single crystal for X-ray crystallography. The powder diffraction analysis of metal complexes well defined crystalline peaks (Fig. 3) while Cu(II) and Ni(II) complexes were found to be amorphous in nature. The indexing and calculations of unit cell parameters were performed using XPERT - PRO software and scattering angles ( $2\theta$ ) corresponding to each reflection, inter-planar spacing ( $d$ ) along with Miller's indices and lattice constants were evaluated which corresponds to cubic crystal system for Cu(II) and Ni(II) complexes. The average crystallite size for the above mentioned complexes was calculated using Debye Scherrer's formula:

$$D = 0.9\lambda / \beta \cdot \cos\theta$$

Where constant 0.9 is the shape factor,  $\lambda$  is the x-ray wavelength of Cu  $K\alpha$  radiation ( $1.5406\text{\AA}$ ),  $\theta$  is the Bragg diffraction angle and  $\beta$  is the full width at half maximum (FWHM). The experimental average crystallite sizes of Fe(III) and Cu(II) complexes were found to be 43.3, 88.2, nm respectively.



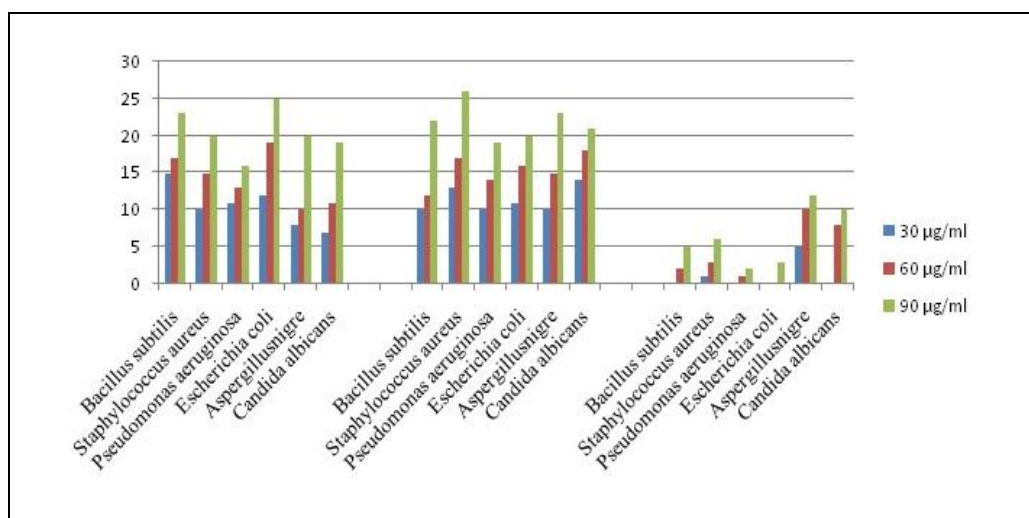
**Figure 3 - X-ray Diffraction Analysis**

### *Microbial activities*

The synthesized Fe(III) and Cu(II) complexes of the antibacterial and antifungal activities results are given in tables 4. Against all organisms, the ligand is moderately active, and the complexes are more active than the ligand. The Cu(II) and Fe(III) complex is highly active against the bacterial and fungal species compared with other complexes. The activity increases with increase in concentration of complexes. It is suggested that the complexes having antimicrobial activity may act either by killing the microbe or by inhibiting multiplication of the microbe by blocking their active sites [7]. The activity order of the synthesized complexes is as follows:  $\text{Cu} > \text{Fe} > \text{L}$ .

**Table 4 - Antibacterial and Antifungal Activities**

Organism name	[Fe(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]			[Cu(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]			DNPH		
	30 µg/ml	60 µg/ml	90 µg/ml	30 µg/ml	60 µg/ml	90 µg/ml	30 µg/ml	60 µg/ml	90 µg/ml
<i>Bacillus subtilis</i>	15	17	23	10	12	22	-	2	5
<i>Staphylococcus aureus</i>	10	15	20	13	17	26	1	3	6
<i>Pseudomonas aeruginosa</i>	11	13	16	10	14	19	-	1	2
<i>Escherichia coli</i>	12	19	25	11	16	20	-	-	3
<i>Aspergillusnigre</i>	8	10	20	10	15	23	5	10	12
<i>Candida albicans</i>	7	11	19	14	18	21	-	8	10

**Figure 4 - Antibacterial and Antifungal Activities***In-vitro antioxidant activity*

It is a well-documented fact that ligand and its transition metal complexes exhibit significant antioxidant activity. The results of radical scavenging effect of the compounds at different concentrations (50µg/ml, 100µg/ml and 150µg/ml) are shown in (Table – 5) as well as in concentration dependent curve in (Fig. 5). It is evident from the results that free ligand, showed remarkably less potent activity than metal complexes, which is mainly due to the Chelation of organic ligand with the metal ion. Among the examined complexes, Fe(III) and Ni(II) complexes exhibited best scavenging activity whereas Co(II) and Cu(II) complexes have shown moderate activity in comparison to Free ligand.

The difference in the activity of the metal complexes may be ascribed due to the coordination environment and the redox properties. In general, the redox properties of the complex depend on several factors such as chelate ring size, axial ligation, degree of unsaturation in the chelate ring. The comparative assessment of the antioxidant activity data on free ligand and its complexes suggest that the complexes have better antioxidant activity as compared to free ligand which warrant them further in vivo experiments for pharmacological purposes.

**Table 5 - % scavenging activity of the complexes and free ligand**

Complex	50 µg/ml	100 µg/ml	150 µg/ml
DNPH	50.57	52.24	59.60
[Fe(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	62.78	65.41	86.34
[Cu(DNPH) <sub>2</sub> (SCN) <sub>2</sub> ]	55.31	56.61	60.62

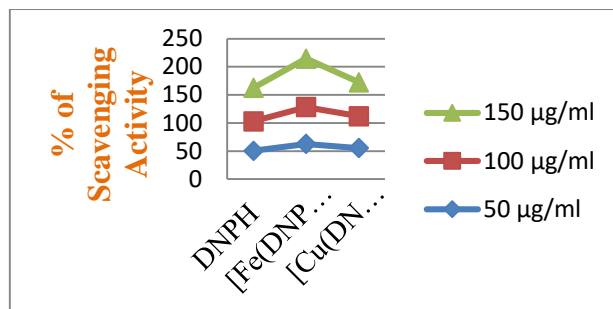


Figure 5 – Scavenging Activity

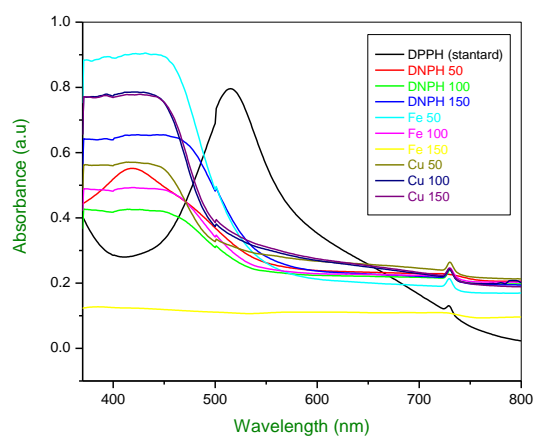


Figure 6 - Absorbance

Structure of metal complexes

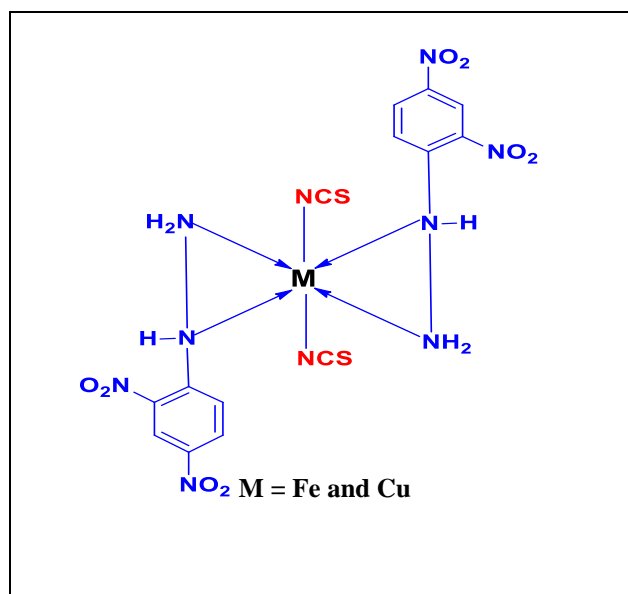


Figure 7 - Structure of metal complexes

## 5. CONCLUSION

Mixed ligand complexes of Fe(III) and Cu(II) with 2,4-dinitrophenyl hydrazine and Thiocyanate were synthesized. The structure of the complexes was confirmed by the elemental analyses, IR, UV-Vis., magnetic moment, molar conductance. The molar conductance values show that the complexes are non-electrolytes. Spectral and magnetic moment suggest to octahedral geometry for the mixed ligand complexes. PXRD analysis show the crystalline nature of metal complexes. The comparative study of *in vitro* antibacterial and antioxidant activities was carried out which revealed that metal complexes exhibited more potential activities as compared to free ligand.

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## **Over The Top (OTT) Streaming and User Adoption: A Conceptual Study in the Indian Context**

**Sridevi M**

Research Scholar, Department of Management studies, Periyar University, Salem

**Dr. T. Sarathy**

Associate Professor, Research Supervisor, Department of Management studies, Periyar University, Salem

### **1. INTRODUCTION**

Gone are the days when we needed to look ahead to blockbuster movies to be launched on the huge displays or needed to wait for a whole week to catch up at the brand-new episode of favourite television shows. The online screening and streaming video content providing platforms which can also be said as OTT(Over-The-Top) services providing platforms have successfully marked their presence in the entertainment part of people's life in India. Now a day's people their small screens more than big LCD or TVs. In case if they wish to watch any reality show, cricket match, any web series, serials, movies etc. their first preference would be their smart phones. Over the top (OTT) streaming structures including Disney+ Hotstar, ZEE5, Netflix, Amazon Prime Video, in conjunction with nearby players consisting of ALTBalaji, Voot, Eros Now, SonyLIV, MXPlayer amongst others have redefined the way Indian target market eat content. Binge-watching that is trending among the millennials and Gen-Z has taken the centre-stage. During COVID-19 pandemic, OTT platforms are experiencing a unique moment. With millions at home, now everyone sitting at home are craving new content. During these tough Covid times the OTT platforms have witnessed a huge improvement in phrases of extended viewers, new subscribers and more modern audiences are flocking in the direction of on-the-go content, a lot in another way, be it tune, video and podcast consumption. With the upward push of the pandemic, OTT structures are gaining a good deal popularity. In early 2020, Netflix received nearly 15.8 million paid subscribers as locked- down audience had limited number of entertainment alternatives. Moreover, similar video streaming systems inclusive of Disney+ Hotstar, Amazon Prime, and ZEE5 have also located a spike within the range of subscribers, introducing a experience of sanguinity inside the future of the Over-the-Top (OTT platforms) enterprise. As the name implies, those platforms offer content explicitly to viewers over the internet usage of a TV, computer, and/or cellular telephones in the consolation in their homes on their fingertips. According to Statista report, "the projected figure for internet users in India is expected to grow to 492.68 million users in 2022, also India already is the second – largest online market worldwide and a big number of internet users are the people who use internet on mobile phones. Major players like Amazon Prime Video, Disney+Hotstar, and Netflix are undeniably doing amazing but the new entrants like Jio TV, Jio cinema, SonyLIV, Flipkart Videos are also fighting good with these pre-established OTT services providing platform in market. As social distancing and work-from-home continue to prevail, the shows watched on the OTT systems have become communication starters across the country, and globally. Also, many movies are actually being launched on OTT systems and are developing lots of buzz on social media structures. According to industry specialists, this trend will stay the same in near future as the worry of pandemic will keep human beings away from the theatres and cinema halls. OTT has empowered the client in an essentially one-of-a-kind manner. Unlike the highly uni-dimensional, inflexible era of linear tv, over-the-top tv now allows customers to actively interact with content. It also gives them a big selection of picks, in terms of binge watching, time shift, region shift, and navigation. Besides resetting purchaser revel in and expectancies, OTT has also forced the incumbents to revisit a number of their lengthy held, middle business assumptions. Having to begin with shrugged off the competitive hazard from OTT, mainstream cable and satellite TV operators, in addition to broadcast networks, are progressively rolling out their own direct-to-consumer offerings. So, everybody can now watch "Game of Thrones" or "Breaking Bad" over any popular internet-enabled tool, without having to enrol in a cable company. The features like binge watching, on demand content, convenience, time shift, privacy, navigation etc insists a consumer to use these OTT platform services on their mobile screen. Other than these the reduction in internet cost, the expansion of internet services (broadly 4G) are the things that grabbed the customer's eyeballs towards the online streaming videos and successfully converted it in their habits. Also, the benefit which marketers are having from the advertisement during these online streaming videos is that the chances of viewing an advertisement is really more by the customers while watching online videos and these chances are comparatively low when being watched on TV.

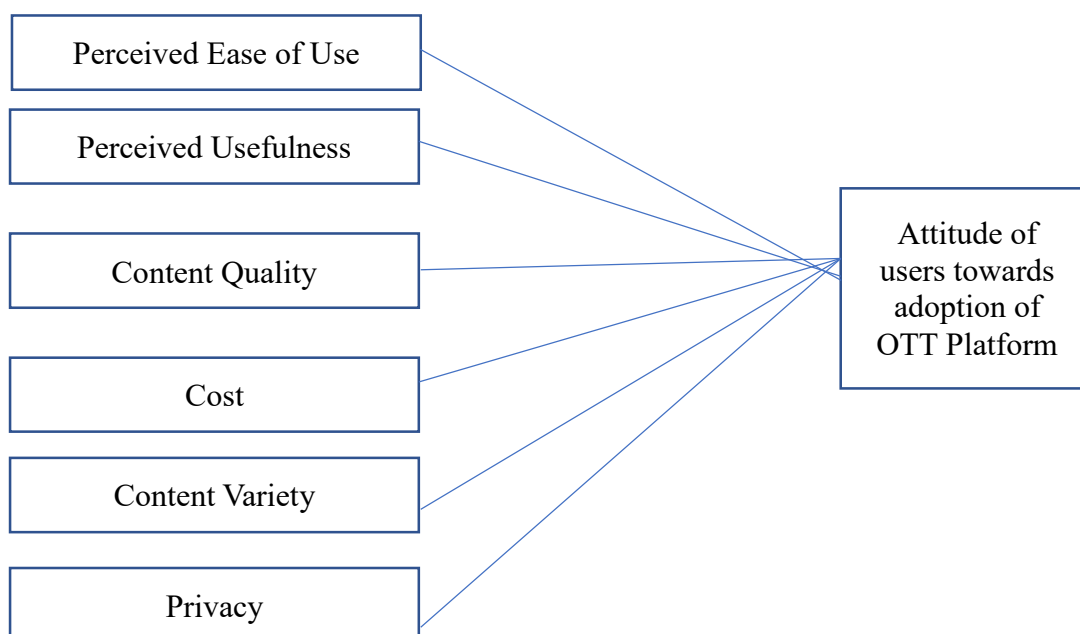
### **2. LITERATURE REVIEW**

OTT industry is providing platforms which have successfully marked their presence in entertainment part of people life. One of the prominent aspects in Industry 4.0 is personalisation and customisation of products and services. In addition, to mine information, AI helps to optimise OTT delivery. The content delivery infrastructure

is monitored offering valuable inputs for improving compression techniques apart from optimising network traffic which helps to achieve scalability in operations. In the study by Bhullar.A & et al., (2020), it was highlighted that content quality and user interface play an important role in adoption towards OTT. Cha (2013) talks about the motivational factors for opting OTT services. Despite the fact that OTT is a growing sector there has been very less research conducted in this domain. Past studies have focused whether OTT can become a substitute of traditional television or not. The user's perspective has less been researched. So, in this paper we are trying to understand the user perception and what are the reason for their adoption of OTT platforms. The main factors will be identified with the help of empirical verification. This research will be of use to OTT providers to build long term relationships with the customers. In the study by Moyler & Hooper in 2009, convenience of watching content anytime and anywhere and on any device was considered as one the major factors for adoption of OTT platforms.

### 3. RESEARCH METHODOLOGY

#### *Proposed Model*



**Figure 1 - Proposed Model**

#### *Variables:*

*Perceived Ease of Use:* Perceived Ease of Use (PEOU) is one of the important variable of TAM. It has been defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989). The perceived ease of use refers to the capability of an individual to try a new innovation and evaluate its benefits easily. The perceived ease of use is the consumer’s perception that using OTT platform is easy by and it will lead to adoption of OTT media platform. OTT platforms gives flexibility to the viewer to watch any show, series or movies wherever user goes. So, the content can be watched anytime and anywhere. The consumer is up for it to pay additional cost provided the consumer gets privilege and pliability to watch anything anywhere.

*Perceived Usefulness:* Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). For consumers usefulness of a new technology is very essential to switch to it. Whereas if the consumer does not find any usefulness of new technology then user will not take on the new technology, so to analyse the viewpoint of the users towards OTT media platform, it is essential to think about the Usefulness of OTT media to the user over traditional media.

*Content Quality:* Content Quality refers to the sort of content delivered to the customer, which is as per the requirement of the customer that set one’s heart on. Good content quality engages the central position in terms of interest generation amidst the audience. If the content is not up to the mark, no matter how the convenience of a platform is, user will not be interested to visit again. It is very important to put in the suitable interesting content

on OTT platforms. The content needs to be contemporary, interactive and fun to engage with. There could be graphic interfaces and innovative visual effects need to be incorporated so that it entices the consumers to be involved with the content.

*Cost:* Cost is one of those factor that is reason for the adoption of OTT platform. As, television provides around thousand channels in some operators and the cost that has to be paid is high as the whole package has to be taken and therefore, television becomes a costly medium. Whereas, OTT platforms are customized, so users are actually paying for what they are watching in terms of the OTT platform but in terms of television, they are paying even for what they are not watching and hence television is a costly medium in comparison to OTT platforms.

*Content Variety:* Variety is the spice of content. The customers love to watch diverse content and that made them to shift from TV to OTT platform. As, OTT allows the audience to watch not just diverse content from around the world but to also experiment new genres.

*Privacy:* Privacy is somewhat that currently every single user of OTT platform wants. Whereas violating the privacy can foster the transparency and trust between the customers and operators.

#### 4. DATA ANALYSIS & INTERPRETATION

*Measurement Scales:* The measurement items (all statements) for all constructs were adopted from previous studies. Also, multiple items were used to measure each factor. For each item, a five- point Likert Scale is used ranging from "Strongly Disagree" to "Strongly Agree".

**Table 1 - Conversion of Likert Scale into Numerical Scale**

Likert Scale	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Number	1	2	3	4	5

**Table 2 - Reliability Statistics for Questionnaire**

Cronbach's Alpha	N of Items
.900	31

From table 2, the Cronbach's Alpha value is 0.9, so we can say that the questionnaire is reliable as the value is above 0.7.

**Table 3 - Reliability Statistics for each factor**

Factor	No of Statement in the Factor	Cronbach's Alpha value
Privacy	3	.781
Ease of use	4	.933
Content quantity	4	.885
Content quality	3	.727
Cost	3	.758
Perceived usefulness	4	.872
Attitude	3	.893

From table 3, we can say that reliability of each factor is above 0.7, it is possible to state that each variable is reliable.

**Table 4 - KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Adequacy.	Measure of Sampling	.917
Bartlett's Test of Sphericity	of Approx. Chi-Square	3287.435
	df	276
	Sig.	.000

This test fulfils the assumption of KMO which needs to be more than 0.6 and here it is 0.917 which means that sample is adequate up to 91.7%. Also, the significant value should be less than 0.05 and here P-value is

0.000 which means the result is appropriate and normality is achieved.

**Table 5 - Communalities**

	Initial	Extraction
I believe when I share my account access with someone, that person should not be allowed to see the shows I am watching.	1.000	.639
I think OTT platforms are less risky in terms of data security.	1.000	.351
I feel uncomfortable in sharing my OTT account with others due to privacy reasons.	1.000	.706
It provides me with pause, play and rewind facility while watching.	1.000	.824
I can watch my favorite shows and movies multiple number of times.	1.000	.857
I can watch shows and movie according to my time convenience.	1.000	.833
I can watch shows and movies anywhere as it is very handy.	1.000	.783
I feel OTT platforms offer a wider range of content, be it shows, movies, news.	1.000	.731
I feel that there is more content of different languages in OTT platforms.	1.000	.651
I feel OTT platforms offer more genres of content (Movies and shows)	1.000	.779
I feel that the quantity of shows available on OTT platform is more when compared to TV	1.000	.711
I feel that shows on OTT platforms have better ratings.	1.000	.519
Sometimes I get early access of new seasons of flagship shows.	1.000	.459
I feel more award-winning shows and movies are available on OTT platforms.	1.000	.539
I feel that I have to spend less money on OTT platform over traditional media.	1.000	.595
I feel subscribing to OTT platform fits into my budget.	1.000	.733
I feel I can access more content by paying less.	1.000	.711
I like when I get alerts on upcoming content which matches my interest.	1.000	.520
I enjoy using OTT platforms.	1.000	.706
I feel entertained after using OTT platforms.	1.000	.739
I spend more time on OTT platforms.	1.000	.595
I use OTT platforms more frequently as compared to TV.	1.000	.787
I prefer subscribing to OTT platforms over subscribing to TV channels.	1.000	.753
I prefer OTT platforms as it allows me to binge watch more content.	1.000	.743

Extraction Method: Principal Component Analysis.

The basic assumption about communality is that it should be the values are above 0.5. more than 0.5 and in the above table 6, it is achieved as all.

**Table 6 - Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.207	42.529	42.529	10.207	42.529	42.529	4.592	19.134	19.134
2	2.043	8.512	51.041	2.043	8.512	51.041	4.079	16.997	36.131
3	1.559	6.496	57.537	1.559	6.496	57.537	3.654	15.224	51.354
4	1.396	5.818	63.355	1.396	5.818	63.355	2.143	8.930	60.285
5	1.060	4.416	67.771	1.060	4.416	67.771	1.797	7.486	67.771
6	.987	4.114	71.885						
7	.797	3.322	75.207						
8	.692	2.885	78.092						
9	.616	2.567	80.658						
10	.554	2.307	82.965						
11	.516	2.150	85.115						
12	.470	1.959	87.074						
13	.452	1.885	88.959						
14	.413	1.722	90.681						
15	.326	1.356	92.038						
16	.316	1.319	93.356						
17	.293	1.223	94.579						

18	.263	1.096	95.675						
19	.240	1.001	96.675						
20	.205	.853	97.529						
21	.166	.694	98.222						
22	.157	.654	98.876						
23	.155	.645	99.522						
24	.115	.478	100.000						

*Extraction Method: Principal Component Analysis*

The above table shows the total variance explained by the factors and it is 67.771 which is satisfactory. This states that 67.771% of variance is explained by mentioned 4 factors in the model.

**Table 7 - Rotated Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
I believe when I share my account access with someone, that person should not be allowed to see the shows I am watching.	.300	.040	.349	.169	.631
I think OTT platforms are less risky in terms of data security.	.329	.258	.304	-.124	.261
I feel uncomfortable in sharing my OTT account with others due to privacy reasons.	-.016	.057	.158	-.006	.823
It provides me with pause, play and rewind facility while watching.	.253	.274	.808	.080	.160
I can watch my favorite shows and movies multiple number of times.	.254	.244	.828	.059	.211
I can watch shows and movie according to my time convenience.	.244	.276	.827	-.013	.120
I can watch shows and movies anywhere as it is very handy.	.229	.344	.765	.008	.164
I feel OTT platforms offer a wider range of content, be it shows, movies, news.	.319	.687	.380	.112	.009
I feel that there is more content of different languages in OTT platforms.	.160	.749	.236	.069	.059
I feel OTT platforms offer more genres of content (Movies and shows)	.246	.783	.322	.042	.022
I feel that the quantity of shows available on OTT platform is more when compared to TV	.247	.745	.261	.120	-.116
I feel that shows on OTT platforms have better ratings.	.471	.474	.182	.148	.133
Sometimes I get early access of new seasons of flagship shows.	.165	.554	.138	.086	.313
I feel more award-winning shows and movies are available on OTT platforms.	.346	.507	.042	.147	.373
I feel that I have to spend less money on OTT platform over traditional media.	.131	.013	-.039	.759	-.008
I feel subscribing to OTT platform fits into my budget.	.055	.079	.056	.846	.063
I feel I can access more content by paying less.	.102	.218	.067	.803	.069
I like when I get alerts on upcoming content which matches my interest.	.467	.322	.340	.058	.281
I enjoy using OTT platforms.	.655	.409	.222	.095	.226
I feel entertained after using OTT platforms.	.643	.449	.182	.143	.266
I spend more time on OTT platforms.	.650	.291	.150	.073	.243
I use OTT platforms more frequently as compared to TV.	.839	.162	.228	.068	.009
I prefer subscribing to OTT platforms over subscribing to TV channels.	.835	.154	.144	.103	-.029
I prefer OTT platforms as it allows me to binge watch more content.	.787	.168	.283	.120	-.017

The above rotation component matrix shows the statements falling under which factors. The KMO value for each statement is near or more than 0.6 which fulfills the basic assumption.

## 5. FINDINGS & CONCLUSION

The OTT platform market is flourishing at a very good pace and also, it can be called as modified version of traditional television. It can be concluded that OTT service providers can develop their strategies by keeping in

mind the above- mentioned factors. All the above factors are important and should be taken into consideration for building customer driven strategies. By running EFA (Exploratory factor analysis), it was found that 4 components are important for the study which are explaining more than 67% of variance. Also, there is scope of considering the factors like perceived risk, self-efficacy and competitive advantage to study their influence in adoption of OTT platforms in the future research model.

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## Impact of Announcement of Corporate Quarterly Results in Stock Prices

**Dr. S. Saravanakumar**

Formerly Professor, JKKN College of Engineering and Technology, Komarapalayam-638183, Tamilnadu

**Dr. A. Saravanan**

Assistant Professor in Economics, PSG College of Arts and Science, Coimbatore-641014, Tamilnadu

### Abstract

*Announcement of quarterly results is the course of communicating the performance of a company to its owners. Investors' long-term buying decisions are largely based on the earnings stream of the firm. Normally a higher earnings than the previous quarter earnings should be welcomed by the market. This should be associated with greater return after the result is announced. All higher return after the announcement cannot say to be due to the earnings results. To find out the impact of results on returns, the impact of other factors in returns is to be segregated. The announcement of earnings is unique and specific to a company, to study its impact on the market place, the impact of other factors is removed, that is why the period is limited to 32 days and the return is calculated for 31 days. This study is based on samples of 50 Nifty companies listed on National Stock Exchange, exhibited that investors do not gain value from earnings announcement. Indeed, shareholders earned little value over a period of 15 days prior to the earnings announcement through to 15 days after the announcement. The lower return may be partially compensated because of the current earnings yield. This study also indicates that announcement of result does not convey any useful information to the investing community, which needs to be further investigated.*

**Keywords:** *Earnings Announcements, Quarterly Results, Abnormal returns, Cumulative Abnormal Returns, Event Window.*

### 1. INTRODUCTION

Disclosure of quarterly results is a means of communicating the results of operations on a periodic and regular basis. It is basically an extension of the annual reporting exercise on a more frequent basis. Quarterly reports are of great utility to the investing community. Investors consider interim/quarterly financial reports to be of more value than financial information which enables them to analyze actual performances and also revise their projections. Interim financial reports provide price-sensitive data to investors. Timely and reliable interim financial reporting improves the ability of investors, creditors and other stakeholders to understand an enterprise's capacity to generate earnings, cash flows, liquidity and its financial condition. It is a medium for continuous communication by the management with the investors and enables efficient investment decision making. Quarterly reporting leads to better price discovery and reduces chances of leakage of financial information. Investors are updated on the financial performance and financial status at frequent time intervals and within a short time from the end of the financial period. This avoids surprises at the end of financial year and facilitates efficient allocation of resources. Interim financials plays an important role in strengthening the confidence of investors in capital markets. The quarterly performance has taken center stage in recent times as far as the stock market is concerned (Saravanakumar, 2011). The stock market has in recent times tended to react instantaneously to information made available in quarterly financial reports. The prime objective of disclosing financial results is to provide useful and relevant information to all stakeholders concerned.

Quarterly results include not only financial statements but also other means of communicating information that relates directly or indirectly to the information connected with enterprise resources, obligations earnings etc. The traditional practices of Indian companies have been to communicate information on their operations and financial status once a year through their annual reports. However, the emphasis has shifted steadily towards a prompter and continuous reporting information. Periodic reporting rather than annual reporting provides users with more current information for use in assessing the performance of a business enterprise. Investors and academicians all over the world favor such an interim report since it provides timely information which is of price sensitive nature. The propagation of financial information at regular intervals helps the companies in sharing the information with the outside world. It is the question of integrity of managements and level of transparency in presentation of information of both the financial and non-financial developments in the respective companies, which determines the goals. Disclosure of quarterly results will prevent insider trading to some extent. The quarterly performance influences the stock price like the annual financial information. The importance of the quarterly information will be felt, if the same can be comparable to the corresponding period of the previous one or two years (Muhammad, and Abdullah, 2009). Quarterly results have been given more

importance but not at the cost of yearly performance. The short-term result is a path which ultimately leads to the destination of long-term goals. Stock market does not only take short-term goals in-to consideration, of course, quarterly results also have importance. Stock market price depends on the consistent profitability of a company which can be shown only through quarterly results. It helps to achieve the long-term goals by quarterly review of the financial parameters, it also helps in the judging the position of the company vis-à-vis its competitors. Hence drawing of quarterly results not only helps the company, but it also helps the investors by transparent reporting of the quarterly performance (Saravanakumar et al., 2012).

## 2. REVIEW OF LITERATURE

Earlier researches have seen continued rising in prices of shares when positive annual reports have been presented. The behavior of abnormal returns at the announcements of stock splits and found that there is a considerable market reaction prior to the stock split announcement (Yondrichs et al., 2021). The behavior of security prices surrounding the quarterly earnings announcements and found that stock market is efficient in the semi-strong form (Hutagaol et al., 2022). Price changes surrounding the announcement of a firm's annual earnings and found that the stock market reacts quickly to annual earnings announcements (Juwinta et al., 2021). Recently, considerable attention has been given to examining the association between corporate disclosure and share price anticipation of earnings (Avdalovic, 2017). The stock market's ability to anticipate future earnings changes is significantly improved when firms voluntarily provide higher levels of disclosure (Gunardi et al., 2016). However, these studies do not take into account the possibility that dividend policy may provide an alternative device for conveying value relevant information to the stock market that might act as a substitute or complement for narrative disclosure in the financial communication process (Ardini et al., 2022). The impact of dividend propensity on the stock market's ability to anticipate future earnings. The possibility that voluntary disclosure may act as an alternative communication mechanism (Ali, 2022). The items disclosed in the quarterly results statements, according to her some information disclosed compulsorily and some voluntarily which took part investment decisions (Dang et al., 2021).

## 3. OBJECTIVES

The study has been initiated with the following objectives:

1. To examine the behavior of stock price around the announcement of quarterly financial results.
2. To investigate the strategies based on information contained in earnings announcement could be used to outperform the market.
3. To study the investor expectations on the information content in disclosure of quarterly results.

## 4. METHODOLOGY

The study consists of 50 companies listed and included in the S&P CNX Nifty index of National Stock Exchange. The selection of the sample has primarily been guided by two factors, the active trading continuously for the sample period, and the availability of quarterly earnings announcements. The present study covers a period of one quarter from October 2021 to December 2021. Companies that have any price sensitive information other than earnings report during the event window (31 days) are eliminated. There are three sets of data have been applied to this study. The first set of data consists of quarterly earnings announcement released by the sample companies. This includes the dates on which the board meeting approved quarterly financial results of the company. The second set of data consists of daily-adjusted closing prices of the stocks selected for the study at the National Stock Exchange for the period covered (-15 days to +15 days) by this study. Daily-adjusted closing prices are used in the study as these are assumed to reflect the consensus of the market participants regarding price of the stock at the end of the trading. The third set consists of the S&P CNX Nifty index of common share prices compiled and published by the National Stock Exchange for the event window (-15 days to +15 days) were collected from the website of NSE and respective companies' websites, financial dailies like The Hindu Business Line and Economic Times. Further, the study has also attempted to test the opinion of investors with regard to the usefulness of various items disclosed by the companies in the quarterly results.

The study examines the stock market reaction to earnings announcement in the National Stock Exchange of India. A sample of 50 Nifty companies from different sectors is examined. The finding shows daily abnormal return gets a pick 15 days before the earnings announcement, and 15 days after the dividend announcement. In order to study the impact of earnings announcement on stock returns, present study covers two measures: (i) Daily Abnormal Return (DAR) and (ii) Cumulative Abnormal Return (CAR) during pre-announcement and post



announcement period. DAR indicates the relative daily percentage price change in the earnings disclosure stocks compared to the change in average market price. This study used Nifty index as the proxy of market return. DAR is calculated as follows:

$$DAR_{it} = R_{it} - R_{mt}$$

Where,

$DAR_{it}$  is the market-adjusted abnormal return for security  $i$  over time period  $t$ .

$R_{it}$  is the time  $t$  returns on security  $i$ , calculated as  $(S_{it} - S_{it-1})/S_{it-1}$ . Where,  $S_{it}$  is the market closing price of stock  $i$  on day  $t$ .  $S_{it-1}$  is the market closing price of stock  $i$  on day  $t-1$ .

$R_{mt}$  is the time  $t$  return on the Nifty index calculated as  $(I_t - I_{t-1})/I_{t-1}$ . Where,  $I_t$  is the market index on day  $t$ .  $I_{t-1}$  is the market index on day  $t-1$ .

The daily market adjusted abnormal return (DAR) indicates the change in individual stock's price due to the earnings announcement. As the percentage change in Nifty index is deducted, the remainder gives us the chaotic portion of the value change, which is specific to that individual stock consequential from its earnings announcement. DAR is calculated over a period starting from -15 days to +15 days relative to the earnings announcement day (0 day). The next portion is cumulative abnormal returns (CAR), which measures the security's total return over a time period starting from the pre-announcement of earnings to the post-earnings announcement including the announcement day. This study covers 31-day window period starting from -15 day to +15 days relative to the earnings announcement day (0 day). CAR is computed as follows:

$$CAR_t = \sum_{t=-j}^{t=j} DAR_t$$

Where,  $CAR_t$  is cumulative abnormal return,  $DAR_t$  as defined above,  $j$  denotes the day -15 through days +15.

Finally, this study used parametric test to determine the statistical implication of daily market adjusted average abnormal return of earnings disclosing stocks over the window period. The t-statistics were calculated by using cross-sectional method by employing the standard deviation of abnormal returns of the sample companies. Moreover, the statistical significance of the cumulative abnormal returns is examined with the help of t-test.

## 5. RESULTS

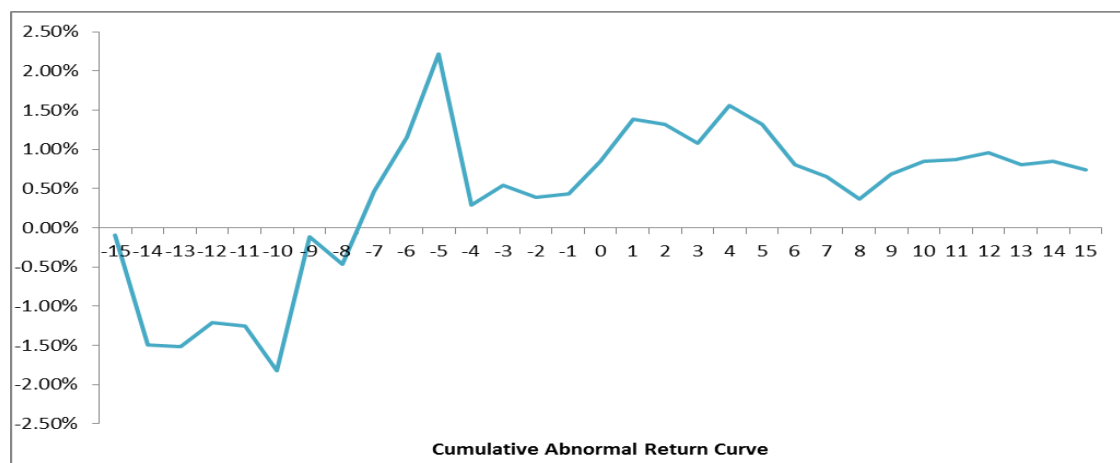
### Stock Price Reactions

The average daily market adjusted abnormal returns (ADAR) on the day of earnings announcement was only 0.42 percent, which is not statistically significant. One point is clearly evident from that analysis, the fact that the information content of earnings announcement of a company often leaks out to the market a few days before the announcement made by the company. Hence, this trend shows the earnings announcement normally carries no useful information to the market participants on the event day. Therefore, it is evident from the ADARs of the day -6, and -5 are about 0.70% and 1.06% respectively. It is clear from the table-1 that market reacts earlier than the actual announcement of earnings.

**Table 1 - ADAR and CAR in Event Window**

Event Window	ADAR	CAR	t-statistic	Event Window	ADAR	CAR	t-statistic
-15	-0.09%	-0.09%	-0.17	1	0.53%	1.38%	1.06
-14	-1.40%	-1.49%	-3.58	2	-0.06%	1.32%	1.49
-13	-0.03%	-1.52%	-3.65	3	-0.24%	1.08%	1.31
-12	0.31%	-1.21%	-2.90	4	0.48%	1.56%	1.08
-11	-0.04%	-1.25%	-3.01	5	-0.24%	1.32%	1.20
-10	0.07%	-1.18%	-2.83	6	-0.52%	0.80%	2.11
-9	2.20%	1.02%	2.48	7	-0.15%	0.65%	1.18
-8	-0.35%	0.67%	1.63	8	-0.28%	0.37%	0.89
-7	0.01%	0.68%	1.66	9	0.31%	0.68%	0.70
-6	0.70%	1.38%	1.35	10	0.17%	0.85%	0.32
-5	1.06%	2.44%	1.92	11	0.02%	0.87%	2.01
-4	-1.93%	0.51%	1.23	12	0.09%	0.96%	0.59
-3	0.03%	0.54%	1.20	13	-0.16%	0.80%	0.34
-2	-0.15%	0.39%	0.99	14	0.05%	0.85%	0.78

-1	0.04%	0.43%	0.87	15	-0.11%	0.74%	0.54
0	0.42%	0.85%	0.43				



**Figure 1 - Cumulative Abnormal Return in Event Window**

Figure-1 presents the abnormal returns of the earnings announcements over the years for 50 stocks. Market reacts to the earnings announcements on the event day in a manner consistent with the information content in the earnings announcements. If earnings disclosed is more than the market participant’s expectation, the reaction of the market for that particular scrip follows bullish trend and vice versa. Prior to earnings announcement, highest DAR found in day -5, and then the percentage return on all other days is less than that on the day -5. Hence, it is clear from above table, the stock market reacts a few days before the announcement of earnings is made. The day following the earnings announcement, the market generated a return of 0.53%, the very next day to the earnings announcement is not generated any positive income to the market participants. During the post announcement periods, all DARs are insignificant except those on day +6, and +11.

Stock market is always influenced by money flows and information flows. During the 31-day window period, the market gets affected by several macro-economic information and money supply forces from the domestic and foreign institutional investment. Hence the earnings announcement event is supported by several adverse effects which are not incorporated under this study. It is very hard to make superior return by taking this announcement information. By taking CAR for that 31-day window period, considerable return found in the day -5 prior to the earnings announcement. In the post announcement period, the investors may harvest their funds in the stock market during the first 5 days after the announcement of dividend. Although the result tends to suggest that investors may have positively reacted to the earnings announcement, the evidence seemed to gain some value from the earnings announcements. This study shows that investors earn more value in the post announcement period that the return gained in the pre-announcement period.

*Investors Reactions*

In order to study the opinion of investors with regard to the effectiveness of various items revealed by the company in the quarterly results, responses of 100 investors selected from the city of Coimbatore of Tamilnadu on the basis of convenience sampling system. A detailed questionnaire prepared on a five-point scale having Highly Useful, Useful, Do Not Know, Less Useful and Not Useful classifications. Weighted average scores have been calculated on the basis of weights assigned, that is, 5,4,3,2 and 1 respectively. The responses of investors to these items are presented in Table 2.

**Table 2 – Investors Opinion regarding items disclosed in Quarterly Results**

Particulars	Highly Useful	Useful	Do Not Know	Less Useful	Not Useful	Weighted Average Score
<b>Compulsory Basis</b>						
Net Sales/Income from Operations						
Other Income	62	34	1	2	1	30.27
Total Expenditure	48	45	3	3	1	28.87
Interest	51	36	4	8	1	28.73
Gross Profit (Loss) after Interest	26	59	5	9	1	26.67

Depreciation	36	55	2	5	2	27.87
Provision for Tax	15	28	4	46	7	19.87
Net Profit (Loss) (5-6-7)	18	65	3	12	2	25.67
Paid up Equity Share Capital	59	35	3	2	1	29.93
Reserves excluding revaluation reserves	51	31	4	5	9	27.33
	17	32	42	4	5	23.47
<b><u>Voluntary Basis</u></b>						
Profit Before Tax	54	31	9	2	4	28.60
Operating Profit	22	57	11	4	6	25.67
Total Income	32	45	6	9	8	25.60
Earnings Per Share	65	29	0	4	2	30.07
Growth Rate in Sales /Profit	46	41	2	5	6	27.73
Changes in Share Capital	28	23	46	2	1	25.00
Operating Expenses	16	19	58	3	4	22.67

It is evident from the above table that investors have given highest importance to net sales or net income from operations followed by earnings per share and net profit. Thus, earnings per share though not required to be disclosed under the requirement of listing agreement have been disclosed voluntarily by many companies. After that other income, total expenditure and profit before tax from the voluntary disclosure are considered highly useful. This reveals the fact regarding the increasing awareness among companies to satisfy the needs of investors. Again these items of information have been categorized according to the investor's usefulness with the help of range method of variation. According to this method, scores less than 20 are considered not useful, 21 to 24 are placed under less useful, 24 to 25 are categorized under do not know, 26 to 27 are coming under useful category, and 28 and above are considered highly useful.

## 6. CONCLUSION

The study attempts to discover the announcement of earnings have any influence on the stock returns. The findings of the present study basically highlight as to how the market evaluates quarterly results. It is simply not true, that earnings announcement data can provide a profitable guide to investment timing or improve a portfolio's rate of return. Information is reflected in stock prices so rapidly that published data tells the investor virtually nothing about the future change in stock prices. Not only do stock returns reflect the firm's earnings data when published but they also anticipate future earnings growth to some extent. The growth factor is taken in terms of percentage which increase profit over the previous year performance, was supposed to be an important performance indicator that is likely to affect the stock returns. There are variety of factors that influence the movement of share price and hence the return. The performance of the company as disclosed by the earnings result is one among them. In pre-announcement period highest earnings bracket experienced the largest negative abnormal returns. Investors experienced a little abnormal return on the day of the earnings announcement. In post announcement period, the investors harvested a slight return from their investment. In academic literature, it is suggested that earnings disclosed have no impact on the value of share in the absence of other market imperfections. While checking investors' opinion on quarterly results, they are showing interest on some items are disclosed compulsorily and some disclosed voluntarily. Their investment decision is based on information content in the earnings announcement. This information will help to the investors in making sound and rational investment decisions.

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## GLCM Features and Deep Learning for Handwriting Text Recognition

**Dr. M. Sivasankari**

Assistant Professor, Department of Computer Applications  
Don Bosco College of Arts and Science, Keela Eral, Thoothukudi District, Tamilnadu

### Abstract

*Handwriting recognition (HWR) is process of transcribing text data from handwritten text images. Handwritten texts are mainly recognized which is scanned from paper termed as offline HWR and text from a special device are recognized by online HWR by means of digitizer or personal digital assistant (PDA). Their feature extraction source is the key difference between them. Currently, offline handwriting recognition has been grabbing attention due to its popularity but difficult in processing. The main challenges are cursive handwriting nature, every character dissimilar size and shape along with large vocabularies. Online support vector machine is greatly utilized for mitigating these issues while dealing with handwriting recognition. The corner discovery is yet a challenging task because of meagre image quality of input handwriting text which is chiefly achieved by corner detection algorithm. Whenever the number of attributes for each data point is higher than the total training data samples, SVM fails in some instances. A novel is greatly suggested for handwriting text recognition for mitigating these issues. Scanning and Skeletonization will be accomplished on input image for alleviating foreground regions in a binary image. A canny edge detector technique is utilized for edge detection for increasing concerned region perceptibility and visibility. GLCM features are mainly involved for statistical features extraction. At last, Improved Long Short Term Memory (LSTM) neural network is greatly deployed for performing character recognition. The suggested model robustness is demonstrated through experimentation outcome pertaining to accuracy, precision and recall by means of tamil and English handwritten document.*

**Keywords:** *Handwriting recognition, Online Support Vector Machine, Skeletonization, Canny Edge Detector, Statistical Features and personal digital assistant.*

### 1.INTRODUCTION

Handwriting recognition has got huge attention with in disciplines of image processing and pattern recognition, and it has become a popular study topic. For the improvement of automation process and the advancement of man-and-machine interface, the contribution of Handwriting recognition is immensely high as regards several applications. Besides, pattern recognition research tends to build the human perception capabilities across artificial systems. There are many stages involved in the character recognition process, namely acquisition, feature extraction, classification, and recognition. Stylizing the system to make it effective in recognizing the actual character of format using an improved model is the core objective of this study [1, 2].

In a progressive research area, the automatic reading of handwriting that matches the human efficiency is considered being a big challenge and significant struggle. Because, there are huge varieties of human writing. The problems, like endless range of character shapes, resemblance within characters, and distorted and broken characters need to be addressed by the handwritten character recognition (HCR) systems. Hence, in present period of time, the system accompanied by the intelligence to recognize natural handwriting in each possible scripts across the world is highly necessitated [3, 4].

In recent times, numerous research studies are carried out on character recognition. Nevertheless, many of them focus over isolated units (i.e. words, characters). Due to the issues, like improbable number of lines per page and the word count per line, uneven spacing within words and lines, and variation in writing style, the recognition of the image containing unconstrained handwritten page is getting really challenging. In recent studies, these problems are resolved through online support vector machine. Nevertheless, the accurate identification of the corner turns out to be tough job, since the handwriting text has poor image quality. This issue can be tackled by using corner detection algorithm. Henace, it can be concluded that the SVM is inadequate when total features for every data point surpasses training data sample quantity [5].

For handwriting text recognition, a novel method is presented in this work in order to deal with the aforementioned problems. Accordingly, Scanning and Skeletonization processes are implemented on the input text; edge detection task is carried out with the help of canny edge detector techniques for maximizing the visibility and perceptibility in the concerned region; the extraction of statistical features is performed through GLCM features; and the handwriting text recognition is accomplished based on Improved LSTMNN.

This study is organized as five segments as mentioned. In Section I, importance of handwritten text recognition is discussed; various approaches for text recognition is conferred in Section II; the Section III provides design methodology for suggested handwritten text recognition model; The experimental study is described and various result analyses are included in Section IV; The conclusion of the work and outlining of future work summarized in Section VI.

## 2. RELATED WORKS

Various approaches for hand writing recognition is reviewed in this section. For handwritten text line segmentation in document images, Renton et al [6] suggested learning-based technique. following features contribute to the method's uniqueness: i) use of X-height textline labelling, which allows for an acceptable text line description for text recognition, and ii) a deep Fully Convolutional Network (FCN) version based on dilated convolutions. The results are based on a publicly available database and compare favourably to a traditional hand-segmentation method.

Wu, et al [7] presented a handwritten Chinese text recognition method with the help of Separable MDLSTMRNN (SMDLSTM-RNN) modules. Through that, contextual information can be extracted in several directions. Besides, the requirement of computational effort and resource are less in this model when compared to conventional MDLSTMRNN. Empirical findings obtained based on ICDAR-2013 competition database depicts efficiency of suggested model to outperform other present approaches and earlier LSTM-based methods.

Moysset et al [8] introduced a novel technique exclusively for full page text recognition. By considering Fully CNNs and Multidimensional LSTM as contextual layers, the text lines are localized on the basis of regressions. Subsequently, solely left side portion of text lines are identified for improving the performance of this localization approach. Then, text end is identified through text recognizer to recognize it. With regard to extremely heterogeneous Maurdor dataset, this approach is proved to be efficient for full page text recognition by obtaining optimal outcomes.

Carbonell et al [9] tends to carry out both processes simultaneously, for which they employed a single neural network accompanied by mutual architecture as regards plain text recognition. The research work is experimented and evaluated over a historical marriage records collection. Accordingly, presented outcomes depict the efficient performance for various configurations, i.e. several information encoding approaches, doing or not transfer learning and processing at text line or multi-line region level. According to compare with the reports taken from the ICDAR 2017 Information Extraction competition, test findings depict that effectiveness of suggested technique matches other preeminent methods even without utilizing dictionaries, language modelling or post processing.

Chen et al [10] suggested a technique for simultaneous script identification and handwritten text line recognition in a multi-task learning environment. The input text line pictures are first extracted using SepMDLSTM based on convolutional feature extraction. Subsequently, two classification modules are fed with extracted features in order to perform the script identification and multi-script text recognition tasks. Each network parameter is processed through end-to-end training with the help of multi-task learning, during which script identification tends to reduce NLL loss, whereas text recognition reduces CTC loss. Based on the handwritten text line datasets belong to IAM (English), Rimes (French) and IFN/ENIT (Arabic) languages, efficiency of the proposed approach is evaluated. Empirical findings depict that the performance of multi-task learning is effective in both script identification and text recognition. Specifically, accuracy rate of script identification is 99.9%, besides CER of text recognition process is comparatively lesser, when compared to a few single-script text recognition methods.

Romero-Gómez et al [11] introduced an approach for automatically aligning handwritten text images and associated transcripts. In this method, images are automatically segmented into lines, which eases the recognizing process. The Levenshtein distance within recognition results and the transcripts is used to attain an alignment confidence. Highly confident lines are further utilized in training. Ultimately, the outcomes derived through the experiments on historical document are promising.

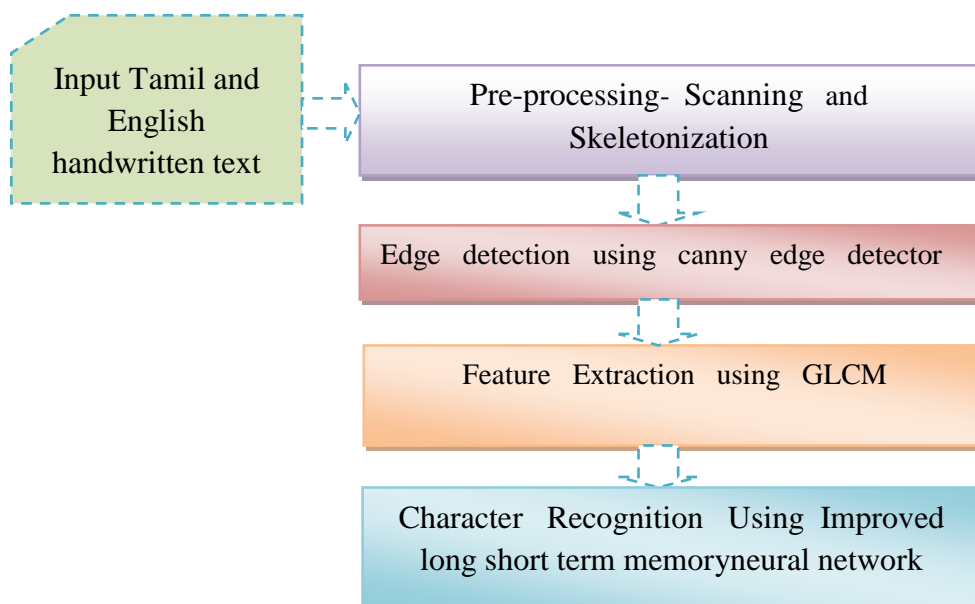
Mouhcine et al [12] introduced a novel approach on the basis of Hidden Markov Models (HMMs) for offline recognition cursive Arabic handwritten text. Even though the system is analytical, yet it does not require accurate segmentation, since it uses embedded training for performing and enhancing the character models. Because the extraction features preceding by baseline estimation are statistical and geometric, peculiarities of text as well as pixel distribution characteristics can be merged in word image. Hidden Markov models

predominantly helps to modelling these features, whereas embedded training is used to train them. The images from standard IFN/ENIT dataset are used during the experiments. The results depict the recognition improvement carried out by the proposed model.

Bolelli et al [13] introduced a novel method for semi-automatically index handwritten word images. HOG descriptors-based suggested model utilizes Dynamic Time Warping method for comparing feature vectors expanded from single handwritten words. On the dataset collected from Italian civil registries of XIX century, the proposed scheme is applied, since it is a challenging dataset. The results of experiments prove that the proposed techniques are efficient than previously developed word spotting strategies.

### 3. PROPOSED METHODOLOGY

In this segment, the proposed model is comprehensively conferred through four significant steps, i.e. i) implementing Scanning and Skeletonization processes on the input text; ii) performing edge detection task with the help of canny edge detector techniques for maximizing the visibility and perceptibility in the concerned region; iii) performing the extraction of statistical features through GLCM features; iv) accomplishing the handwriting text recognition on the basis of Improved LSTM neural network. The suggested model's complete architecture is shown in Figure 1.



**Figure 1 - Suggested model's complete architecture**

#### *Scanning and Skeletonization*

There may exist additional pixels in the input characters, hence the recognition efficiency may get affected during the training of algorithm. Then, handwritten characters are converted into 1024 (32X32) binary pixels through scanning process. Subsequently, the binary pixel image is processed through skeletonization process, during which the additional pixels not belongs to the character's backbone are eliminated as well as the wide strokes are diminished to thin lines [14, 15, 16, 17].

Usage of Lantuejoul's formula is exemplified through a repetitive thinning-based method with the help of morphological (Opening and Erosion) as well as Boolean operators (or (j), and (&) and Not (!)) as follows,

Require: Binary image

Validate: Single pixel width image skeleton generation

1:  $img \leftarrow$  input binary image;

2: while (Not – empty(img)) do

3:  $skel \leftarrow skel \left| \left( img \& \left( ! \left( Opening(img) \right) \right) \right) \right|;$

4:  $img \leftarrow Erosion(img);$

5: end while

6: return skel;



**Figure 2 - Skeletonization of an English Character**

According to this strategy, Erosion followed by Dilation take place in Opening transformation task, during which identical Structuring Element is employed by assigning 250 to a 3x3 cross-shaped Structuring Element (i.e. adopt 4-connectivity). Through the estimation of union of present Erosion less the Opening through this Erosion for compressing skeleton for each reiteration. Besides, the erosion of current binary image is carried out again up to the image obtains empty-white pixels.

#### *Edge Detection Using Canny Edge Detector*

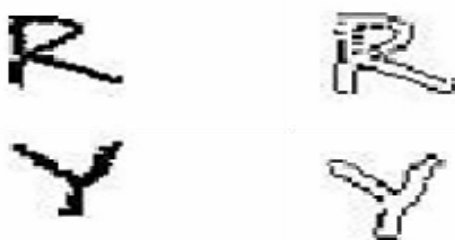
Identification of the corner of input face image turns out to be highly challenging during the feature extraction process. To resolve this issue, corner detection algorithm can be applied. In this study, canny operator has been presented for accurate identification of the edges.

Algorithm: 1forCanny Edge Detection

Input: Tamil and English Handwritten

Output: Detected edge points

1. Utilize Gaussian filter for smoothing the image, concerning noise removal.
2. Determine the image's intensity gradients
3. Utilize non-maximum suppression to discard spurious response to edge detection
4. Execute double threshold for determining potential edges
5. Monitor edge by hysteresis: Finish the edge detection by overcoming every one of the remaining weak edges that aren't related to strong edges.



**Figure 3 - Original and edge detected images**

#### *Feature Extraction Using GLCM*

Texture analysis tends to find a different and exclusive approach of signifying the necessary characteristics of textures and symbolizes them in unique and simpler form, through which they are enabled to get utilized for accurate and solid recognition. GLCM is an approach which examines texture geometrically by considering the pixels' spatial relationship. During GLCM functions, pairs of pixel are calculated with particular values and specific spatial relationship befall in an image for characterizing image texture. To compute a pixel with intensity value  $i$  that is present in a specified spatial relationship to a pixel with the value  $j$  in a graycomatrix [18, 19]. Every element  $(i, j)$  in GLCM represents total times a pixel with value  $i$  was adjacent to a pixel with the value  $j$ . The texture of GLCM epitomises association within reference and neighbour pixel of the grey level image in multiple directions, as shown in Figure 4.



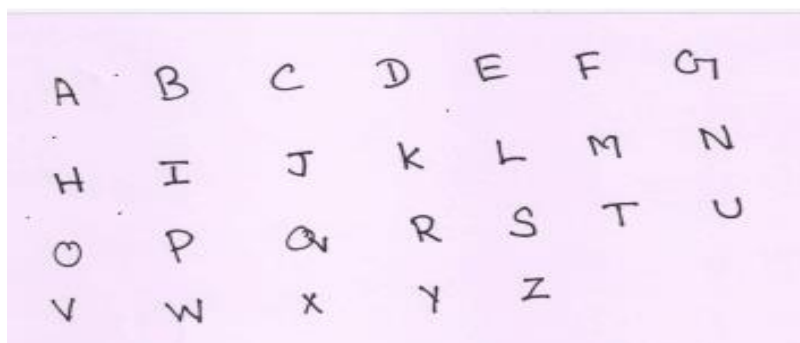


Figure 4 - Input image

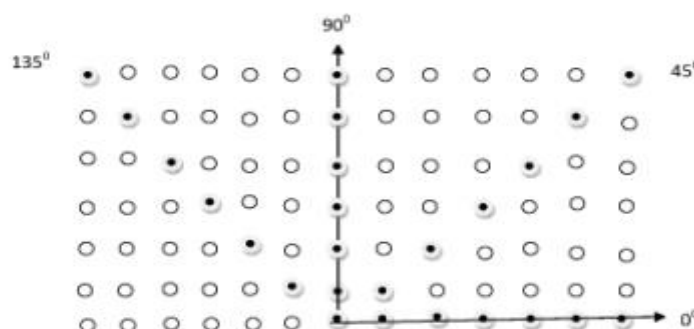


Figure 5 - GLCM matrix for 4 distances and 4 directions of adjacency for texture features.

The following steps take place in the computation of texture features [20]:

**Energy:** In the mammographic image, the observed uniformity is termed as Energy, which is generally estimated from the mean squared signal value as follows

$$\text{Energy} = \sum_{i,j=0}^{n-1} p(i,j)^2 \quad (1)$$

**Contrast:** It helps measuring the variation within the minimum and maximum values of a set of pixels that exist in vicinity. Besides, the volume of local variations occur in the image is computed through this metric.

$$\text{Contrast} = \sum_{i,j=0}^{n-1} (i - j)^2 p(i,j) \quad (2)$$

**Correlation:** identifies the association of a pixel with its neighbour on the overall image.

$$\text{Correlation} = \sum_{i,j=0}^{n-1} \frac{(i \times j)p(i,j) - u_i u_j}{\sigma_i \sigma_j} \quad (3)$$

$\sigma^2$  refers to the intensity variations of each reference pixel in the associations that made their contribution to the GLCM. It can be estimated as,

$$\theta^2 = \sum_{i,j=0}^{n-1} p_{i,j}(i-u) \quad (4)$$

Homogeneity, Angular Second Moment (ASM): For the estimation of homogeneity of the image, ASM helps in an efficient way.

$$\text{Homogeneity} = \sum_{i=0}^{n-1} \sum_{j=0}^{n-1} \{p(i,j)\}^{-2} \quad (5)$$

**Entropy:** It refers to the computation of complexity/ irregularity appears in the image. Besides, it helps obtaining the maximum value, when the values of P (i, j) are applied across the overall matrix consistently. It has maximum, yet inverse correlation with Energy.

$$\text{Entropy} = -\sum_{i,j=0}^{n-1} p(i,j) \log p(i,j) \quad (6)$$

Here, the rows of GLCM matrix are denoted by 'i', the columns are referred by 'j', the number of gray levels is denoted by 'n', and the cell represented by the row and column of the GLCM matrix is signified by P (i, j). In accordance with these valuations, the text features are extracted.

*Character Recognition Using Improved long short term memory neural network*

Being a DL technique, LSTM is set on basis of recurrent neural network (RNN). There exist recurrent structures in RNN, which is capable of feeding the firing strength locally. Consequently, there is no necessity for external registers/memories to store the earlier outputs. Besides, the utilization of recurrent structures in RNN reduces the computational complexity of LSTM, which is represented in Figure 6. [21, 22, 23, 24].

On the basis of following functions, LSTM operates:

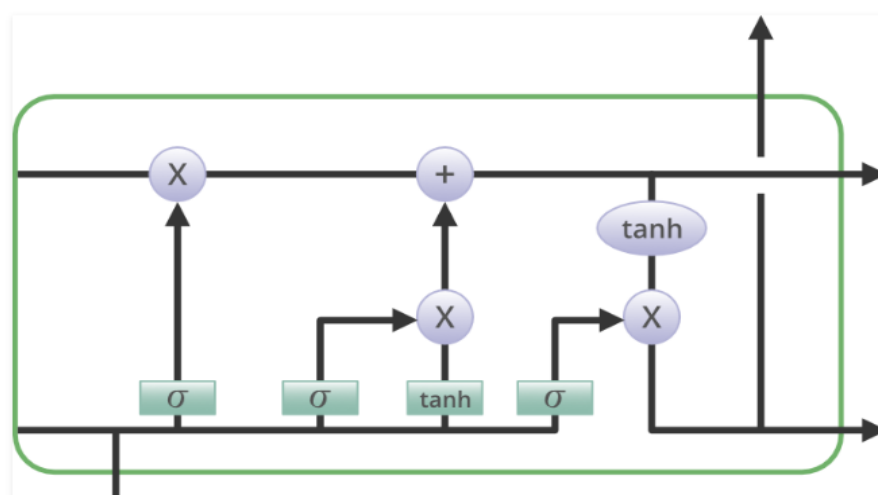
$$y_t = \sigma(W_y \cdot [g_{t-1}, w_t]) \quad (7)$$

$$s_t = \sigma(W_s \cdot [g_{t-1}, w_t]) \quad (8)$$

$$\hat{g}_t = \tanh(W \cdot [s_t * g_{t-1}, w_t]) \quad (9)$$

$$g_t = (1 - y_t) * g_{t-1} + y_t * \hat{g}_t \quad (10)$$

In RNN, learning is executed as two stages, namely structure learning and parameter learning. In accordance with input variable, nodes are applied with membership functions. With the help of mean and variance, Gaussian membership function is designated. Whereas, single-dimensional membership functions are assigned through spatial firing and temporal firing. For each input, the decision on which stage the rule needs to be generated and activated with firing strength higher than the threshold (0, 1) is taken through Structure learning. Post processing of Structure learning, minimization of error cost function is executed using Parameter learning.



**Figure 6 - LSTM**

As represented in Figure 5, the output nodes and the number of input features are equal in conventional LSTM classification model. However, solely the last node is considered and the remaining nodes are discarded in the conventional model. Consequently, the training effect becomes inadequate, since the information may be lost through the discarded nodes. Besides, the training speed may decrease since the discarded nodes take part in computing task and drain the computing resources. The volume of retained information is inversely proportional to input feature count, as expressed in Eq. (11). Hence, it is depicted that the conventional model's training effect and training speed may immensely be reduced if the number of input features are high. To overcome these issues, a few enhancements have been made to the conventional model in this study. As depicted in Figure 6, the traditional architecture is enhanced.

$$\text{Information\_reserve} = \frac{1}{seq\_length} * \text{information} \quad (11)$$

Subsequent to merging of input features, they are fed to 1 LSTM cell and merging vector is given by,

$$X = [X_1, X_2, \dots, X_{seq\_length}] \quad (12)$$

Here, the outcome of improved LSTM network classification system is formulated as,

$$\text{Lstm\_out} = [h_t] \quad (13)$$

Algorithm 2 articulates fundamental steps for improving the model. Accordingly, the overall information can be acquired by the improved model since it does not discard nodes, through which optimal classification effect is assured, which is superior to the conventional LSTM classification model. Besides, the training speed of improved model is proved to be high by having lesser nodes. Moreover, the improved model is capable of adjusting the interference information and saving the significant information, as it includes solely a single

LSTM cell. Consequently, the model's classification effect can considerably be increased. Algorithm.2. for Improved LSTM

1. Input: x
2. Output: out
3. (batch\_size,1, seq\_length\*embedding)  $\leftarrow$  x. shape;
4. LSTM (seq\_length\*embedding, hidden\_size,2) $\leftarrow$  LSTM
5. ((2,batch\_size,hidden\_size),(2,batch\_size,hidden\_size)) $\leftarrow$  hidden
6. lstm\_out, hidden  $\leftarrow$  LSTM(x, hidden);
7. Linear (hidden\_size, output\_size)  $\leftarrow$  FC;
8. fc\_out  $\leftarrow$  lstm\_out\*FC;
9. out $\leftarrow$  fc\_out;
10. end;
11. returnout;

#### 4. RESULTS AND DISCUSSION

Initially, the recognition process is fed with scanned images as an input, which is involved in the handwritten recognition. During the process, the steps namely segmentation, feature extraction, classification and recognition are applied to recognize the words. In this handwritten recognition model, the text documents and scanned images accompanied by noises are considered as an input. In Table 2, the Performance Comparison Results are depicted as regards the languages of Tamil and English based on various performance parameters.

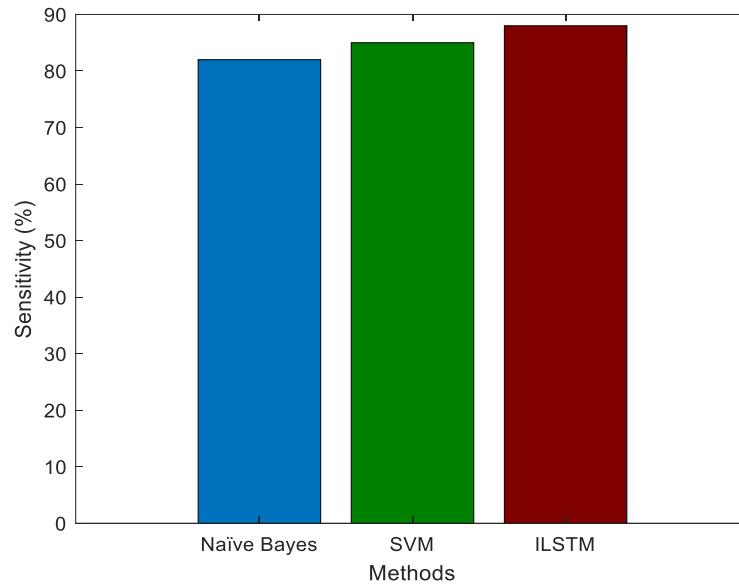
Table 1- The results of two different characters and two languages with results depending on maximum and minimum number of iterations required to accomplish the task.

**Table 1- Recognition Process**

Methods	Sample character	No. of trained character (minimum and maximum)		No. of. particular character to be recognized within the iterations
		Minimum	Maximum	
ANFIS		18	100	68
		15	100	75
ANFIS		13	100	82
		16	100	69
OSVM		15	100	64
		13	100	70
OSVM		11	100	75
		13	100	62

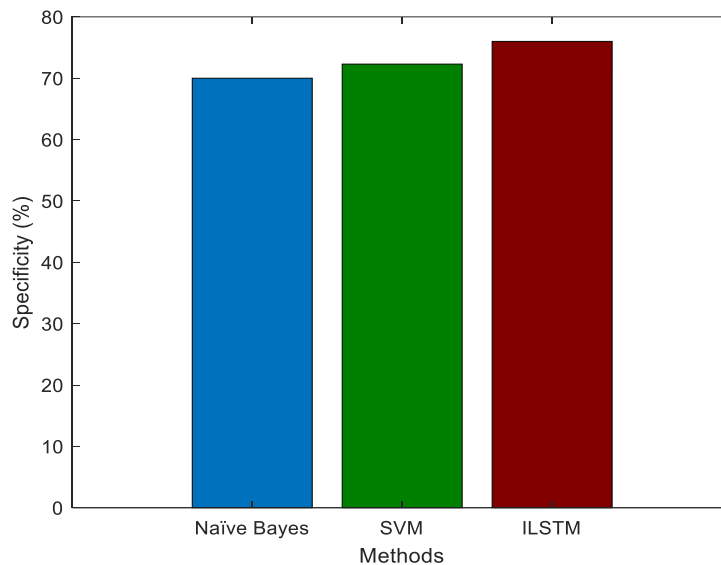
**Table 2 - Performance Comparison Results**

Algorithm	Sensitivity (%)	Specificity (%)	Precision (%)	F-measure (%)	Accuracy (%)	Time(Seconds)
Naïve Bayes	82	70	84	83	85.13	19
SVM	85	72.3	89	87	87.00	15
ILSTM	88	76	90	88	88.5	12



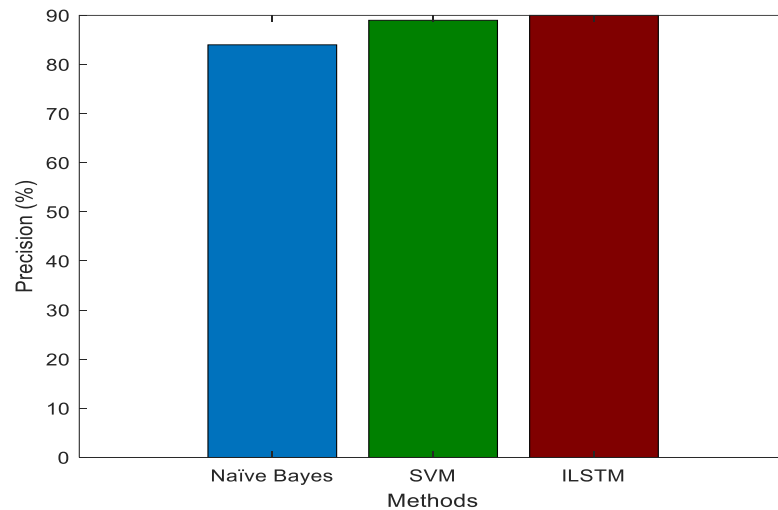
**Figure 7 - Sensitivity results vs. classification methods**

In Figure 7, the Sensitivity values individually obtained by the Naïve bayes, and SVM and the proposed ILSTM mechanism are compared for Runtime metrics, where implemented approaches lie on X-axis, and Y-axis stands for Sensitivity rates. The graphs demonstrate that the novel ILSTM model is capable of outperforming the existing Naïve bayes, SVM methods, since the proposed method obtains 88(%) Sensitivity rate, whereas Naïve bayes acquires 82(%), and SVM obtains 85(%)



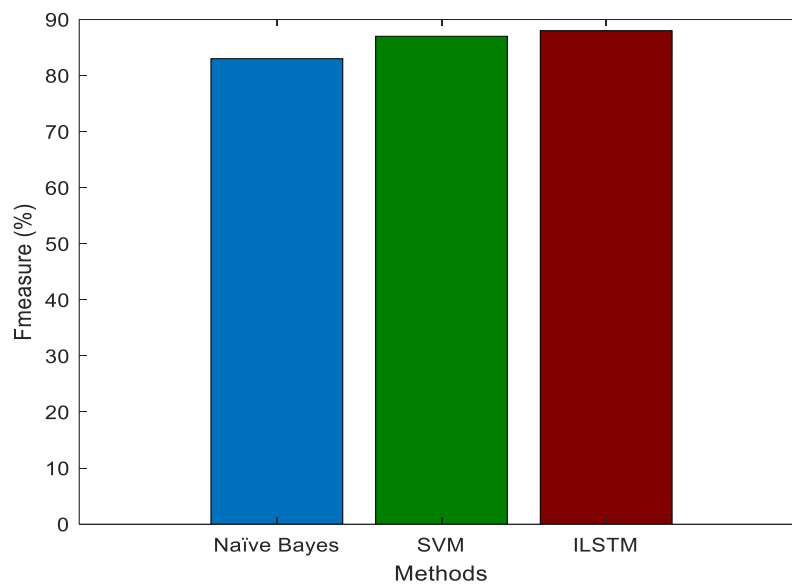
**Figure 8 - Specificity results vs. classification methods**

In Figure 8, the Specificity values of the existing Naïve bayes, SVM classifiers and the proposed ILSTM technique are compared, in which implemented methods lie on X-axis, and Y-axis stands for Specificity rates. The graphs depict that the proposed model has the ability to surpass the existing methods, since the proposed ILSTM method obtains 76(%) Specificity rate, whereas Naïve bayes, and SVM obtain 70(%), and 72.3(%), correspondingly.



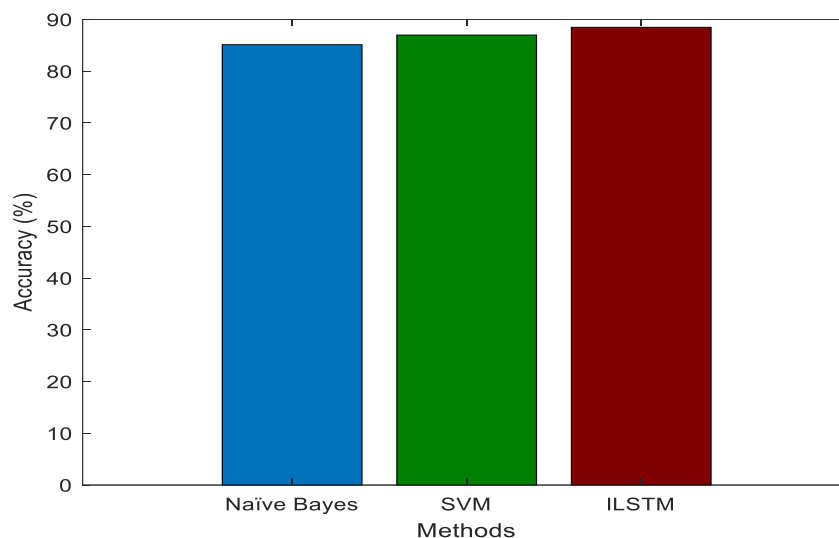
**Figure 9 - Precision results vs. classification methods**

Figure 9 compares the Precision rates of the existing Naïve bayes, SVM and suggested ILSTM techniques. here, X-axis signifies implemented methods and Y-axis stands for Precision rates. The graphs depict that suggested method outperforms existing methods, since proposed ILSTM method obtains 90(%) Precision rate, whereas Naïve bayes, and SVM solely obtain 84(%), and 89(%), correspondingly.



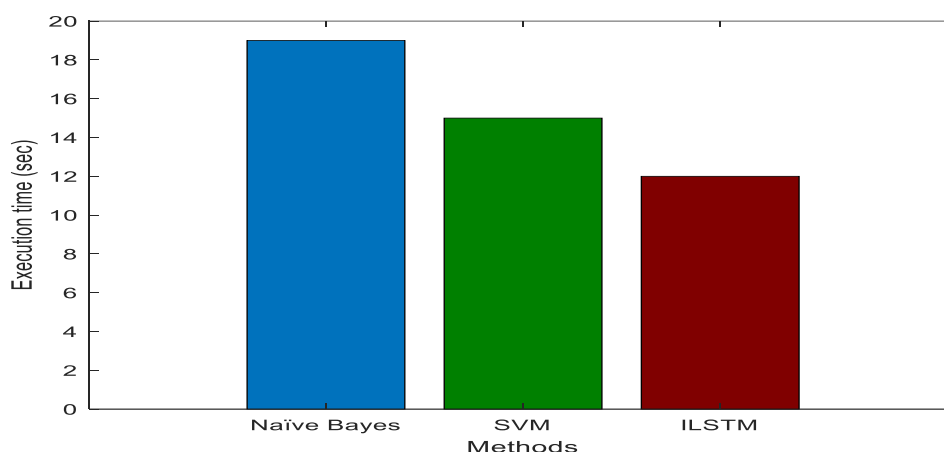
**Figure 10 - F-measure results vs. classification methods**

In Figure 10, the F-measure rates individually obtained by the existing Naïve bayes, SVM classifiers and the proposed ILSTM approach are compared. In the figure, experimented methods lie on X-axis, and Y-axis stands for F-measure values. The graphs depict that the proposed model has the ability to surpass the existing methods, since the proposed ILSTM method secures 90(%) F-measure rate, but Naïve bayes, and SVM solely attain 84(%), and 89(%), correspondingly.



**Figure 11 - Accuracy Results Vs. classification methods**

Figure 11 compares the individual Accuracy rates of the existing Naïve bayes, SVM classifiers and the proposed ILSTM method. In the figure, X-axis indicates implemented methods and Y-axis stands for corresponding Accuracy values. The graphs depict efficiency of suggested system to outperform existing methods. The suggested ILSTM method procures 88.5(%) Accuracy rate, whereas Naïve bayes, and SVM solely obtain 85.13(%), 87 (%), respectively.



**Figure 12 - Time results vs. classification methods**

In Figure 12, the Time metrics of the existing Naïve bayes, SVM classifiers and the proposed ILSTM approach are compared. In the figure, executed methods lie on X-axis, and Y-axis stands for Time metrics. The graphs depict that the proposed ILSTM method has the time result of 12(sec), which is comparatively lesser to Naïve bayes, and SVM, since they yield 19(sec), and 15(sec), respectively.

## 6. CONCLUSION AND FUTURE WORK

In recent decades, Handwritten Text Recognition (HTR) has grasped an immense limelight and turned out to be significant research area, because of its wide-ranging applications in the domains of commercial and academic. Either by dynamic (online) or static (offline) data, HTR methods tend to transcribe cursive text to digital medium (ASCII, Unicode). In this way, for offline text recognition, images become the information source and they can be applied for transcriptions of medical prescriptions, historical manuscripts, forms, etc. This suggests that it is necessary to focus on developing the large scale HTR systems for numerous languages and scripts. This research primarily intended to present an enhanced handwriting recognition method. In this model, input image is initially processed through Scanning and Skeletonization tasks as regards the reduction of foreground regions in a binary image. Subsequently, a canny edge detector approach is exploited to perform the edge detection,

through which visibility and perceptibility is increased in the concerned region. Besides, the GLCM features are utilized to extract the statistical features. Ultimately, Improved LSTM neural network is employed to carry out Character Recognition task. Empirical findings clearly depict the efficiency of suggested system in delivering optimal efficiency based on the accuracy, recall and accuracy metrics. Nevertheless, this proposed model requires to compute all features for recognition process as there is no feature selection model included in it. Hence, it requires to provide a feature selection model.

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## **A Study on the Impact of Digital Marketing among Customers with Special Reference to Fashion Industry in Chennai**

**Dr. Dhivya Sathish**

Associate Professor, School of Management Studies, Sathyabama Institute of Science and Technology, Chennai

**Dr. M. Lavanya**

Associate Professor, School of Management Studies, Sathyabama Institute of Science and Technology, Chennai

### **Abstract**

*The present study deals with the impact of digital marketing on fashion accessories. It's all about reaching out to the appropriate customers at the right moment with digital marketing. Connecting with consumers online is one of the most effective strategies to grow our business in today's technology environment. With the use of digital marketing, any small business owners may now easily promote their products with simple start-ups. Handbags, coats, watches & jewellery, and other fashion items are accessible in internet marketing. The current research looks at how internet marketing affects fashion accessories. The primary goal of this research is to determine whether customers are aware of online advertisements through social media apps, to investigate the various fashion accessories purchased by customers through digital marketing, to comprehend the reasons for purchasing fashion products through various digital media platforms, and to make recommendations to improve the purchase of fashion accessories through digital marketing. The current study was analyzed using a Descriptive Research Design. Data was gathered from 200 clients using well-structured questionnaires, and responses were examined utilizing statistical methods such as the percentage method of analysis and ranking.*

**Keywords:** *Fashion accessories, digital marketing, online advertising, social media applications, small scale businesses.*

### **1. INTRODUCTION**

The fashion sector drives a significant portion of the global economy and ranges from global budget shops to upscale luxury firms. Fashion is one of the most challenging industries to work in because of the instability of the global economy, as well as various trends and technological advancements. A number of brands have launched a number of initiatives to improve their products to the world with innovative styles, producing methods, and also to provide a chair processes to final customers to withstand in a marketplace because this industry involves constant innovations, pressure for growth, and value potency. Small Scale Business Men use Digital Marketing as a tool to develop their businesses where they can easily get Customers through many social media platforms like Instagram, Facebook, YouTube, or through many online apps to buy their products. The fashion industry is transitioning into the new technological world. Small company owners confront a major issue when it comes to the digital transition of traditional methods of selling fashion items into digital marketing. This is because fashion firms must make changes to every part of their organizational culture.

The Strategies the Fashion Industry Uses: Every fashion sector requires an all-encompassing vision and selling tactics made to endure competition from other brands of trendy goods. Fashionable companies' use of digital marketing has changed significantly over the past few years, and it is crucial that businesses continue to adapt and develop in order to maintain the effectiveness of their previous marketing strategies. The following are a few techniques that may be utilized to enhance digital marketing in the fashion industries:

Link Up Via Websites: Customers' need to keep up with the latest trends has changed over the past several decades, and more and more buyers are choosing to make purchases online rather than in person. If clients don't already have one, this sort of plan entails getting one for them; this transitions from a fashion to a fashion E-Commerce.

A Mobile World: Next, having a website alone won't automatically attract clients. So, we must engage in digital marketing to promote the fashion industry. For instance, using celebrities to promote fashion with deals and discounts, etc. This calls for having a responsive website that scales content appropriately for the screen it is displayed on. If these promotions are not done, your mobile consumers may have a poor user experience, which may discourage them from engaging with your businesses further. This can be very important for the sector because many consumers discover items they like while going about their daily lives, and if they find what you offer but can't load it on websites.

**Participate in Social Media:** One of the crucial and successful strategies for advertising fashion companies is social media. As a person, the business cannot entice individuals to utilise its services and develop a rapport with its clients. However, as the fashion sector, you should also use restricted channels like Instagram to showcase and advertise your goods. Additionally, combine the business with fixed platforms like Facebook, Instagram, etc., so that customers can see something they like while browsing the catalogue.

**Marketing Campaigns:** One of the best tactics for the fashion business is campaigning, as influencers are the focus of social media campaigns. When an influencer shares anything like a promotion for a high school, both the influencer and their followers prefer children since they are persons within the industry/niche who have large fan bases and command attention. Children on the other side of the tracks idolise them and want to imitate them.

**Change with the Technology:** Rapid technological developments throughout the industrial revolution, including those in artificial intelligence (AI). For instance, chatbots serve as 24/7 customer support agents that direct your consumers through the checkout process as soon as they arrive on your website. They are there to assist your users if they have any problems. And a personality's representative will take over if they lack the capacity to respond to that inquiry.

## **2. REVIEW OF LITERATURE**

M. S. Nuryati and E. S. Bahri (2022) to identify Asnaf Entrepreneurs' digital marketing platforms and their techniques for advancement. They discovered that Asnaf entrepreneurs use Facebook, Path, Instagram, Twitter, LinkedIn, and other digital marketing sites. Google, Facebook Messenger, Line, BBM, Pinterest, WeChat, YouTube, Whatsapp, and Google. However, Asnaf Entrepreneurs have aided in the growth of the country. They therefore come to the conclusion that the transformation technique must be used on an associated current basis. To advance to Muzakki as a Zakat player, that is.

El-Sayed, A., and El-Fanagely, B. R. (2022), In a paper titled "The relevance of digital lighting fashion technique in generating new fashion marketing," The research seeks to understand and put into practise the marketing concepts that are essential for generating excellent business outcomes in the fashion industry. They discovered that a wide variety of lighting and technological equipment, from small light emitting diodes to liquid crystal (LC) displays, from diode lasers to electro fluorescent radiators, are used in clothing design. The aesthetic, ergonomic, informational, and biological qualities are increased when such gadgets are included into contemporary clothing design. Saura et al., 2019, one of the causes of this transformation process was the so-called Bubble Point Com, which, along with the advancement of information and communication technologies, created a speculative economic current on technologically based companies, startups, and online businesses. Chaffey et al., 2003 stated the definition of the technique through which internet marketing will serve the marketing and corporate goals of the firms. According to this study's analysis of numerous marketing researchers, businesses do not necessarily need their own online marketing plans.

## **3. RESEARCH METHODOLOGY**

For data collection and analysis, the research methodology used was descriptive research design. With a sample size of 250 consumers who purchase Fashion Accessories in Digital Marketing as targeted persons in Chennai city, the sampling approach used was Convenient Sampling Technique under Non – Probability Sampling. Primary data was collected using a questionnaire, while secondary data was collected through a review of literatures, websites, books. The study's shortcomings include a small sample size of 250 respondents. The research employs a set of organized, predefined questions. It is a scientific investigation. The data are depicted in the form of tables and charts and t test, Percentage method of analysis, ranking method of analysis is used for statistical analysis.

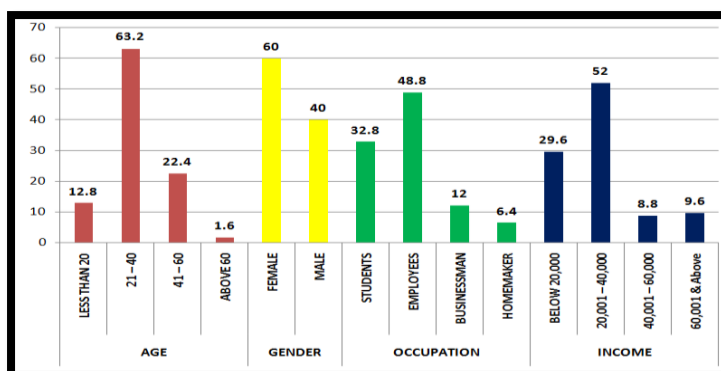
## **4. OBJECTIVES OF THE RESEARCH**

1. To assess consumer knowledge of internet advertising among those looking to buy fashion accessories in Chennai City.
2. To look into the types of fashion accessories that consumers buy after using digital marketing.
3. Researching the elements that influence the purchase of fashion accessories on various digital media channels.
4. To make recommendations to improve the purchase of fashion accessories using digital marketing.

### 5. DATA ANALYSIS

**Table 1 - Table indicating demographic details of consumers**

DEMOGRAPHIC FACTORS	PARTICULARS	FREQUENCY	PERCENTAGE
AGE	LESS THAN 20	32	12.8
	21 – 40	158	63.2
	41 – 60	56	22.4
	ABOVE 60	4	1.6
GENDER	FEMALE	150	60
	MALE	100	40
OCCUPATION	STUDENTS	82	32.8
	EMPLOYEES	122	48.8
	BUSINESSMAN	30	12
	HOMEMAKER	16	6.4
INCOME	BELOW 20,000	74	29.6
	20,001 – 40,000	130	52
	40,001 – 60,000	22	8.8
	60,001 & Above	24	9.6



Inference: From Table & Chart 1, It implied that 60% of the respondents taken into account for the current study are female, between the ages of 21 and 40, and earn between Rs. 21,001 and Rs. 40,000 per month.

**Table 2 - Table indicating preferred online sites for shopping fashion accessories**

PARTICULARS	FREQUENCY	PERCENTAGE
AMAZON	50	20
MYNTRA	98	39.2
FLIPKART	66	26.4
SNAPDEAL	26	10.4
EBAY	10	4
TOTAL	250	100

Inference: From Table & Chart 2, it revealed that for online fashion accessory buying, 39.2% of respondents choose Myntra, 26.4% prefer Flipkart, 20% prefer Amazon, 10.4% prefer Snapdeal, and 4% prefer Ebay. As a result, the vast majority of respondents in Chennai City chose Myntra for online accessory purchasing.

**Table 3 - Table indicating online advertisements awareness among customers to purchase fashion accessories**

PARTICULARS	HIGHLY AWARE	SOMEWHAT AWARE	NOT AWARE	WEIGHTED AVERAGE	RANK
ONLINE WEBSITES	678	32	6	720	1
YOUTUBE	612	64	14	690	2
TELEVISION	546	80	28	654	3
CELEBRATE ENDORSEMENT	558	76	26	660	4
FLYERS	492	88	42	622	5

Inference: From Table & Chart 3, it inferred that Ranking method to analyze the awareness of online advertisements relating to fashion accessories and it reveals the most of the respondents are aware of Online Websites which have been Ranked 1, Youtube has been Ranked 2, Celebrity Endorsements has been ranked 3, television has been ranked 4 and Flyers has been ranked 5. Hence, the majority of the respondents are aware about Online advertisements through websites.

**Table 4 - Table indicating factors influencing to buy fashion accessories**

PARTICULARS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	WEIGHTED AVERAGE	RANK
Shopping online is easy	312	240	48	96	198	3780	1
Shopping online is not a safe way to shop	528	150	48	84	120	526	2
Online retailers are trustworthy	1188	100	56	18	16	360	4
Shopping online enables me to shop very quickly	552	360	192	66	20	288	5
Online shopping allows me to get an offer better price	1200	110	16	24	12	366	3

Inference: From Table & Chart 4, it showed that the respondents who are of the opinion that Shopping online is easy has been Ranked as 1, the respondents' opinion that Shopping online is not a safe way to shop has been Ranked 2, Online shopping allows me to get a better offer price has been Ranked 3, Online retailers are trustworthy has been Ranked 4 and Shopping online enables me to shop very quickly has been Ranked 5. Hence, the majority of the respondents are of the opinion that the major factor which influences respondents to buy fashionable accessories through digital marketing is that they are of the opinion that buying fashionable accessories through digital marketing is easy.

**Table 5 - Table indicating kinds of fashion accessories purchased by customers through digital marketing - hypothesis testing 1 – t test**

H<sub>0</sub> = There is no significant difference between male and female with respect to the kinds of fashion accessories purchased by customers through Digital marketing.

H<sub>1</sub> = There is a significant difference between male and female with respect to the kinds of fashion accessories purchased by customers through Digital marketing.

PARTICULARS	GENDER	N	MEAN	S.D	T value	P value
LEATHER BAGS AND SHOES	FEMALE	150	0.9097	0.0195	18.943	0.000**
	MALE	100	0.5024			
CLOTHES	FEMALE	150	0.8646	0.7625	19.454	0.000**
	MALE	100	0.4532			
JEWELS	FEMALE	150	0.8951	0.0733	21.852	0.000**
	MALE	100	0.6542			
ELECTRONIC ACCESSORIES	FEMALE	150	0.8759	1.9158	17.266	0.000**
	MALE	100	0.5264			

It is inferred from table 5 that all the null hypothesis is rejected as the p value is lesser than 0.001, so we accept alternate hypothesis. Hence, there is a significant difference between male and female with respect to the kinds of fashion accessories purchased by customers through Digital marketing.

## 6. SUGGESTIONS

1. Before selling their items online, business owners should understand how buyers feel about attractive accessories.
2. Customers anticipate special deals and discounts throughout holiday seasons in an effort to draw them in with inventive marketing tactics.
3. To increase their company's profit margin, business owners may still boost their marketing through adverts or other social media platforms.

## 7. LIMITATIONS OF STUDY

1. For this study, only 250 respondents who are residents of Chennai were used to obtain the data.
2. New models of purchase through social networks and based on the views of other customers might be identified using the data, which could be utilised to investigate new behaviour models of online users.

## 8. CONCLUSION

Because the buyer is allowed to pick from a wide range of rival brands, the fashion business is one of the riskier industries with a very short lifespan. Digital marketing is highly valued in society nowadays since it allows individuals to change consumer fashion trends by being able to demonstrate, discuss, and remark on them. Then, when it comes to marketers, it has grown to be a huge danger to gaining new consumers as well as keeping the ones they already have. Relationship marketing is a component of digital marketing that supports attracting and retaining satisfied repeat consumers. The study's findings show that individuals are aware of digital channels. Customers often prefer using digital channels to purchase whatever items they are interested in, regardless of their educational background. Monthly income is not a major factor when deciding which products to purchase through digital marketing. Most individuals prefer to acquire things through digital channels, and the survey revealed that consumer intentions to use digital marketing to make purchases have increased. Future research on the impact of digital marketing on consumer purchasing decisions over a larger geographic region is possible, providing more precise data.

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## **Importance of Educational Guidance in School**

**Aorenla M Jamir**

Assistant Professor and Scholar, Department of Education, St. Joseph University, Nagaland

**Senteinla Ao**

Assistant Professor and Scholar, Department of Education, St. Joseph University, Nagaland

**Prof. Fr. Sunny Joseph**

Professor and Supervisor, Department of Education, St. Joseph University, Nagaland

### **Abstract**

*The modern education system considers educational guidance as an integral part of the curriculum to ensure all round development and well-being of the students in the school. Educational guidance plays acute role in helping the students to make right choices, as well as adapt in school, curriculum, courses and school life which contributes towards the students all round development and enable them to make an educational plan based on their ability, goals, interests etc. Therefore, the main aim of this paper is to highlight the “Importance of Educational Guidance in School.” The Objectives of the study is to articulate the importance of educational guidance in the school and to disseminate the importance of educational guidance to the teachers and students. The study will be descriptive study using both primary and secondary sources of data and random sampling method will be used. As general conclusion, findings will be articulated and suggestions will be given in the conclusion so as to fulfill the objectives of this paper which will be useful for the Head of the school, teachers and academia.*

**Keywords:** *Guidance, Educational Guidance, School.*

### **1. INTRODUCTION**

The main aim and objectives of education is to bring about possible and practicable understanding of likelihood which is already ingrained in human being. Education promote all aspects of an individual 's personality. Guidance is an essential part of education and helps to achieve the goals of education. Guidance is an integral part for the development of individual which is the main objective of education. Therefore, this study is undertaken with the purpose of articulation of the importance of educational guidance required for the students to deal himself / herself in different situation of life, to have a tension free and balanced life with an ideal contentment and also to understand their interest, attitudes, strength, abilities and perception.

### **2. NEED AND IMPORTANCE**

Guidance plays an important role for children and schools and has a great impact in bringing out the best in every aspect of the children. Proper guidance will help the children to inculcate valuable lessons in their daily life. It will help to shape students' behavior and instill discipline which is best among them. Guidance is needed in achieving their goals, help in decision making and learn to live in harmony and peace enabling overall development to become good human being.

### **3. OBJECTIVES OF THE STUDY**

- To articulate the importance of educational guidance in the school.
- To disseminate the importance of educational guidance to the teachers and students.

### **4. METHODOLOGY**

Methodology used here is both primary and secondary sources and simple random sampling method has been utilized to improve accuracy and representativeness. Under primary source the researchers has used closed and open structured questions and there were 42 respondents. In secondary sources the researchers has used Government reports, journals, internet and newspapers and in simple random sampling the researcher have collected responses from the college students.

## 5. STATEMENT OF THE PROBLEM

The statement of the problem undertaken is stated as “Importance of Educational guidance in school”

## 6. REVIEW RELATED LITERATURE

### *Studies done abroad*

Mapfumo and Nkoma (2013), conducted a study on the guidance and counseling which is received in high school and is also important in the university. Findings shows that all former school responded to the existence of importance to guidance and counseling, 34 schools including private, government and mission schools have services and class lessons which is known to their students as well as what is offered in the class room based on lesson environment.

Hassan and Farah (2013), in their study titled “needs of guidance and counseling among the secondary schools Students point of in Khartoum State Sudan” found that guidance and counseling needs to connect with school issue for managing the time better, how to study and listen effective studying skills; also to connect with cordial difficulty which are harmonious with other students better, manage to live with family members, getting involve in school activities, making friends dealing or relationship issue, improving communication; guidance and counseling also needs to connect with the psychological difficulty that are- helping oneself, reducing test anxiety, stop feeling stressed ,concerns about smoking, dealing with anger, stop feeling sad or depressed gaining more self-confidence etc.

Eliamani and Peler (2014), in their study titled “to examine the influence of secondary school student ‘s access to guidance and counseling services on school life, attitude towards studies and career choices” found out that the guidance and counseling services which were offered in the school includes health, spiritual matters, academic and moral. Though no professional counselor was to be found, the guidance and counseling services offered shows adequate in student’s life and shape students view towards learning and profession.

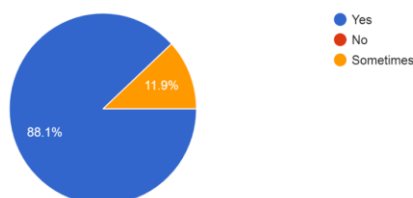
### *Studies done in India*

Kaur et al (2013), in his study titled “study on Guidance needs of secondary school students” found out that there was no difference between the guidance needs including, educational and vocational, psychological, physical and social of both male and female secondary students; educational and vocational of urban secondary school students were less than those of rural secondary students.

A study was conducted by Jumana and Meera (2016) in their study titled “need of guidance and counseling among the graduate students” found out that there is a need of Guidance and counseling programme at graduate level.

## 7. DATA ANALYSIS AND INTERPRETATION

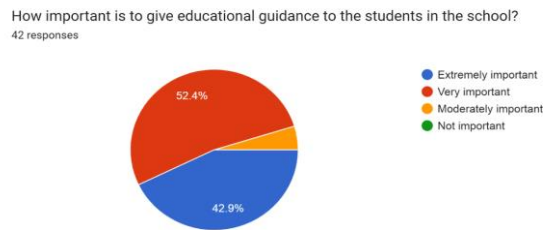
In your opinion, Do you think that there is a need of educational guidance in the school?  
42 responses



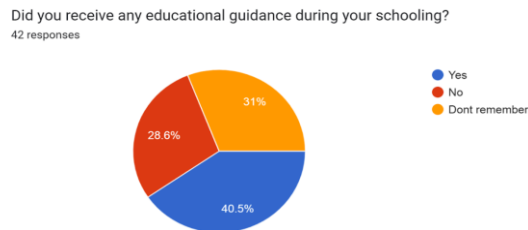
**Figure 1:** Need of educational guidance in the school?

As shown in the figure 1, only 88% of the students agree that there is a need of educational guidance in the school and 12% of the students disagrees with the statement.

As shown in the figure 2, only 52% of the students agree that it’s very important to give educational guidance to the students in the school, while 43% of the students agree that it’s extremely important and 5% agrees that it’s moderately important.

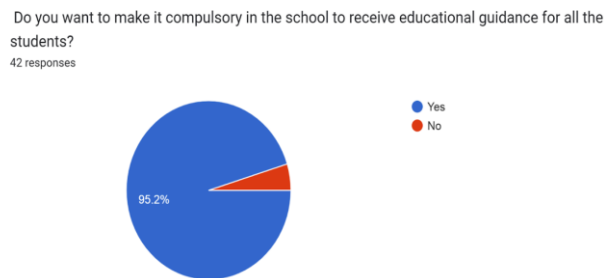


**Figure 2:** Important to give educational guidance to the students in the school



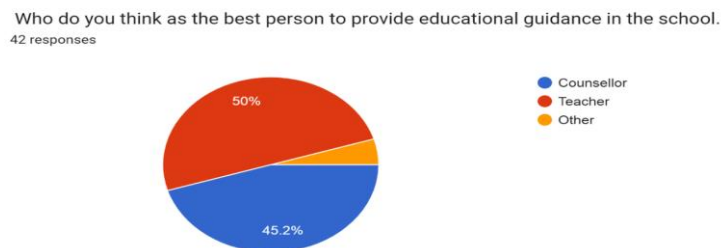
**Figure 3:** Receives any educational guidance during schooling

As shown in the figure 3, only 41% of the students agree that they have received educational guidance during their schooling, while 31% of the of the students responded that they have not received any educational guidance and 29% of the students responded that they don't remember.



**Figure 4:** To make it compulsory in the school to receive educational guidance for all the students.

As shown in the figure 4, 95% of the students agree to make it compulsory in the school to receive educational guidance for the students and only 5% of the students disagree with the statements.



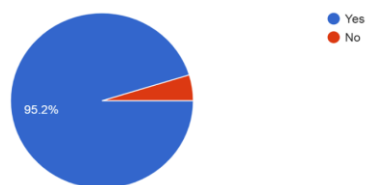
**Figure 5:** Best person to provide educational guidance in the school

As shown in the figure 5, 50% of the students agree that it is the teacher who is the best person to provide educational guidance in the school, 45% of the students responded for the counselor and 5% responded for others.

As shown in the figure 6, 95% of the students agree that educational guidance helps to meet the needs of the students and 5% of the students disagree with the statement.

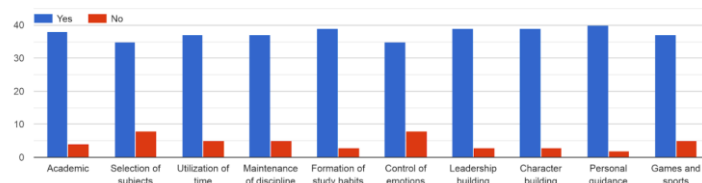


Do you agree that educational guidance helps to meet the needs of the students  
42 responses



**Figure 6:** Educational guidance helps to meet the needs of the students

What kind of educational guidance should be given in the school



**Figure 7:** Kinds of educational guidance should be given in the school

As shown in the figure 7, the first parameter reveals that 90% of the students agree for academic guidance while 10% of the students disagree, second parameter reveals that 83% of the students responded for selection of subjects while 17% of the students disagree, third parameter reveals that 89% of the students responded for utilization of time while 11% of the students disagree, fourth parameter reveals that 89% of the students responded for maintenance of discipline while 11% of the students disagree, fifth parameter reveals that 93% of the students responded for formation of study habits where 7% of the students disagree, sixth parameter reveals that 83% of the students responded for control of emotions where 17% of the students disagree, seventh parameter reveals that 93% of the students responded for leadership building while 7% of the students disagree, eight parameter reveals that 93% of the students responded for character building while 7% of the students disagree, ninth parameter reveals that 95% of the students responded for personal guidance while 5% of the students disagree and tenth parameter reveals that 88% of the students responded for games and sports which should be given in the school and 12% of the students disagree.

### 8. FINDINGS

- 88% of the students agree that there is a need of educational guidance in the school and only 12% of the students disagree with the statement.
- 52% of the students agree that it's very important to give educational guidance to the students in the school, while 43% of the students agree that it's extremely important and only 5% agrees that it's moderately important.
- 41% of the students agree that they have received educational guidance during their schooling, while 31% of the students responded that they have not received any educational guidance and 29% of the students responded that they don't remember.
- 95% of the students agree to make it compulsory in the school to receive educational guidance for the students and only 5% of the students disagree with the statements.
- 50% of the students agree that it is the teacher who is the best person to provide educational guidance in the school, 45% of the students responded for the counselor and only 5% responded for others.
- 95% of the students agree that educational guidance helps to meet the needs of the students and only 5% of the students disagree with the statement.
- 90% of the students agree for academic guidance while only 10% of the students disagree, 83% of the students responded for selection of subjects while only 17% of the students disagree, 89% of the students responded for utilization of time while only 11% of the students disagree, 89% of the students responded for maintenance of discipline while only 11% of the students disagree, 93% of the students responded for formation of study habits where 7% of the students disagree, 83% of the students responded for control of emotions where only 17% of the students disagree, 93% of the students responded for leadership building while only 7% of the students disagree, 93% of the students responded for character building while only 7% of the students disagree, 95% of the students

responded for personal guidance while 5% of the students disagree and lastly 88% of the students responded for games and sports while only 12% of the students disagree .

Responses from the students about the existing problems faced without proper educational guidance given in the school

- Confusions in long term career plans due to lack of educational guidance.
- Many students flung because they were forced to choose subjects by their parents, elders. Without realizing his or her interest.
- The student has high risk to be misguided and deprived of important information or knowledge.
- Students tend to choose the wrong course for their future. They neglect their interest and follow what's been told them to do so or sometimes they are forced to take up what's been told to them.
- Students not being able to choose their selection of subjects leading to failure and unemployment.
- Choosing wrong career, lack of confidence and lack of Entrepreneurship mentality and skills.

## 9. DISCUSSION AND RECOMMENDATIONS

It is found that majority of the students i.e., 88% of the students agree that there is in needs of educational guidance. It implies that educational guidance helps them to understand the importance of education in every student life. Regarding the importance of giving educational guidance in the school only 43% of the students agree for extremely important so there is a need to find means to enable the vast 57% of students to explore the education needs of students and helping them to develop their potential by providing suitable opportunities. Findings shows that only 41% of the students agrees that they have received educational guidance during their schooling and 95% of the students wants to make it compulsory in the school to receive educational guidance so it is found necessary to create a clear plan. Findings shows that majority of the students agrees that educational guidance meets the needs of the students therefore there is a need to enhance knowledge of opportunities to the students through relevant and useful information by boosting their confidence level and also by mentally preparing them for societal challenges by organizing seminars, workshops, symposiums related importance of guidance and distributing literature of guidance in school so that guidance is accepted as an essential part of education. It is also found that majority of the students agrees that it is the teacher who is the best person to provide educational guidance and therefore it is necessary for a teacher to identify the skills n interest of the students and provide proper guidance in realizing their dreams. Regarding the kinds of educational guidance which should be given in the school, majority of the students agreed with all the guidance shown in figure 7. Therefore, it is necessary for all the educational institutions to make sure that their students have the best facilities by implementing a holistic educational guidance platform in the school and also by providing the right support to the students.

## 10. CONCLUSION

Evidence from the study shows that there is a need of educational guidance in the school to increase the awareness of one's world of work. There is also a need to analyze the importance of having educational guidance in every school. It is also found that teacher plays an important role in educational guidance programme in the school because it is the teachers who knows their students better and they understand the needs and problems of students. It is also seen that students need educational guidance in every aspect of their life from choosing a right career to all round development. This study will help the administrators, teacher and counselor to take necessary steps for improving the existing system of school.

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## **A Thematic Analysis: Sources of Occupational Stress and Health Complaints of Secondary School Teachers in Private Sector**

**Renemlila**

Department of Psychology, St. Joseph University, Nagaland

**Dr. Watinaro Longkumer**

Associate Professor, Department of Psychology, St. Joseph University, Nagaland

### **Abstract**

*Existing literature in the west including India has shown that teachers in the organizational sector are under high stress leading to burnout and physical health problems. The goal of this qualitative research was to analyze the sources of occupational stress among the private Secondary School teachers and how it affects their health. Seven participants all of whom were female were interviewed and purposefully chosen from various private schools in the Dimapur area. The results of thematic analysis show that role ambiguity, role multiplicity, low salary, workload, student misbehavior, large class size, job insecurity and lack of status were the most prominent themes of occupational stress, leading to burnout and various physical health complaints especially related to musculoskeletal pain such as neck pain, back pain, headache and migraine. Based on the findings of this qualitative data, it is determined that these issues must be addressed and School administrators must find ways to reduce stress levels, such as fostering a positive or supportive culture, hire counsellors or psychologists, provide a pleasant working environment, and ensuring job security among others. In addition, School administrators and policy makers should implement interventions or programs to improve the teachers' mental and physical health.*

**Keywords:** Teachers, Occupational Stress, Health Complaints.

### **1. INTRODUCTION**

Teaching in the organizational sector is one of the most challenging and significant professions. Studies around the world considers teaching as a high stress and emotionally taxing occupation (Kyriacou & Sutcliffe, 1977; Chan, 1998; Skaalvik & Skaalvik, 2018; Reddy & Anuradha, 2013) The job of a teacher is both physically and mentally demanding, and it takes a lot of energy to carry out the tasks, which is seen as a source of occupational stress (Kaur, 2011). Teachers' occupational stress is related to a variety of sources such as organizational climate, classroom and students', and external issues (Reddy & Anuradha, 2013; Foley & Murphy, 2013). Workload, role multiplicity (Leung et al., 2009, Skaalvik & Skaalvik, 2018; Shernoff et al., 2011; Kerr et al., 2011; Kaur, 2011), large class size (Reddy & Anuradha, 2013; Foley & Murphy, 2013), low salary (Kaur & Kumar, 2019), role ambiguity (Boyle et al., 1995), students' misbehavior (Foley & Murphy, 2015; Reddy & Poornima, 2012), lack of administrative support (Kaur & Kumar, 2019), job insecurity and lack of status (Mark & Smith, 2018; Foley & Murphy, 2013) have all been identified as the most common sources of occupational stress across the globe. Further these prolonged sources of stress lead to feeling of exhaustion and physical ill health (Lazarus & Folkman, 1984; Kyriacou, 1987; Shernoff et al., 2011; Leung et al., 2009; Kaur & Kumar, 2019; Mark & Smith, 2018). Many research on teachers revealed a variety of physical health concerns, particularly those related to musculoskeletal disorders such as neck pain, shoulder pain, low back pain, leg pain and knee pain (Eric & Smith, 2011; Mesaria & Jaiswal 2015).

Kyriacou (2001) suggests that although the commonest sources of teachers' stress can be highlighted, there are differences between countries in main teachers' stress sources on the basis of prevailing educational systems, values and attitudes concerning teachers' and the schools within the society as a whole. The literature on teacher stress has generally employed quantitative approaches using highly structured rating scales with predetermined responses. Although they are infrequently employed, open ended approaches that allow teachers to expand on the phenomena of stress from their viewpoint have the ability to provide a deeper understanding of their experience of stress (Shernoff et al., 2011). Despite the fact that the above studies have provided some insight, there is still a need for a qualitative and comprehensive study regarding the provenance of occupational stress and its impact on health among Nagaland teachers in order to include a wide range of contexts and individuals. The data acquired in this research will give rich qualitative data on Nagaland teachers experiences of occupational stress and its impact on health, which will be used to support a later survey-based phase of research. With these concerns in mind and in light of a systematic review of literature related to the concerned area of study, two research questions lead this study:

- Q1. What are the most common sources of occupational stress of private Secondary school teachers of Dimapur?  
Q2. What effect does it have on their health?

## 2. METHODOLOGY

### *Participants' selection*

In order to identify and select data rich information linked to a topic of interest purposive sampling is commonly employed in qualitative research (Palinkas et al., 2015). Hence, the participants were purposively selected among teachers complaining of occupational stress working in private secondary schools in the Dimapur area. The saturation criterion was used to select participants for this study. Many people describe saturation as the point at which data collection process stops producing fresh or relevant data (Dworkin, 2012). As a result, seven participants were interviewed over the phone, all of whom were female.

### *Data collection*

Semi-structured interviews include a series of core questions that help outline the areas to be investigated, but also allow the interviewer or interviewee to deviate in order to examine an idea or response in greater depth (Gill et al., 2008). As such, a semi-structured interview was utilized to collect data, with the participants being asked two core questions: what are the sources of their occupational stress? And how does it impact or effect health? It gave participants a chance to talk about their experiences in greater depth. They were encouraged to speak openly and in their own words about their experiences. The first author conducted all of the interviews. The interview was done over the phone with the participants' permission, and their phone calls were also recorded and transcribed word for word. Each interview lasted 25-40 minutes, and the interviews continued until no new ideas arose, suggesting saturation (Dworkin, 2012).

### *Data analysis*

Following Braun and Clarke's (2006) guidance, the transcribed material was analyzed using thematic analysis. Because thematic analysis is one of the most used methods of qualitative research analysis (Braun & Clarke, 2006), it was chosen for this study. Thematic analysis is a method for detecting, analyzing, and reporting patterns (themes) within data and it organizes and describes the data set in rich detail. Themes represent some level of structured response or meaning within the data set and convey something important about the data in respect to the research question. The analysis involved the following six phases:

#### *Phase one: Familiarizing with the data*

The researchers did verbatim transcriptions of the recorded interviews. The researcher then went over the transcribed contents again and again. The researcher also got immersed in the data to the point where they became familiar with the data.

#### *Phase two: Initial coding*

Each interview transcript was re-read in the second stage. The researchers then, generated the initial codes from the data that appeared to be pertinent to the study's topic. The researcher added the initial codes to any phrase, sentence or paragraph that was considered significant to the research topic. These codes refer to the most fundamental segment, or element of the raw data or information that may be appraised in a meaningful way addressing the phenomena under study.

#### *Phase three: Search for themes*

In this phase, the researchers compared the primary codes to the text content and the generated initial codes. All relevant coded data extracts within the identified themes were collated, and conceptually related and similar codes were grouped into higher level themes. A thematic map was created, as proposed by Braun and Clarke (2006), to assist in the identification and construction of overall themes by grouping initial codes.

#### *Phase four: Reviewing of themes*

In this phase, the candidate themes were checked and refined against the coded data extracts and the whole data set. Themes that lacked adequate data were dropped and themes that were similar to each other were combined.

When the candidate themes had caught the outlines of the coded data, the validity of the individual themes was assessed in respect to the complete data set to see if they reflected the meanings present in the data set as a whole and told a persuasive story about the data.

*Phase Five: Defining and naming themes*

The researchers defined and refined the themes during this phase by going back to the collated data extracts for each theme and structuring them into a cohesive and internally consistent report with a narrative. And subthemes that could co-exist were also identified. Each theme's title was created to be short and to the point in order to convey the theme's meanings quickly and effectively. This step of analysis was repeated until the final theme map could tell a full story that met the goal of the study.

*Phase six: Writing the report*

The last phase was organizing the fully developed themes and data extraction, as well as writing the reports. The analytic narratives and most representative quotes that might encapsulate the core of the themes were intertwined. A report was finally created that could demonstrate the entire story of the data collected.

### 3. RESULTS

The data analysis revealed three core themes regarding the sources of stress: organizational climate, classroom and students, and external issues consisting of nine subthemes such as role ambiguity, role multiplicity, low salary, workload, large class size, students' misbehavior and discipline, lack of administrative support, lack of status and job insecurity. When it came to the effects of stress two main themes emerged: physical health complaints and burnout. With the use of relevant excerpts from the interview data, the following paragraphs will describe the themes in detail.

*Sources of stress*

*Theme one: Organizational Climate*

The high number of classes they have to take, the many roles they have to perform without being compensated appropriately, and the tremendous workload were all mentioned as major sources of stress by participants. These are classified as role ambiguity, role multiplicity, low salary, and workload.

*Role ambiguity*

Role ambiguity was mentioned by every participant as one of the main causes of their work stress. All of the participants stated that out of the 7 periods in a day, they have to take five to six classes or periods, some of which are not related to their field of study. As a result, they are unclear of their responsibilities as subject teachers. The following are some of the participants' quotes:

*"Yes, I cannot understand my role, when I joined, I was appointed as an English subject teacher but they also let me teach other subjects such as general knowledge or environmental studies. So, it becomes difficult to properly perform my duty owing to taking other subjects" (P4)*

*"Umm... I was appointed as a secondary teacher but I am asked to go to lower classes as well, so taking 5 to 6 classes in a day makes me unable to perform my duties smoothly" (P1)*

*"You know what, there are less number of staffs which is why we have to take many classes" (P6)*

*Role multiplicity*

Participants identified lack of balance as well as unreasonable amount and scope of expectations imposed on them as a source of occupational stress. Some participants said that they felt stressed by having to perform many roles with pupils, such as a counsellor, special mentor or sometimes as a parent. They also serve as physical educator, organizer, an art instructor. As a result, the participants' many duties were seen as excessive and beyond their control. For example, some participants mentioned:

*"... we do not get rest at all, even a single Saturday is not an off day for us... on Saturdays we act as physical education teachers, or art teacher, or organize different cocurricular activities" (P5)*

*“As a teacher we are expected to do a lot of work. Sometimes I have to play the role of a parent, or a special mentor for those students who are extremely weak in studies” (P2)*

#### *Low salary*

Insufficient pay was cited by all the participants as another major sources of occupational stress. They complained that they were underpaid for the amount of effort they put in. The following extracts from the interview demonstrate this:

*“Given the amount of work we do, we are not paid accordingly. the salary is way below the belt” (P1)*

*“One cannot compare the amount of we get and the work we do, its incomparable, it’s very disappointing” (P7)*

*“But despite all the works that I do in my profession I feel very dissatisfied with the salary and its very stressful” (P2)*

#### *Workload*

Workload was seen as another source of occupational stress by several of the participants. Taking a large number of classes involved a large number of preparations, paper works for all of the classes they take, and keeping records of students for that many classes. In addition, they must conduct oral and written examinations every other day during the board exams, show their performance to higher authorities and parents, and attend remedial sessions for students. Because of the overwhelming workload, some participants were compelled to prepare lessons or check papers at night or weekends interfering their personal relationships and social life. For example: *“I have to get up early in the morning to go to class, return home only in the evening and spend extra hours at night in order to prepare lessons for the next day. I don’t get time to go out socialize or mingle with friends” (P3)* *“...doing so many work for this amount of students for 5 classes is not easy, maintaining attendance record, continuous evaluation, checking their books, maintaining progress reports...” (P5)*

#### *Lack of administrative support:*

The lack of support from administrators and authorities was cited by the majority of teachers as another key source of stress. The participants (P3, P5, P6 & P7) cited that even if they try their best, they are subjected to partiality towards certain teachers who are related to the authority as a result of which they do not receive enough support and motivation. They do not get the same amount of feedback about their work, and they do not make an effort to understand the teachers when they are having problems with students’ mis behavior and poor performance.

*“...when these students underperform the teachers are blamed and the authority starts questioning and all the hard work goes in vain” (P7)*

*“...authority of the school favor certain teachers whom they know personally. This partiality and favoritism from the authority creates differences among the teachers and also those teachers who actually work hard gets discouraged and demotivated when we do not get the appreciation for the work we do” (P5)*

#### *Theme two: Classroom and Students*

The participants complained about the unequal teacher-to-student ratio and on a number of issues regarding their interactions with students. The majority of participants regarded these concerns to be substantial sources of stress. The sub themes identified are large class size, and students’ discipline and behavior, which are discussed below:

#### *Large class size*

The majority of the participants expressed frustration with having to deal with a large number of students in a single classroom, making it impossible to reach out to each and every one of them. In addition, due to the uneven teacher-to-student ratio, they find it challenging to manage the classroom. As a result, it is regarded as one of the sources of occupational stress, as evidenced by the following excerpts:

*“there are 55-65 students in a class so it becomes very difficult to manage the whole class as well.” (P1)* *“...and reach out to each and every student, so it is kinda stressful.” (P5)*

*“Unproportionate teacher-student ratio of 1:75, doing lots of paper works, which is very stressful.” (P3)*

#### *Student misbehavior and discipline*

Another prominent sources of stress for most of the participants was student discipline and misbehavior. Many participants felt like giving up on the students when they did not cooperate and also when their efforts were regarded with disinterest by students. Some participants were also irritated by students’ misbehavior since the

students purposefully provoke the teachers for the sake of amusement. The participants' remarks below support the aforesaid sources of stress for them:

*"I have to deal with different kinds of students... even after trying my best to make them understand when they do not cooperate, I feel like giving up on them"* (P2)

*"Lack of attention and cooperation from them and also sometimes the rebellious attitude of the students irritates me a lot. Some students intentionally provoke the teachers just to have fun."* (P3)

The participants (P6 & P7) shared similar perspectives on the issues at hand.

#### *Theme three: External Issues*

Two sub themes emerged under this:

##### *Job Insecurity*

Some of the participants expressed that lack of sense of security of the job was another source of occupational stress. They stated their dread of being fired by the authorities, no matter how hard they worked. Although it is human to make mistakes, no one in this field was entitled to do so. This is highlighted by the participants' statements:

*"I think there will never be a day when you can say that I am finally safe or I won't be terminated from this job...which is very stressful"* (P3)

*"As a private teacher, there is this fear that I'll do one thing wrong, I'll be kicked out and it is not a good feeling."* (P7)

##### *Lack of status*

Another source of occupational stress for many of the participants is lack of social status as a private school teacher. The participants voiced disappointment and frustration when they had to put in a lot of effort and go through a lot in this profession, yet society does not perceive it to be a respectable one. The following extracts from the interview are:

*"We work so hard but then at the end of the day people often tend to compare teaching in a private institution with government institutions. They do not see working here as ones' career but as an option for not getting a government job"* (P1)

*"... society also considers this job as a last resort. So I never get the appreciation for the amount of hard work that I do which is very disappointing"* (P3)

##### *Health complaints*

Participants reported that the various sources of occupational stress had an effect on two areas, burnout and physical health issues.

##### *Theme four: Burnout*

Many of the participants stated that they were quite fatigued and exhausted by the end of the day, as evidenced by the following remarks made by teachers:

*"By the end of the day I feel very tired and exhausted"* (P1, P2)

*"It drains me to the core"* (P3, P5)

##### *Theme five: Musculoskeletal pain*

Participants stated that after joining teaching profession, they began to experience physical health issues. They began to suffer from headaches and frequent migraine attacks as a result of their heavy workload. They must do several paperwork tasks, such as verifying students' notebooks, class tests papers, exam papers, keeping students' progress reports and maintaining ongoing assessment reports for a large number of students, which necessitates bending down their heads and writing. This has resulted in a significant problem in neck and shoulders. They complained about back pain as a result of standing and taking excessive number of classes. The following are some examples of statements made by participants:

*"After joining this profession, I started suffering from back pain since I have to stand and take 5/6 classes in a day"* (P1)

*"Headache and migraine attack occurs frequently dealing with so many students and workload"* (P7)

*"I also get headache; every day I get migraine attack"* (P2)

In addition to the above-described health issues, some participants reported throat discomfort as a result of shouting and teaching.



#### 4. DISCUSSION

This research set out to investigate the causes of occupational stress and how it impacts teachers' health. For the sources of stress of private secondary school teachers three core themes emerged from the analysis and for the impact of sources of occupational stress, two core themes emerged.

##### *Sources of occupational stress*

The organizational climate emerged as the first theme from the data. Role ambiguity, role multiplicity, low salary, excessive workload and lack of administrative support were the most regularly cited sources of occupational stress under organizational climate. The participants stated that they have to attend 5 to 6 classes per day, some of which are unrelated to their field of study, play multiple roles, and have a tremendous amount of work to complete, as a result of which they were forced to prepare lessons or check papers late at night or on weekends, interfering their personal relationships and social lives. The similar finding was reported by (Shernoff et al., 2011) where their participants claimed that they had too much work to accomplish in too little time, and that their work hours were insufficient to adequately perform job-related duties. Despite the amount of labor, they put in, they were underpaid, which was expressed as another common source of occupational stress. This finding is in agreement with prior research by Kaur and Kumar (2019) in which work overload and insufficient pay are the top most cited stimuli stressors for teachers' stress. In terms of lack of administrative support, the study's findings showed that many of the participants found partiality and favoritism among staffs to be stressful because they do not receive the appropriate amount of appreciation or reward for their hard work, and they also do not receive social support from the authority. This conclusion is supported by Mark and Smith (2017) findings, where participants claimed that the authority provided little social support, openly had favorites among subordinates, and ignored employee needs.

Classroom and students, as well as the external issues were two other core themes of occupational stress. Dealing with various types of students, some of whom were rebellious and unmotivated was mentioned by the majority of the samples as another provenance of occupational stress. Shernoff et al., (2011) found similar results, stating that dealing with persistent disruptive conduct by students was a substantial cause of stress for teachers. In dealing with disobedience and inattention, teachers acknowledge feeling overwhelmed. Some teachers also said that the time spent dealing with disruptive student had a significant impact on instruction and student concentration. The unbalanced teacher-to-student ratio made it hard for the participants to handle the entire classroom, which was also stressful. This finding is consistent with Anuradha and Reddy (2013) findings, which revealed that big class size was one of the key stressors driving extreme stress among the higher secondary teachers.

The other sub themes that emerged as sources of occupational stress are job insecurity and lack of status. Job insecurity and lack of status were also mentioned as factors of occupational stress by participants. They claimed that no matter how hard they work, how much time and effort they put in, their job were never guaranteed and that they are always under the fear of authority. They also claimed that society views teaching in a private school as a last choice or alternative to not being able to find a white-collar job. The research participants of (Foley & Murphy, 2017) had similar opinions, stating that unfavorable public opinion and lack of security (Mark & Smith, 2018) of their profession was a source of disappointment and frustration.

##### *Impact of occupational stress*

This study's findings highlight that the various provenance of stress lead to feeling of exhaustion. Several other studies found similar findings where teachers are exhausted and emotionally drained. The results of this study also found that participants after joining this profession began to experience various physical ill health particularly related to musculoskeletal pain such as headache, neck pain, shoulder pain, back pain, and frequent migraine attacks as a result of various sources of stress such as dealing with large amounts of paper works, that requires bending down, lesson preparation, standing and teaching, and taking many classes among others. This finding is in agreement with previous research on musculoskeletal pain. A study conducted by Chiu and Lam (2007) among secondary school teachers, lifetime prevalence of neck discomfort was found to be 69.3 percent, with a prevalence of 66.7 percent within the first twelve months, and 59.7 percent after becoming a teacher. A review (Erick & Smith, 2011; Mesaria & Jaiswal, 2015) on musculoskeletal disorder amongst school teachers found that the most physical ill health reported by teachers were low back pain, neck pain, and shoulder pain.

## 5. CONCLUSION AND IMPLICATION

The findings suggest that the problem is widespread among Nagaland teachers, and that it should be investigated on a larger scale, taking into account a variety of demographic factors. The findings also raise serious concerns about the need to address the challenges teachers encounter, and as a result, both the school community and the general public should be made aware of these concerns. School administrators and policy makers should implement strategies to provide supportive services such as employing counselors or psychologists where teachers and students may talk about their difficulties and concerns. School administrators and policy makers should also implement interventions or programs to promote the mental and physical health of teachers.

## 6. STUDY LIMITATIONS

Although this study's findings have included a new context and individuals in the literature, the current study's shortcomings should also be noted. There is a chance that certain stress related characteristics were overlooked due to the absence of various demographic variables. Additionally, because of the small sample size and the fact that the data only came from one place, it is not possible to extrapolate the findings to the total Naga community.

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## **Challenges and Future of Blended Learning Approach in India with Special Reference to Secondary Education**

**Bibha Srivastava**

Research Scholar, Faculty of Education, Integral University, Lucknow

**Dr. Smita Srivastava**

Assistant Professor, Faculty of Education, Integral University, Lucknow

### **Abstract**

*It has always been demanded that educational system has to be revamped and graded to the emerging need of the nation. Education system may be compared with an organism or a machine in which all the parts or components are interdependent and their interactions are dynamic. It gives an identification of learners needs and characteristics selection of appropriate learning expensive and its choice of relevant materials, media and resonances for such experiences. If working a local regional, state or content level a properly functioning resource center may be supposed mainly to work has a coordinating agency for the development and application of education technology among the resonance centers at the local regional, state and national levels on one hand the users of this technology to those who are in need of such service. In blended learning the programs and activities are so planned and executed as to present a happy combination of both. The traditional classroom teaching practice and e-learning faced instruction. This is future and prevent one can reap the benefits of both the practices of traditional and e-learning. In India the technology advancement is growing day by day. This paper will give emphasis the advancement of blended mode and what their challenges and future of blended learning which type of facility it gives to the learner in India, ICT enabled teaching, Blended approaches and awareness all discussed.*

**Keywords:** *Development of Technology, Blended, advantage of blended learning , Human Resources.*

### **1. INTRODUCTION**

As a Chinese proverb correctly notes “If you are planning for one year, plant grains; If you are planning for ten years, plant trees; If you are planning for a hundred years, plant men.” The wisdom we got from this golden statement shows that all things are measured by keeping the man in mind and he has been the key to for the growth of society in long term. The planning regarding manpower has been a long-term significance of wide range. With an opinion to create a long-lasting social enhancement, it is judged crucial to develop the resources present for human at first. If we have a talk on this context, education is concerned as the exponentially crucial instrument in the development of a strong nation. Education chiefly contracts with improvement of resources for human being. A nation spreads it’s heritage, reconstructs it’s culture, reinforces it’s economy and keeps it’s values with the help of education only. Education is the mode of promoting "individual excellence" as Nunn asserted. There is such a gigantic importance of education that it has been has been considered as a fundamental right of human. The Charter regarding Human Rights bordered by the United Nations Organisation in 1948 affirms:

### **2. HUMAN RIGHT TO EDUCATION**

“Everybody has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education will be compulsory. Technical and professional education shall be generally available and higher education shall be equally accessible to all on the basis of merit.” "Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups and shall further the activities of the United Nations."

### **3. DEVELOPMENT OF HUMAN RESOURCES THROUGH EDUCATION**

In any economic endeavour, human resources have traditionally been considered to be crucial. In terms of highly qualified manpower, it is more notable primarily in developing nations. The additional funding could come from abroad, where it is typically used to build infrastructure and equipment. However, human capabilities lag behind physical resources and become economic development's limiting factors. Schultz contends that the method used to calculate the formation of physical capital, i.e., the cost of producing them, can

also be used to calculate the formation of human capital. The value of productivity from human efforts increases as a result of investment in human resources, which has a positive rate of return. The following are crucial initiatives that advance human potential:

- (1) All expenditure affecting a person's life expectancy, strength, and stamina are included in health facilities and services.
- (2) On the job training,
- (3) Formally prepared education at different levels like elementary, secondary and higher,
- (4) study programmes with outreach initiatives,
- (5) Families and individuals move to accommodate shifting employment opportunities.

Education is, therefore, an investment in education is considered to be a wise investment. Through pursuing education and training, one can increase efficiency and working capacity. From an economic perspective, knowledge and skills that increase a person's capacity for production are considered capital. The advancement of human resources through education and training can benefit both the individual and the community across the board. Because of this, investing in education is productive because it pays off and speed up economic growth. Dr. V.K.R.V. Rao has, therefore, stated, "Since education is considered an investment leading to economic growth, this is a very good way of getting more funds for education. Many educationists, therefore, started talking of education and economic development to justify their demands for more money for education."

#### *A Man Does Not Live Only on Bread*

Some empirical studies have demonstrated the beneficial relationships among education, personality enrichment and economic growth. The epic study "Asian Drama-an Enquiry into the Poverty of Nations" disclose this link in a silver-tongued manner and underscored the universalisation of education for boosting growth of economy. In another book titled "The challenge of world poverty", Myrdal has presented the main idea and conclusion. A World Anti-Poverty Programme outlined the every component of the educational system needs to undergo fundamental reform with a focus on high-quality education in developing nations. The Reforms are not primarily aimed at increasing educational quality as determined by financial expenses. Weight should be arranged on "distribution spread" of the educational contributions among districts, social classes, as well as, in both genders. The reform should address what is educated, as well as its intention, spirit, and impact, for example, on student's willingness to perform manual labour. Myrdal also makes the point that a lot of education in less developed nations is miseducation and is likely to create development barriers. Furthermore, he contends that the investment-in-man model obstructs the development of realistic and pertinent research because it is essentially an extended capital output model.

#### *National Aspirations of India*

When India gained its independence on August 15, 1947, it was confronted with a vast array of issues that were enormous in scope and of a social, political, and economic nature. Despite having abundant natural resources, including resources related to human, the country's teeming millions of people were mired in ignorance, sluggishness, illiteracy, and poverty. The constituent assembly's 1949 adoption of a new constitution laid the groundwork for a sovereign and democratic republic that would guarantee all of its citizens justice, liberty, equality and fraternity. There exists a significant extension of education at the school, tertiary and university level as well, in accordance with the constitutional instruction for universalisation of basic education for all age group children starting from six to fourteen years old. However, it is argued that the quality of education has declined and that it is no longer relevant to the requirements and objectives of the society. The Indian Education Commission, 1964-66 has mentioned, "In a world based on science and technology, it is Education as Investment in Human Resource Development."

The commission has identified the food shortage as "the first and most important" among the nation's development issues, along with the extreme poverty of the masses, and has linked this to the high rate of underemployment or unemployment. Other issues include a lack of democratic values and national integrity. However, the commission on education is confident that properly reformed, geared, or revamped education will lead to the desired improvement in our nation's conditions. It has been cogently observed, "In our opinion, therefore, no reform is more important or more urgent than to transform education, to endeavour to relate it to the life, needs and aspirations of the people and thereby make it a powerful instrument of social, economic and cultural transformation necessary for the realisation of our national goals."

#### 4. DEVELOPMENT OF HUMAN RESOURCES

By introducing new facilities in agriculture, industries, scientific technology, encouraging capital formation, as well as, investment and giving the necessary infrastructure for transport, credit, marketing and exchange facilities, the physical resources of the nation must undoubtedly be developed with the goal of realising national aspirations. But more significant than a formal education programme. One potent tool, namely education, of course in cooperation with other agencies, is the only way to bring about such a large-scale change without resorting to violent revolution. The Kothari has noted that the only method for reaching everyone is the national education system. However, it is not a magic wand that can grant wishes. It is a challenging tool whose effective use necessitates willpower, commitment, and sacrifice. However, it is a tried-and-true tool that has helped other nations in their pursuit of development. If there is the desire and the ability, it can do so for India.

##### *Advantages of Blended Learning Approach*

Because education is so important, any expenditure on education should be considered an investment. India is a level three country in terms of human resource development, or semi-advanced countries, but a level one nation in terms of gross national product (G.N.P.) per capita. The statistics on literacy and enrollment at the primary level are very unreliable, and the national statistics hide the distribution of enrollment by sexes, groups, and geographic locations. Enrollment is particularly low in underdeveloped states, districts, and populations like schedule castes, tribes, as well as among girls. Myrdal has also considered such statistics as "completely unreliable." The literacy rates for developing nations like India typically exaggerate the level of literacy in those countries, and enrollment statistics inflate student achievement. Myrdal (1970) therefore concludes "A major prerequisite for national planning of the radical reform of the education system in under-developed countries that is urgently needed is very much improved statistics focused on the crucial questions."

##### *Convergence*

Convergence refers to the blending of technologies for faster communication and collaboration. Consider, for example, the evolution of mobile technologies. Simple handheld devices meant for communication have undergone phenomenal transformation to accommodate the digital camera, radio, MP3 player, voice recorder and access to the Internet. Moreover, handheld devices like mobile phones can also be used as content storage devices in addition to being used for reading and writing emails, chatting, browsing the Internet, videoconferencing and so on. When used for learning, convergent technologies offer innovative ways of seeking and exchanging information. As we notice in the case of television, text messaging through mobile phones has made it a highly interactive medium. Viewers can interact by sending short messages to ask or answer questions or share opinions.

##### *Ease of Use*

As an online medium, ICT is easily accessible and user-friendly, since most of the digital devices do not demand specialised skills like programming, nor do they require the use of specialised tools for the creation and delivery of learning content. For instance, the availability and convenience of numerous WYSIWYG (what you see is what you get) features have prompted many users to create and publish content on the Internet. Moreover, free or open-source tools, free Web tools and applications like blogs and YouTube have not only simplified the process of creating content, they have also made publishing and sharing an easy task. The popularity of these tools has prompted many in the field of education to use them to share learning resources. Many teachers and trainers have found innovative ways of reaching their learners with the help of open-source tools, free storage space and other user-friendly features. For example, Learning Management Systems (LMS) and authoring tools are mostly browser based; since they can be accessed through a browser, there is no need to download and install them or use other plug-ins. In addition to being cost effective, they are easy to implement and maintain.

##### *Cost Effective*

Unlike analogue devices that consume more time and resources for effective application in the field of education and training, digital media has made a phenomenal difference due to this affordability, adaptability and scalability. An appropriate example, in this case, would be the choice of tools for content development and delivery or subscription models for course enrollment catering to a variety of learning goals and training budgets. The initial investment required for setting up the infrastructure for using ICT in learning may be fairly high; however, when utilised efficiently, it translates into significant returns like easy access to content, reduced travel and increased productivity, besides providing flexible learning options. Moreover, the content can be

easily adapted to meet the requirements of learners in different geographies without incurring heavy expenses in creating new content to meet dynamic learning needs. The scalability aspect of ICT makes it easy to cater to a greater number of students, while keeping intact the quality and consistency of content.

### *Quality and Consistency*

Today, many institutions of higher learning are finding it difficult to keep a check on the quality of learning they deliver. The rising number of enrollments, especially in engineering institutions, does not find a match in the availability of qualified trained faculty. An average-level institution may not be able to attract and retain the best teaching talent due to constraints like remuneration and employee benefits. This is a grave problem, as Krishnan observes, "Engineering institutions have been permitted to run in recent years in India with little or no facility for students and with poorly qualified teachers. There are almost 500 or more such institutions in three provinces in India alone, Tamil Nadu, Andhra Pradesh and Karnataka. Added to this there are already more than 1000 or so arts and science institutions." In the corporate training domain, issues of quality, standards and consistency arise when training has to be repeated for different learner profiles. It may call for the reuse of existing content and the creation of new content with the help of available trainers and subject matter experts (SME).

### *Effective Use ICT in E-Learning*

What several new and interesting ICT applications in e-learning, it is easy to get excited and start using them, without conducting a thorough analysis of their appropriateness and benefits. Effective use of technology depends on using the application that is most suitable to solving a problem or addressing a new requirement. This is possible when we understand the relationship between ICT and e-learning and their place in the broad spectrum of technology-enabled learning. The following illustration shows how ICT is one of the components that constitute the big picture of e-learning. All three constituents-ICT, e-learning and e-learning support are of equal importance for the successful realisation of any initiative. The following figure presents some of the main points that need our attention while understanding the relationship between ICT and e-learning:

We notice that usually most of the attention and effort is focused on ICT at the expense of asking questions like:

- What is the learning or performance problem we are solving in specific terms?
- What is the vision or goal? Are these bound by time and budgetary constraints?
- Answers to these questions call for an understanding of how the points listed under the heads, ICT, E-learning and E-learning Support influence our decisions.

## **5. CHALLENGES IN E-LEARNING ADOPTION**

We are at an interesting juncture when it comes to e-learning adoption in India. Thanks to awareness about e-learning projects in education and training and the credibility gained from these projects, questions like the following rarely become a matter of concern: Is it possible to learn from computers? How can one learn without the physical presence of a teacher? Will technology replace me as a trainer? The stage we are in today demands an entirely different set of questions. We don't question whether technology is effective or if it will replace teachers. However, it's still possible to wonder how well this medium will actually help students learn. Hence, our efforts are more focused on making learning effective decisions. The following (Figure 1.2) is a diagrammatic representation of how e-learning signifies the convergence of people, content and technology and related issues that need careful consideration.

Several issues concerning the stakeholders demand our attention: Teachers and trainers will be concerned about integrating technology with classroom teaching Students may worry about coping with the medium while getting used to the idea of self-study.

### *Future*

Since, there exists firm relation between development and education, human resources are common basic factors in both processes, any expense in this relation has to be considered as an investment which could give returns over and over and in several ways liberal view, a cultural outlook towards "individual excellence" and "social efficiency."

India is dedicated to establishing a secular, democratic, and socialist society. She is expected to fulfil her duties as the head of a resurgent and emerging world with a vision for the future of humanity. She is now heavily involved in national reconstruction programmes with physical, social, intellectual, and ethical dimensions against the backdrop of a long spiritual and ethical heritage.

The development of human resources is of utmost importance, and this is the focus of all educational efforts. Education must extend past the limits of humanity and toward the horizons of eternity. It must include every facet of life on earth and every dimension of the universe. It cannot limit itself to only training the nation's future leaders or preparing the nation's citizens. In order to conform to a predetermined set of values, structures, needs, and ideologies, it cannot permanently mould the young mind. The International Commission on the advancement of education has fittingly observed, "Education is no longer the privilege of an elite or the concomitant of a particular age to an increasing extent, it is reaching out to embrace the whole of society and the entire life span of the individual." When viewed from this broader angle, education must be seen as an investment in people.

## 6. CONCLUSION

ICT has made a vast difference by widening the horizons of learning to include several innovative and creative ways of knowledge acquisition and skill development. Digital technology has radically changed the way radio, television, telephone and computers are used to promote learning. Digital media provide a wide spectrum of applications and tools for creating, publishing and accessing content and this has had an impact on all our education and training initiatives. Some of the key attributes of ICT deserve a mention here.

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## Fostering Blockchain in the Indian Education System - Edu Fraud

Dr. T. Logeswari

New Horizon College, Bengaluru

### Abstract

*Blockchain is the current buzzword adopted in the industry for decentralization of records. This technology ensures that the data is stored in a secured, transparent manner without providing authority to a single entity. Blockchain has found its utility in myriad sectors –healthcare, finance, supply chains- to name a few. Some of the key industry players in this area include Coinbase, Monex, and SilverGate. Blockchain progress can be attributed to the fact that it is not owned by a single company/organization. All that is needed to incorporate a blockchain network is a network with nodes that could maintain the data copies. Hence through the medium of this chapter, we wish to consider two key points, i.e. the feasibility of the adoption of Blockchain in the Indian Education System. We would also like to propose a solution for enabling the implementation of this framework in the Education sector.*

**Keywords:** Blockchain, Certificate,

### 1. INTRODUCTION

With the progress of blockchain, in these industries, there has been also been a parallel effort to incorporate the same in the education field as well. One of the key highlights for adopting block chain in the education sector is that it enables the student to have greater control over their academic identities [1]. They can provide access to their records to their potential employers and to anyone they wish to provide access to. Using the technologies available, we can also ensure that the data is protected through encryption thus providing a secure storage.

### 2. LITERATURE REVIEW

In a developing nation like ours, the Government is currently channelizing their effort to streamline this technology. A notable initiative in this direction was by the Maharashtra Government to use Ethereum Blockchain for verification of Skill Development Diploma Certificates. Technologies like these when coupled with Virtual Reality and other similar domains have the potential to completely revolutionize the current education system. This can also help the Government in detecting fake certificates, hence ensuring a cleaner system. However, like any technology there exists areas of concern for this as well. Ensuring the student data is safe and not prone to any misuse, is one of the biggest challenges facing the adoption of this technology [2].

A preset algorithm to determine the authenticity of the documents involved in also pivotal in establishing such a framework [4]. The educational institutes of our country have limited infrastructure amenities and hence the adoption of this framework could be a problem particularly in the rural, less-developed areas. This will also involve an additional expense of streamlining the existing system and introducing techniques and methods which would enable adoption of this technique over the existing setup [3].

#### *Introduction*

What is blockchain? A Database Which is Distributed adjustably Transparent highly Secure and Immutable A list of records / transactions, like a ledger, that keeps growing as more entries are added; Copies of the entire database are stored on multiple computers on a network, syncing within minutes / seconds; Records stored in the database may be made visible to relevant stakeholders without risk of alteration; Malicious actors (hackers) can no longer just attack one computer and change any records; and The mathematical algorithms make it impossible to change / delete any data once recorded and accepted [8].

A) Blockchain technology enables the creation of a decentralized environment, where transactions and data are not under the control of any third-party organization. Any transaction ever completed is recorded in a public ledger in a verifiable and permanent way [6]. Based on the blockchain technology, we propose a global higher education credit platform, named edu-fraud.



**Figure 1 - Identity Misrepresentation University impersonation**

Existing solutions of educational certificates verification thus have the following challenges:

- i. Centralised i.e. completely dependent on certificate issuing authority
  - ii. Manual i.e. verification is usually done through emails, phone calls or web forms
  - iii. Time consuming – could take weeks or months
  - iv. Easy to breach and tamper
- There is thus the need for a decentralised trust system that is verifiable and tamper-proof, is automatic, real-time and is fraud-proof.



**Figure 2 - Document Tampering Forgery & Fraud**

*Current challenges Existing solutions of educational certificates verification thus have the following challenges:*

- i. Centralised i.e. completely dependent on certificate issuing authority.
- ii. Manual i.e. verification is usually done through emails, phone calls or web forms.
- iii. Time consuming – could take weeks or months.
- iv. Easy to breach and tamper.

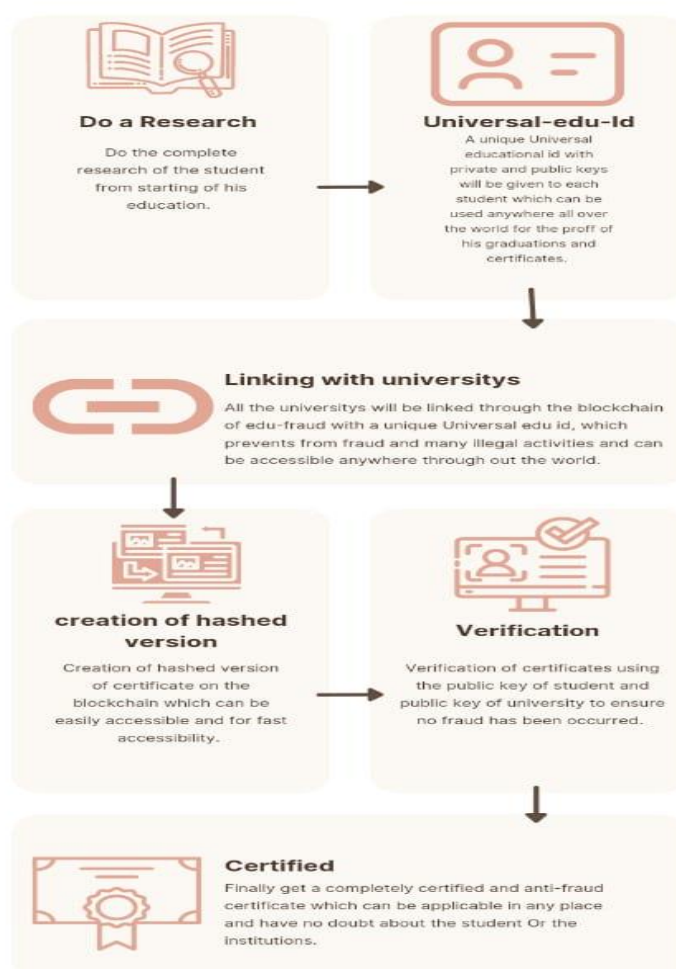
There is thus the need for a decentralised trust system that is verifiable and tamper-proof, is automatic, real-time and is fraud-proof. Leveraging blockchain for educational certificates [5].

*Implementation - The process in which edu-fraud operates is:*

- i. Creation of student identity: universal-edu-id, a unique blockchain representation of the identity is provided, along with a set of private and public keys.
  - ii. Issuance of certificate by university, together with universal-edu-id of the student.
  - iii. universal-edu-id i.e. creation of a block of student certificate – hashed version of the certificate on the blockchain
  - iv. Verification of the certificate using the public key of the student and the public key of the university.
- The solutions have features for both online and offline verification.

The immutability feature of blockchain ensures that tampering of certificate is not feasible – both the content of the certificate and the identity of the certificate holder.

## process flow of blockchain based educational certificate solution Edu-fraud



**Figure 3 - Process flow of blockchain based Educational based solution**

*The key features of edu-fraud include:*

- i. Data privacy: data stays with the entities that own them.
- ii. Real-time, automated verification from anywhere in the world.
- iii. Tamper and fraud resistant.
- iv. Permanence: the certificates will survive beyond organisations – removes dependence on the issuing authority for future verifications.
- v. Scalable to national and global level.

### 3. CONCLUSION

In this paper, we proposed a solution to the problem of counterfeit of the documents based on blockchain technology. The blockchain technology provides the authentication, authorization, privacy, confidentiality and ownership to the documents of the user which are the required properties of the digital documents. Hence, the students as well as the organization are benefited with this system.

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## **Traditional Media in Rural Development: An Insightful Study Through the Context of Manipur Sumang Kumhei**

**Dr. Naorem Nishikanta Singh**

Assistant Professor, Department of JMC, St. Joseph University, Nagaland

### **1. INTRODUCTION**

Manipur, a state in the extreme east of India, which is called the Switzerland of India or “The Jewel of India”, is the land of nine hills and one valley. It is one of the seven states of the North East bordering the state of Nagaland in the North, Assam in the West, Mizoram in the South and Myanmar in the East. The heart of the land, Imphal Valley is surrounded by nine hill ranges. The valley is nourished by the Nambul and Imphal rivers, which ran across the heart of Imphal city. The land is adorned with the Loktak Lake, the glittering jewel in the neck of a beautiful damsel. The land is rich in Fauna and Flora. It is a state where people from different castes, creeds, tribes, and religions live together as one. The state is marked by its rich culture, tradition and heritage. Traditional media is one of the traditions which the art is passing from generation to generation and Sumang-Kumhei is most acceptably practised in this land of border State. Manipuris used to call Sumang-Kumhei as Jatrawali earlier.

Sumang-Kumhei literary means Courtyard Play is one of the most popular forms of Manipuri Theatre. It is enacted in the open courtyard with the audience all around. The performers of this theatre are made of 10 to 12 professional artistes. A small open area and very few props like two chairs and a table are necessary to perform this play. A play starts with an invocation song to God, the King or the motherland. The actors come on the stage singing the invocation followed by another salutation song to the audience. The action of the play starts after the salutation song. The unique nature of this theatre is all the artistes are male who play female roles also (The roles of male characters are played by female artistes in the case of female theatre groups) which signifies the uniqueness of this art form of freestanding between the two gender-based groups. For convenience to the actors, the dressing area or green room is either in the North-West or the Southwest to the play arena. Three-four musicians are necessary off-stage for musical accompaniments as demanded by the scene.

This traditional theatre has been changing its nature since its origin. In the present day, a popular troupe performs 3 shows per day during its season, which starts from Holi (February/March) and it continues throughout the year except during the rainy season. In the sense of preserving and promoting this precious art-form, now we have Sumang Leela festival at State level. Without any doubt, it can be said that it is the most demanded traditional form of media which serves society by educating, imparting awareness and entertaining. The plays are based on social issues and as well on popular world history like Opium War, rise and fall of Hitler, Lidice, Border disputes etc. They focus on social issues related to dowry, polygamy, HIV/AIDS, social media, caste, religion and corruption too. The plays usually cover some two hours and humour scenes always entertain the audience in all the plays. Mass education imparted by Sumang-Kumhei for socializing Manipuris is beyond the reach of Proscenium theatres, cinema and other specialized modern media structures because the former is a mobile one, an indigenously evolved performing art form which can be played conveniently at any place with a little material arrangement. Its popularity was speed-up since early 20th Century and many performers and troupes travelled to many parts of the country to perform as a part of cultural exchange and bagged many titles in different festivals.

Suman-Kumhei makes people laugh, weep and think over contemporary problems that afflict Manipuri society through satirical comedies, discussions, analysis and prescription of positive remedies. Indeed, Sumang-Kumhei, in the course of its evolution, has established a symbolic relationship and moulding the values, norms, attitudes, and beliefs of the people in ongoing systems. Advancements in Information and Communication Technology in our day have in certain respects conquered time and space, making it possible to reach people everywhere across the globe with information instantaneously. But this fast information superhighway can never go alone in shaping our society leaving behind the traditional media.

### **2. GROWTH AND DEVELOPMENT OF SUMANG-KUMHEI**

Sumang-Kumhei traces its origin from the comic skits of the jesters of Chandrakirti Maharaj (1850s). But scholars and social scientists trace the root of Sumang-Kumhei and state that it was invented between 400 and 500 B.C. From its inception until the year 1500 A.D. the term was not used to mean it. During that period the term used for it was *Harao Kummei* (fun and festivity). Even the Bengali Babus associated with Manipuri elites in plays, dramas, songs and dances along with their literatures. Around 1500 A.D. when Manipuris embraced

Hinduism the term *Harao Kummei* was replaced by *Leela* and stories from Hindu books became plots of the plays. Thus proceeding and in the reign of Chandrakriti the play termed *Fagi-Leela* played by the court jesters. The jesters were the favourite attendants of the King in early Manipuri tradition. Their witty and humorous jokes always kept the King and his company in good moods. Here the conscience of the author suggests that there were very limited media to keep the Kings and Senates entertained. Kharibam Laishuba and Abujamba Saiton were the jesters pioneering the comic-plays since middle of the 19<sup>th</sup> century. With little innovation, comedians began to form small groups travelled in all the directions with their humorous acts. The actors' physical looks, voices, gestures, wits and cross-talks with contortions of the body were the main attributes and reasons for their popularity.

Since the first decade of 20<sup>th</sup> century these comic-plays came up with songs and dance and the main thrust of their humour was directed in making fun of the new colonial masters and the bureaucracy (The British). The plays does revealed our history and about the intruders of traders from neighbouring countries. These plays were the precursors of Sumang-Kumhei in Manipur. They were very short in duration and carried no full length story. "*Harishchandra*" a full length plays expunge from Ramayana played in vernacular in the year around 1918 was a landmark in development of Sumang-Kumhei. The play projected the social conditions of the time with a bit of sarcasm as it was the time when the Manipuri society was in the grip of the *Brahmasabha* and the King, and at the same time patronized by the British. The religious plays of the time like *Sansenba*, *Gourleela*, etc and the contemporary proscenium plays considerably influenced the organizers of the play to produce a well-made Sumang-Kumhei.

Sumang-Kumhei is a mobile theatre which travels throughout the length and breadth of the Manipur valley and imparts socio-cultural and politico-economic education to the people. In the year 1902 proscenium plays were started with "*Pravas Milan*" and "*Bamacharan Bandhav Natyssala*" subsequently Education Department took up play productions on every Saraswati Puja, though the plays were in Bengali. Another mythological play from Hindu text, *Savitri-Satyaban* interwoven with local elements followed the trend revealing the exploitation of poor and down trodden people by those in power. Next comes "*Moirang Parva*" synonymously ballad of Khamba and Thoibi sung by the *Pena* (a musical string instrument) minstrels, *Moiraba Charan*, *Chandrajini*, *Suvatta-Suri Huranba*, *Thok-leela* etc. which travelled throughout the state from the 1920s up-to the 1950s. The impact of Second World War brought many changes in socio-cultural, political-economic fields as Manipur was not matured enough to be a full-fledged State. The then Government banned the historical play *Puran Meithaba* (the burning of the *Puran*) because of the apprehension of a volatile fallout. The play *B.A. Mapa Lamboiba* (the Renunciation of the world by B.A.'s father) pungently showed the pitiable fate of the old tradition against the onslaught of new values accrued out of the new education and new economy. It created a landmark in the history of Sumang-Kumhei by being the first play based on written script. Shri Nongmaijing Sharma was the writer, Director and organizer of the play.

After 1950s the facet of Sumang-Kumhei came up with new themes based on folk stories and social issues for instance *Kabui-Keioiba*, *Sandrembi Chaishra* and *Mahaprabhu Fita Onba*. During the reign of G.C. Tongbra in the field of Sumag-Kumhei (1950s - 60s) the Manipur State government has taken up promotional programmes since 1960s of this art form. And at present the Manipur State Kala Academi is organizing Sumang Leela Festivals every year at Iboyaima Shanglen, Palace Compound. No doubt there are women's Sumang-Kumhei groups and they too participate in the Annual Festival. Now a day Life Pension is also paid to old artistes.

### 3. FORMS OF SUMANG-KUMHEI

Sumang-Kumhei has a history of its genesis and development. Today it has become a comprehensive term which comprises many forms of theatrical art. *Moirang Parva*, *Khongjom Parva*, *Epom* and *Eshei-Kumhei* are all the forms of this theatrical art. The theme of *Moirang Parva* is the immortal love of Khamba and Thoibi which was handed down by minstrels to the accomplishment of *Pena* from generation to generation orally. Similarly, *Knongjom Parva* do the same genre of presentation but different story. In this form the story is about martyr Paona Brajabashi who fought against mighty British and sacrifice for his mother. *Epom* is comedy play performed by three or four comedians and it was just a wholesome entertainment play without song. Although *Epom* was entertainment play it carries moral values as well as knowledgeable riddles. *Mayang Imphal Tombi*, *Oinam babu*, *Takhellambam Chaoba* and *Kunjaraj Singh* were the legend artistes of *Epom*. *Eshei-Leela* was the latest form of Sumang-Kumhei which emerged as the most popular one during 1970s. But it was short-lived. There is full of romance and melodramatic elements wherein songs are more important than dialogue and action. Play-back singers take a major role in this form. Following the theatre tradition, it has become proscenium-oriented in terms of choreography, sound system and presentation.

#### 4. SUMANG-KUMHEI AND MANIPURI SOCIETY

Sumang-Kumhei has an endless close and intimate relation with Manipuri Society. In the words of L. Damodar Singh, a distinguished scholar, “Sumang-Kumhei is the people’s theatre considering its insight into the people’s life and intimate and resilient relation it can strike with the people”. Along with the change in social, economic and political structures, the theme, style and presentation of this theatre have also been changing. After WWII the myths, folk and pseudo histories which were once the main theme of Sumang-Kumhei were started replacing by social related themes. They began to use scripts and Ningombam Angouton who wrote and produced *Puran Meithaba*, was one of the pioneer script writers. G.C. Tongbra tried to expose both the comic and tragic situations of life arising out of different attitudes and outlook. Pity quarrel, misunderstandings, pity crime in our society became the main theme and it made a profound impact on our society. Audience themselves became aware of their follies when they witnessed Sumang-Kumhei.

After 1960s a great many changes have been witnessed about political instability, economic backwardness, unemployment problems, communal violence and insurgency activities which have been the main problems ever since. The gap between poor and rich has widened; corruption, human rights violation, custodial death, rape & killing, polygamy, fake encounter, partiality and injustices have increased. Thus the tragic turn at the end of 20<sup>th</sup> century engulfed the people of Manipur into darkness. With the changing trend of the society, Sumag-Kumhei is seen to undergo changes in its presentation showing the keen awareness of the needs of changing times. Not only in themes but also the costumes, makeup, equipments, and sophisticated technologies changes are observed. Today this art form is considering as commercial art rather traditional folk theatre.

Sumang-Kumhei is reproducing contemporary social problems to people of Manipur predicting the repercussions of the circumstances. *Ee Thaklaba Kangla Sha*, *Eegee Mahao* and *Yotkhoklal* give a true picture of contemporary society which is full of tensions and conflicts under the Armed Forces Special Power Act. *Yotkhoklal* exposes the tragic situations faced by the common people which resulted from the arm conflicts between the insurgent groups and Indian army.

#### 5. CONCLUSION

Though Sumang-Kumhei has its vicissitudes, as it has high mobility and good accessibility to the common masses it will remain the most powerful form of art. This art form awakened the political turmoil by enacting patriotic plays which enthused the political thinking and nationalistic spirit of the Manipuris. It helps in generating forces for the birth of “psychic mobility” of the people to change the traditional outlooks from “change-resistant sacred outlook to change-ready secular outlook”. In short Shumang-Kumhei modernizes the traditional and traditionalizes the modernity to change the society in tune with the changing needs. It fosters the spirit of rediscovery of traditional culture, leads on to “reinterpretation of traditionalism to function as a catalyst of social change” and secularization and democratization of social relations.

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## **Augmenting Environment Sustainability through Organic Farming in Nagaland: A Historical Perspective**

**Mhonlumi L Tungoe**

Assistant Professor, Dept. of History, St. Joseph University, Nagaland

**Yantsuchan Yanthan**

Student, Dept. of History, St. Joseph University, Nagaland

### **Abstract**

*Nagaland being one of the most engaged in the agricultural activities land under shifting cultivation in India. Farmers have been practicing organic agriculture in the state since Ancient times. This practice has been widely successful because of its economic growth and tolerance towards ecosystem. With rapid increase of awareness towards the quality of food consumed by human, organic farming provides one of the possible solutions towards sustainability of Environment as it helps to address both environmental degradation and Poverty. Nagaland, a hilly mountainous state located in India where vast majority of its population are engaged and solely dependent on Agriculture. The practice of Organic farming has drastically benefited the natural ecosystem. This method has resulted in enhancing the living standard of the people. Ancient traditional farming system called Shifting cultivation is widely successful in Nagaland. This system of Organic farming enhanced the capacity of soil and conservation of Biodiversity. The success of Organic farming in the state is also widely because of the policy by the Government on Organic agriculture in Nagaland which focuses not only on food safety but maintaining sustainable eco-friendly methods. Its success is also the result of traditional mode of farming that has been prevalent during Ancient times. In the present day where there is constant development causing Environmental degradation is one of the major concerns that pose a serious threat towards our ecosystem and our health. The shifting cultivation adopted in Nagaland supplemented by usage of various natural manures provided not only sustainability but a general source of income for the farmers.*

**Keywords:** Sustainability, Environment, Organic, Nagaland, Agriculture

### **1. INTRODUCTION**

Organic farming in Nagaland has been a long traditional practice that has been practiced since ancient times. It uses traditional method of organic materials such as farm yard manures, cow dung, poultry manures. Organic farming in Nagaland covers many villages due to its rich hilly topography. Organic farming in Nagaland has not only contributed to the State revenue but it has also drastically improved the livelihood of the people. The state of Nagaland produces high value crops such as Pineapple, Cardamoms, Ginger, Juicy fruits, Tea, Coffee which are of high end nutritional value for human health. In Nagaland locally grown organic produce is customer preferences where farmers also get better value market. It is also proved that organic production results in healthy diet. Organic farming practice is a long traditional practice that has been followed by the people in Nagaland. People in this region were already aware of the concept of natural farming even before. Since Ancient times people realize the necessity to conserve environment as their livelihood were depended on it. They stressed on the importance of healthy soil and healthy consumption. The success of Organic farming practices in Nagaland is widely considered because of the traditional identity in agricultural practices and various tribes of Naga's festivals are associate with agriculture such as Tsukhenyie for Chakhesang Naga, Moatsu for Ao Naga, Mongmong for Sangtam Naga, Aoleang for Konyak Naga. These festivals are celebrated, thanking the almighty God for successful harvest. During this festival they drink and dance appreciating God and the natural environment provided to them. This is the reason farmers in Nagaland consider their land as a priority and take good care and delight in it. These practices have not only contributed towards promotion of Naga identity but it has also drastically impacted towards protection and promotion of ecosystem. Relation between traditional farming and farmers and the various festivals have been developed and have brought the awareness towards more sustainable environment conservation.

The production of food was insufficient during the mid 1940s to 1960s in India, keeping this in concern to meet the needs and demands of the people. At the very onset during these years' Green revolution was launched by geneticist Dr. M. S. Swaminathan, around 1960s which drastically helped in increasing food production in the country. The primary aim of introducing the green revolution was self sufficiency in agricultural production where farmers could produce high-yielding varieties (HYVs) of cereals to alleviate poverty and malnutrition in India (John & Babu, 2021).

Though the introduction of green revolution has increased the agricultural production, in due course of time there were many cases of overuse of chemical fertilizers, pesticide, and lack of crop rotation which slowly resulted over the land to become more infertile and it also affected the ground water. These impacts made the farmers even more miserable because there was increasing expenditure spent on the cultivation of crops to overcome these shortcomings. Though the green revolution was a solution for generating stability and income of the people it has also drastically affected indigenous method of cultivation. At the onset of green revolution, the state of Nagaland in many villages has remained true to the production of indigenous agriculture by using only natural manures instead of chemical fertilizers to promote more crop production. The food production that are produced since our forefathers like Rice, Pineapple, Cardamons, Tomato, Capsicum etc. still are in produce using only traditional method and thereby conserving soil and its natural environment.

Shifting cultivation is defined by FAO (1982) as “a farming system” in which relatively short periods of cultivation are followed by relatively longer periods of fallow.” (Encyclopedia of Biodiversity, 2001). Shifting cultivation is also known as slash and Burn agriculture. This method of cultivation takes time because after harvesting until the soil is regenerated again, the farmer does not plant crop unlike inorganic agriculture where pesticides and fertilizers are used to increase the longevity of the soil in an unnatural manner. Though it cannot be guaranteed that shifting cultivation is the best mode of cultivation, but comparing to the artificial method of producing agriculture it is the best and the possible solution to conserve our environment.

#### *Role of Government Agencies for Promotion of Organic Farming in Nagaland*

To strengthen the market and the commodities and to support farmers in Nagaland, Government agencies such as Department of Agriculture have tirelessly worked towards organic farming by launching various Schemes which includes National Project on Organic Farming (NPOF), National Programme for Organic Production (NPOP). These policies and schemes has been implemented has been widely successful because of mass support and sustained the livelihood of many farmers and bring them more closely towards sustainable Organic Farming Under these initiatives it provides help to farmers such as distribution of organic inputs to the farmers, training of farmers in organic production, awareness campaigns and Field demonstration. To promote organic farming in Nagaland, state organic policy has been implemented. It laid out its various strategies such as imparting knowledge on organic farming system through syllabi of the school education (National programme for organic production, 2018).

#### *Major Agricultural Regions in Nagaland*

- *Zabo Farming of Kikruma Village:* The Naga farmers of this village have worked closely with nature and have use terrain and climate to their advantage. The village has 1,664 households; it is located on a hilltop where perennial water sources are scant. They belong to Chakhesang Naga tribe. They are considered to be one of the most hardworking communities having traditional knowledge and experience in hill farming. This farming community of Kikruma village since time immemorial has successfully developed its own unique farming technique of indigenous system of water harvesting that nurtures the soil and enhances agriculture production which is dedicated specifically to irrigate the paddy fields. This method of agriculture technique creates sustainability not only in soil conservation but boost the income source of the villagers. The indigenous practice to adapt themselves from the scarcity of water leading them to develop a method of soil and water conservation with efficient land management system. The word Zabo can be traced back to the local dialect word Zabu which is translated in English as “Impounding runoff water and utilization”. (National Institute of Agricultural Extension Management and Michigan State University Extension, 2021) Their indigenous technique of farming integrates forestry, agriculture, fishery and animal husbandry activities by using harvested water conservation. The farmers in the village have hand dig ponds to harvest rainwater during monsoon season. The pond surface and below is plastered in mud to avoid any loss of water. A pond measuring 3 meters can irrigate terrace cultivation and yield up to 600 kg of rice. Water channels are created linking the pond to the paddy field. In the water channel bamboo check dam is made to control soil erosion. The water-harvesting ponds and tanks that have been traditionally created by the villagers not only serve as a water reservoir for irrigation but they also serve for other purpose like drinking water for cattle and other animals of the village which results in conservation of biodiversity. The harvested water from the catchment along with animal dung and urine is left in the water-harvesting pond for about a month. Some farmers even rear fish in the ponds for some additional income. This system of integrated traditional farming not only benefits the farmers to sustain their livelihood but also sustains the natural environment.

- *Sustainable Agricultural System of Mima Village, Kohima:* This village is located in Kohima district in Nagaland. It is known for its sustainable form of agricultural practices. In this village we do not find much of lift irrigation, jet pump or even tractors and Oxen but rather the agricultural system is manual and farmer mostly use spade to work in these fields. The careful use of water management and land distribution is the key for its sustainability. Here we find split bamboo that are channeled to provide water to the fields also strict regulation is imposed where farmers from every clan has to keep the height of the water inlet at the same level so there is no imbalance in the distribution of water. The fields produce rice, maize, sesame, millets and diverse types of vegetables that are organic and healthy. The community of this village has avoided using High Yielding Varieties of seeds (HYVs) and chemical fertilizers. They vouched for producing diverse crops through sustainable farming practices. In times when healthy diet with sustainable mode of production is a concern, this village has provided an indigenous response to this food security and environmental conservation.

### *Shifting Cultivation Practices in Nagaland*

One of the major cropping systems that have been followed by the people of Nagaland is Shifting cultivation. From the name as it is shifting means moving location from one place to another. In the hills of Nagaland, Jhum or slash and burn form of traditional agricultural practice have been followed since generations by the tribal people in Nagaland. Jhum area covers about 72% of total cultivable area in the State and contributes to the total rice production of about 42.26% (Kuotsuo, et al., 2014) There are many tribes in Nagaland that are dependent on shifting cultivation for supporting their livelihood. Here in this method of farming the selected sites are usually flared up in the month of February - march along with sowing of crop in April- May. This method of farming technique does not utilize any kind of fertilizers or chemicals and it only follows organic principle of food production. To replenish and maintain soil fertility Nagas after the cultivation in that particular area which they have harvested leave the particular area for two or three years and shifts to another area and goes back to the plot again after the soil is replenished. In Mon district of Nagaland, Jhum cultivation is the mainstream of practice that are depended by the people. The entire rotation in this method of cultivation takes about six to ten years depending upon the size of the field. It has been reported that the longer the duration of the waiting period for crop rotation the more fertile the crop become, this method is practiced by the tribes of Lotha, Sema and Ao, Nagas. This traditional method is carried out as they bring in higher economic income not only for the village but the State as well. On the other, it also conserves the soil and water issue which is an environmental concern in the present scenario globally.

### *Alder Tree based Sustainable Farming Method*

Since the State is a hilly topography with intense rainfall during monsoon season to prevent soil erosion and soil loss this method of indigenous technique has been used to conserve environment. The people of Khonoma village of Kohima district, Nagaland have used the method of raising Alder trees alongside major agricultural crops like rice, maize. The main motive behind this traditional idea is that on planting this tree alongside it the nodules of the trees are able to fix nitrogen into the soil, hence improving soil fertility and also providing shed for plantation.

According to the Integrated Watershed Management Programme (IWMP) 2009-10, it has reported that Agriculture is one of the significant contributors to the net State domestic product and it is the largest employer of the working force in the State of Nagaland. Though the dependency of employment on agriculture has declined from as high as 96.50% in the 1950s to about 68% in 2000 (Brief write up on integrated watershed management programme, 2009-10). The organic mode of agricultural production still continues to be the main source of livelihood. In this region shifting and terrace cultivation remains the dominant form of land use practice in the state. The traditional form of shifting cultivation is the method of cultivation that has been widely practiced across Nagaland. Jhum occupies around 90% of the area under cultivation. Where on the other hand terrace cultivation is largely confined to the districts of Kohima, Dimapur, Tuensang, Peren, Phek and Wokha. Though the single cropping system is mostly prevalent in the State, multiple cropping systems are yet to be practiced in large.

## **2. FINDINGS AND CONCLUSION**

The traditional method of organic farming helps us in maintaining the stability of our ecosystem because its processing is natural, so it puts less pressure upon land and water degradation. Organic farming helps us to maintain a healthy diet and improves our immune system because in its cultivation fertilizers and pesticides are absent so the nutritional value of soil is maintained and there is a healthy growth of agriculture commodities that

we produce like rice, wheat etc. The process of organic production will also drastically help in conservation and protection of our natural habitat such as flora, fauna and our aquatic ecosystem because the agricultural waste that is sipped into ground water and rivers does not contain intoxicant as organic farming uses zero fertilizers and harmful pesticides. This will drastically improve the life cycle of all the ecosystems. Also organic farming not only ensures water conservation but controls water pollution. Due to runoff and leaching of pesticides and chemicals, in the process of inorganic production the water reservoirs gets polluted and this results in killing of many aquatic flora and fauna. But this problem is reverse with organic method of traditional farming as it keeps our water supply unpolluted and clean.

Farmers in Nagaland have adopted the traditional method of shifting cultivation where agricultural practice is done without the use unnatural inputs. In this process of cultivation, they leave the paddy for regeneration for some 8-10 years depending upon the size of cultivation after harvesting. This process is enough to regenerate the soil and sustain crop production economically without the use of chemicals and artificial inputs. This process of shifting cultivation is successful and has been in practice till today. Organic farming also preserves animal health and welfare. It is a known fact that chemical sprays and pesticides contain soil acidification and also release green house gas that gradually destroy the natural habitat of majority of insects, birds and fishes etc. Organic method of natural farming acts like a natural pest's control. Organic mode of production also results in safer working conditions for farmers as it is a well known fact that many farm workers die each year because of pesticide use. Even in many places where modern farming technology is used and where farmers are well informed about protection from unnatural farming the rate of cancer patient among farmers is much higher than the average population who does not practice farming (AGRIOCH, 2021).

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## Historical Analysis of Ecological Transition: With Special Reference to Intanki National Park, Nagaland

**K. Hokato Sumi**

Assistant Professor, Dept. of History, St. Joseph University, Nagaland

**Mhonlumi L. Tungoe**

Assistant Professor, Dept. of History, St. Joseph University, Nagaland

### Abstract

*Over the years, the state of Nagaland had experienced an ecological imbalance mainly in terms of the lower percentage of rainfall causing an almost a verge of drought like situation causing innumerable loss to the farmers in particular and the inhabitants of the region as a whole. Nagaland experienced a heavy floods and number of landslides in the state over the past years, with the rise in the level of high temperature and increase degree in humidity as an indication of the nature prompting call for the people to understand the impending gravity, of the threatening ecological affects the state need to be tackle before any hazardous consequences befall in the nearest future. From being primitive dwellers of the forest, practicing jhum or slash cut cultivation to transition to a rapid modern infrastructural development. The region underwent a tremendous transitional change of natural vegetation landscape just over the course of few decades from being covered with almost an entire proportion of the area with forest to rapid depletion of the natural forest vegetation by the end of 20<sup>th</sup> century, posing a serious threat not only to climate factors but also destabilizing the natural habitation of fauna's. The exposure and introduction of modern innovative technology acquainted the people towards exploiting the natural forest resources to a larger scale for both domestic usage and commercial purposes in commercializing the forest primarily for the domestic firewood as a sustainable mode of livelihood and timber export making it a most profitable sought business for the people involved in this business thereby making even the state reserved forest areas as a major hotspots for many illegal timber smugglers to exploit forest for the purposes of trade and commerce. This continuous trends of rapid deforestation without an application of the principles of forestry and forest management for sustainable development had resulted to an irreparable negative impact on the current ecological statics of the state which needed to be an utmost priority for the government to address this issues in initiating a prompt measure to combat the exploitation of forest in achieving a sustainable development.*

**Keywords:** Nagaland, Ecology, Primitive, Forestry

### 1. INTRODUCTION

Forest and its natural resources plays an important part in the life of the Nagas since the time these tribal Nagas inhabited the region which is now a modern Nagaland. The inhabitants occupy the region of India, China and Myanmar. The Patkai mountain range with the longitudinal range of 23° N and 28° N and between 93° 20' E of Saramati measuring 3840m (12,598 ft) range of non-Himalayan peak of Indian sub-continent in the mountainous range of Nagaland. Nagaland lies in the temperate zone or sub-tropical region receiving an average rainfall between 1500- 2800mm (80 inches) of rainfall annually. The climate of Nagaland is generally cool in winter and pleasantly in summer especially in the interior places and higher hills. During the winter months of December, January and February the temperature comes between the 4° C to 1° C, the average temperature in winter is approximate range of 22° to 27° and in summer the temperature degree is recorded as high as 26° - 40° Celsius. The monsoon variability and annual rainfall is 24° & 23° respectively. The climate of the state varies from subtropical, tropical, temperate. Nagaland an abode of dense forest surrounded by the mountainous ranges on Brahmaputra valley and the Himalayan range covered by mountain and snow as high as 24,000 feet above the sea level. The steep mountain hillsides are covered with jungle subject to extremely heavy rainfall borne by the winds of the Bay of Bengal. (Means, G. P. Tribal transformation: the early history of the Naga hills, 2013.)

The state of Nagaland is comprised with 15 administrative districts, 74 blocks and 1428 inhabited villages. Nagaland is also one of the parts of 36 biodiversity hotspots of the world i.e. the Indo-Burma biodiversity Hotspot. The forest area of the state is kept under the forest department of the state. The forest is divided into two main circles; Conservator of Forest, Northern Territorial Circle and Conservator of Forests, Southern Territorial Circle with 19 forest divisions spread across the state. As per the updated data as on 31.01.2022, forest now occupy an approximate area of 8421.74 sq. kms out of the total geographical area of 16,579 Sq. km of the state, Nagaland has lost over 2.5 percent of forest area measuring 450 sq. km since 2015 as per data of India State Forest Report 2017. Forest Survey of India released through the ministry of environment, forest and climate change in 2021 Nagaland has 8623 sq. km of unclassified forest and 234 sq. km of reserve forest. Forests are categorized into Northern tropical wet evergreen

forest, Northern Tropical Semi Evergreen Forest, Northern Sub-tropical pine forest, Northern Montane Wet temperate forest, Temperate Forest. Forest in Nagaland are categorized as reserve forest. Assam valley tropical forest, Pioneer euphorbiaceous scrub, eastern alluvial secondary semi-evergreen forest, Secondary moist bamboo brakes, east himalayan moist mixed deciduous forest, khasi subtropical wet hill forest, Assam subtropical pine forest, Naga hill wet temperate forest, montane bamboo brakes, Assam subtropical pine savannah are the types of forest found in Nagaland. The maximum area of forest is owned by the village community so the government purchased from the private ownership for biodiversity conservation and preservation. Government purchased approximately 192.47 sq. km from the private and village owners.

## **2. NAGAS HISTORICAL LINKAGE TO FOREST**

In traditional naga society, the overall patterns of social organization were based on the assumption of mystical spirit that inhibits numerous inanimate objects of nature, the belief in the nature as that the spirit inhabits the area of forest and of this belief, the people somewhat inclined to exploitation of forest, to preserve certain areas of forest as sacred territory, their economic system, social, political, religious system were highly integrated and interlinked to nature, all the different aspects of life were very closely attached to nature. For their survival, people largely and primarily were dependent available forest resources. Agriculture was their main sources of livelihood and economy and thus the practices of clearing the forest was done primarily for cultivation known as jhum cultivation or slash and burn. The deforestation of forest was done but not in a large scale, which do not affect the environment to such a depleting state. The percentage of people inhabiting these regions were few in numbers but with the transition of the period, the nagas inhabiting the forest region came into contact with the outside kingdom of Burmese in around the 13<sup>th</sup> Century and later with the British occupation of Burma through the treaty of Yandaboo. These forest areas came under the powerful nations of the times as Britain that colonize India and subsequently extended its footholds in the hilly region of naga territory. Under the colonization of the Britain, the nation that is tremendously growing in the field of innovation and technologies, the Nagas were exposed to materialistic advancement of the times and caught in transition mode of production from primitive mode to innovative technology. The colonial rule introduced the modern farming method and scientific tools, the introduction of system of communication as road connectivity steadily brought the isolated forest region through the exposition of colonial administration connected the primitive inhabitants to a new progressive world. With the changing circumstances and transition of the period, this forest hill region underwent a drastic change just over the course of few decades by the end of 20<sup>th</sup> century and early of 21<sup>st</sup> century in exploiting the forest resources to the maximum for the commercial purposes leading to the explosion of mass smuggling of trees, felling of trees for logging for domestic as well as for commercialization. The open market demand for timber export in the domestic, national as well as in international markets attracted both the rural and business class of people to exploit the opportunities as it generated a high source of income revenue. The thirsty open market demand led to the exploitation of forest resources both in term of legal and illegal means of supply. The virgin forest fetch as a supply chain to the market smugglers. Here the legal supply indicates the tress that was felled down that belongs to an individual and territory within the village jurisdiction, which are legally belonged to private individual and village authorities as legitimated through the customary laws. The illegal supply indicates the export or import of logging through smuggling, felling of trees without authorization either by an individual, village or government that are illegally felled, transport for cultivation, settlement, expansion of towns, domestic firewood and commercial purposes. This rampant exploitation continues to increase and therefore the government of Nagaland introduced and enacted certain constitutional measures, laws, rules and judicial provisions through articles 47 and through the Directives principles of state policy Articles 48A of the constitution of India.

## **3. MEASURES AND REFORMS**

The Nagaland Forest Act 1968 was enacted for the management of government control with effective from 1st April 1968, the Act was divided into 10 chapters that deals with cattle, village, reserve forest protection, wasteland, import, export, penalties, trespassing, duties of forest officers. The Nagaland Jhumland Act 1970 was enacted and implemented with effective from 12 April 1974, which gave a new definition of forest, all land except the terrace cultivation were categories as forest which were brought under Jhum land within the ambit of forest department. The forest conservation Act 1980 made it mandatory to obtain prior approval of central govt for any forest activities in forest areas that falls under the control of forest department. Nagaland tree felling Regulation Rules 2002 the supreme court of India directed for framing of rules for regulating the felling of tress from non-forest area.

Extraction and transportation of the pine roots and stumps guidelines 2009 was implemented under this directive both extraction and penalty on the felling of pine trees was strictly prohibited and authorized the divisional forest officers to make a proper assessment for the concerned trees in matter of extraction, stumping sources from pine growing regions or transportation and imposing a penalty on the defaulters. The writ petitions civil no 202/1995, this public

interest litigation led the court to declare anyone running saw mills of a kind as non-forest activity and order the states to constitute an expert committee for identification of forest areas, to assess the sustainable capacity of the forest (Annual administrative report, 2021-22, GoN).

#### *Forest conservation, management and projects*

In order to preserve the forest, the forest plantation initiative has been taken up mostly as a microproject in a compact minimum area of 30 ha that are further divided into annual coupes, i/e annual plantation areas. This area will need to cover up within 3 years, the planting of trees of different species are also done along with agricultural crops, this system of tree plantation has been found successful along the jhum cultivation. The forest development Agency (FDA) was also created to regulate the flow of funds for the implementation of the schemes and projects in Nagaland. The National Afforestation Programme (NAP) was implemented under which integrated Afforestation, eco-development projects, area oriented fuel wood and fodder projects schemes, conservations and development of non-timber forest produce was introduced with the prime objective that one third of geographical area of the country shall be under tree coverage.

The effective utilization of Jhumland, supply of fuel wood and small timber, soil conservations, ecological maintenance, generation of income and employment, development of common property resources, conservations and promotion of forest products were some of the objective adopted under the National Afforestation Program further the forest development agency was constituted to look after the implementation of the scheme. Another initiative was entry point activities; community development works was carried out by different joint forest management in the villages that fall under the rural forest areas or zones. The National Forest Policy 1988 was formulated with an objective to maintain, preserve and restore the ecological balance that was caused due to serious depletion of the forest not only in Nagaland but in the country. It aimed to increase the substantially of the forest and meet the requirement of fuel and wood that also aimed to achieved one third of the geographical area under the forest cover by 2012. The state of Nagaland adopted certain objectives to convert Jhumland area into economically and ecologically sustainable woodlands and to protect, conserve, fauna, flora, manage biodiversity and regulate harvesting of forest resources on the principles of sustainability. The National Forest Policy 1988 emphasizes environmental stability and maintenance of ecological balance, to protect forest region from unnatural devastation caused by the fire. A large area of forest is destroyed due to the outbreak of fire, so the forest fire protection scheme was implemented to maintain, preserve, improve, protect, augment the environment, to train the frontline staff, students youths and village communities in combating the forest fire, to effectively control of illegal encroachers and smugglers in the forest. Joint forest management is also another feature introduced at the village level for managing the forest, since major part of the forest are owned by the individual and village community, the effort was put in to make the people aware of the need of forest preservation and initiative for agro forestry was taken up. Number of projects was taken for a sustainable development under the forestry intervention, biodiversity conservation for improving livelihood and community development.

#### *Forest degradation and its impact*

As per the India State of Forest reports between 2019 and 2021, an area of 15,183 sq. km forest are either chopped or thinned in India and of this an area of 9,117 sq. km are severely affected. Nagaland recorded a 235 square km decline in forest cover in 2019-21. In 2008-09 report, the forest covers an area of 13,318 sq.km but the recent updates by the forest department as on 31.01.2022, forest now occupy an approximate area of 8421.74 sq. km. this indicates an alarming rate of forest degradation in the state. An estimate of 82 sq.km of forest are lost for jhum cultivation in Nagaland (Rawat, 2014c). A forest assessment done in 2011 shows a loss of 9 sq.km in Dimapur, 46 sq.km in Mokokchung, 55 sq.km in Zunheboto, 108 sq.km in Tuensang summing up a total of 196 sq km loss of forest in just 4 districts the loss in forest is adversely affecting the climatic and environmental condition, in recent years the state had experienced an extreme heat wave while on the other a heavy flood. The chief conservator of forest and state nodal officers for climate change, Mr. Supongnukshi said, 'This phenomenal effect of global warming is felt over the world, which is not particularly restricted to the region; a global phenomenon which we are witnessing, gradual rise in the extreme temperature- as winter become a bit colder in some places and in summer a rise in temperature.' In 2017 – 1838.265mm but in 2021, Nagaland recorded an average rainfall of 1305.218 mm

due to low rainfall, the state has declared the 'drought like situation' in the year 2012, 2009 and 2021. In 2018 due to flood caused by the heavy rainfall, number of people died and thousands were displaced. The loss of forest is having an adverse impact causing change in weather, temperature and wildlife.



### *Intanki Deforestation Impact*

In reference to Intanki National park, a reserve forest under the government of Nagaland. The forest had undergone drastic changes due to severe encroaching and deforestation of trees. A large scale deforestation had been carried out for human settlement, a vast area had been cleared and occupied by the encroachers to inhabit the area around the Intanki forest as Beisumpeikum and Inavi village, many other groups join the process of inhabiting the forest areas as reported to have exceeded in number of above fourteen different groups to settle in an area of Intanki forest, the government adopted several measures to evict the illegal land encroachers and number of land eviction drives were carried out by burning the villages which was set up by the illegal encroachers, As per the report of Sayantan Bera in 2011, an area at the Intanki National Park was sold at a price of 2500 per hectare. Some encroachers pay a sum of rupees 1000 per acre (0.4 ha). The status report by the forest department in 2009 that a certain area was occupied by the Naga factions which restricted the movement of the forest staff causing much damage to the National park neglecting the improvement and protection of the wildlife and forest as all the government resources are diverted to eviction of the encroachers. The issue has reached to the court when the encroaching villages filed a petition against the government of Nagaland decision for evicting the villagers from the Intanki forest by taking up a legal recourse under the Forest Rights Acts of 2006 but the encroaching villages lost the case in the court. The Rangapahar is another example of forest exploitation, the area has an estimated coverage of 8,800 ha but has shrunk to 176 ha just over the few decades. The Nagaland civil society as Senior Citizen's Association Nagaland made an alarming statement that the Intanki Forest is now under the control of by the Naga factional groups as NSCN (IM) which is being confirmed by the department for the same seizing the 202.02 sq. km area of Intanki National Park. The unprecedented exploitation of forest resources is giving a huge ecological impact to the state ecological environment.

## 4. CONCLUSION

Over the years a concern had been pushed towards the protestation of the forest but it became unreasonably difficult for the department to control the outside forces primarily the pressure from the militants to the usage of forest resources as trees which are felled for the usage of firewood's by the different militants' camps surrounded by different armed groups around the forest. Intanki forest became a revenue generating source both for the illegal smugglers of woods and wildlife. From the area of Manglumukh to the present settlement of Beisumpuikam are now inhabited by the people. Within the areas of an approximate radius of 5km, forest is deforested and trees are cut down for settlement, jhum cultivation and commercialization.

Trees in huge numbers were felled down the roads for road construction and recently more than 400 trees were felled down around Dimapur. Such continuous clearance of trees for developmental projects, expansion of the towns and other activities had adversely affected the climate of Nagaland leading to an environmental imbalance in terms of rainfall and increased global warming. More public level participation is needed for conservation of forest as in 2022 a Nagaland village of Viswema planted 8,000 trees for celebrating 100 years of Christianity. More awareness on the environmental issues need to be taken up and the people at the village level need to be educated about the need of agro based forestry and farming for a sustainable development. Unless more efforts are taken up to combat this concerning issue through community level participation, encouraging more of afforestation activities and projects, the state would experience an enormous ecological imbalance in the days to come if urgent mitigation is not adopted to conserve the forest which would not only preserve the forestry but also maintain a balance environment and provide a sustainability to the people.

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## Women Education as a Means to Achieve Sustainable Development

**Dr. Imkummaro**

Assistant Professor, Department of Education, St Joseph University, Nagaland

**Livi K Yeptho**

Assistant Professor, Department of Education, St Joseph University, Nagaland

### Abstract

*“If you educate a man, you educate an individual, but if you educate a woman, you educate an entire family” – Jawaharlal Nehru. All over the world education is regarded as the key factor in overcoming the barriers that women face and bring them into the main path of development. It will enable them to become self confident, self conscious and build their self dignity. Education plays a very important role in the overall development of the country. Educated women can contribute to improve the quality of the family. It not only helps in the development of half of the human resources but also improves the quality of living at home, family and outside. Educating a woman not only tends to promote education and eradicate illiteracy but also helps to provide better guidance in the upbringing and education of the children. Educated women can also help in reduction of infant mortality rate and growth of population. Educating women would narrow down social disparities and inequalities and this would automatically lead to sustainable development. It is education that advocates and equips women to be economically independent, self reliant and possess a positive esteem to enable them to face any difficult situation and to participate in development activities. Women contribution towards sustainability must also be recognized because women play a major role in educating, nurturing, socializing and upbringing their children. Educated and empowered women can be more responsible with regard to use of natural resources and its protection and they can spread the awareness of the same to their children, family and society at large. To build women as a catalyst for sustainable development, their role in the family, community and society at large has to be free from socio-cultural and religious traditions that prevent them from participation and decision making. It is only through education that will provide knowledge to make them achieve their basic needs; contribute to the welfare of the society and enable them to participate in nation building and sustainable development. Thus, this paper aims to highlight how women education can play a vital role in establishing equality and empower women, which will in turn, lead to sustainable development.*

**Keywords:** Education, Women, Family, Development, Sustainability, Political, Social, Economic.

### 1. INTRODUCTION

Women education can be regarded as a kind of knowledge given to women for enhancing their self respect and self dignity. This knowledge can be in form of formal, non formal or informal education. It can be in the form of adult education, community development workshops, seminars, conferences and training. Women education is one of the most important objectives for the development of the country. It is because educated women can help to enhance their family society and country as well.

Women education thus refers to every form of education that aims at improving the knowledge, and skill of women and girls. It includes general education at school and colleges, vocational and technical education, professional education health education etc which provides for all facilities and opportunity for learning. The paper aims to underline how women education and empowering women will contribute towards a sustainable society. It also highlights about how women’s participation in political, social, and economic areas have contributed towards the development of the society and nation.

### 2. EMPOWERING WOMEN THROUGH EDUCATION

Education is one of the most important means of empowering women with knowledge, skills and self confidence necessary to participate fully in the development process. Empowering is something that makes a person capable to perform or to act according to his or her own choice and value judgment. It is empowerment that releases one from lack of speech and lack of freedom. Jawaharlal Nehru has once said, “Educate a man and you educate one person. Educate a woman and you educate the whole family”. It thus highly deserved that women should have equity and justice in all respect and there is need and importance of empowering women through education. Unless and until women are given equal access to education, economic independence,

freedom of speech and the right to participate in the social decision-making process at par with male counterpart, the socio-economic development will not be achieved.

Women empowerment is a process which helps women to change other women's consciousness by creating awareness. Education is a milestone for women empowerment as it is the agent of basic change in status of women. Women empowerment through education develops awareness about their rights; enhance their self esteem and confidence and ability, their knowledge and skills. Women need to be empowered economically, educationally, psychologically and politically.

Women need to be self reliant and established their own identity, be responsible for who they are and what they want to become. Empowerment enables them to move forward towards life with greater dignity and self assurance. Educated women can recognize the importance of health care and know how to seek rights for themselves and their children. Education helps girls and women to know their rights and to gain confidence to claim for themselves.

#### *Sustainability through Women Education*

Educating women is a key for sustainable development of any nation. Increasing the literacy rates of women is one of the most effective investments for increasing female productivity and enhancing the well beings of families. In developing countries like India, to reduce poverty and accelerate sustainable development, removing gender inequality in literacy and primary, secondary and management education is essential. The roles of women within the society are dedicated towards advocating human development, social justice and are influencing the policy-induced change.

#### *Sustainable society through women's political participation, social and economic contribution*

Many women all over the world have proved dynamic, vibrant, sincere and perfect in many fields. Their efforts and role in shaping a nation's development have proved themselves in no way inferior to men. They are efficient and perseverant enough to face all odds, challenges, obstacles and proved their genius in male dominated society. Educated women can effectively participate in all spheres; social, economic, political, and render their whole hearted contribution towards nation building.

#### *Women's Political Participation*

Throughout much of the world, women's equality is undermined by historical imbalance in decision making power and access to resources, rights and entitlements for women. Either by law or by custom, women in many countries still lack rights to own land and inherit property, attend school, earn income and move in their work, free from job discrimination.

In India in some community women still experience exclusion in electoral process. There is a trend of men dominating the political terrain across all the areas, whereas the representation and presentation of the female gender is still blurry and invisible. Women are still outside the graph of decision making and their status falls with respect to man. Thus, addressing the inequities through laws and public policy is a way of formalizing the goal of gender equality.

- Women's political participation can change the perspective of the society towards them.
- Through women's political participation, peace negotiations can also be initiated and conflict situations can also be resolved, and it can ensure safety towards children and vulnerable community.
- Women's political participation is a prerequisite for gender equality and it enables them in public decision making.
- Empowering women in political aspect can pave more opportunities for them to do better in society.

#### *Women's Social Contribution*

To implement women's education for the attainment of equal status of women in all aspect of social political development within the community and the nation at large, it is important to educate the girls and women. Women represent almost half of the world's population and in this planet at every nation there is gender inequality. Until women are given the same opportunities as of men the entire society will doom to perform below their true potentials. The greatest need of change at this particular hour is the change of social attitude to women. There is an emerging need to improve status of women which should start with economic

empowerment of women. The most important is women's empowerment through self help groups. The empowerment of women will give benefit to individual woman as well as group of women, and also to the families and communities. The dignity and culture of the society can be detected from the status in the society. As long as women remain depressed and exploited, no nation can enjoy freedom and justice.

Education is the key to the social development. Educated women have the chance for healthier and happy life. When women are educated, they prefer to marry at a later age and have fewer children. An educated woman is more self confident, skilled and she wants to be a better parent and citizen of a country. Educated women take proper care of their own as well as their family health. By educating women we can reduce the infant mortality rate and improve the demographic conditions of the country. We can also reduce the orthodox thinking of the society through education and knowledge so that women can come forward and actively participate in the development of the country.

In most part of India, women are considered as a weaker section of the society due to various reasons like gender differences, customs, traditions, attitudes and also due to patriarchal nature of the society, however today in most part of the country women are outshining and enjoying equal rights as man and striving for the best.

#### *Women's Economic Contribution*

By educating women the economy of the country will increase. It has been observed that from the last few decades' involvement of educated women in various activities helps the country to move towards economic development. By getting education, women also contribute to the national income of the country.

In many countries women are also responsible for agricultural production and selling. Often, they take on aid work or entrepreneurial enterprises as well. The sectors of the national economy in which women are employed in large numbers are agriculture, plantations, factories, small scale industries, social services and white-collar jobs. As a matter of fact, women can play a large part in the field of production if their working conditions are properly regulated and they are protected from exploitation. The small-scale industries are a major source of employment in developing countries. In this type of industries, the rate of employment has been faster.

Women are conditioned to the idea of multiple responsibilities they want to be efficient workers and try to fulfil the job requirements at the same time they want to be good wives, good mother and better home managers. Their sincerity towards all responsibilities is itself a cause of trouble. In some houses working women are appreciated. The development of her personality and merging into an enlightened idea are acknowledged. In such family's women are appreciated and have a comfortable position. In some houses the working of a woman is a problem. Women feel guilty for neglecting the duties as housewives they try to do more works to satisfy themselves and the family members which lead to injuries to their health.

Some of the special provisions for women mainly extend to the following areas.

1. Equal pay for work of equal value in this regard one of the most important legislations is the equal remuneration act of 1976 which provides equal remuneration to men and women workers.
2. Night work factories act of 1984 the mines act of 1952 and the bidi and cigar workers (condition of employment act of 1966 prohibits the employment of women between 6 a.m. to 1 p.m.
3. Non discrimination against women in employment and occupation the equal remuneration act 1976 provides for the prevention of discrimination on the ground of sex against women in the matter of employment and prohibits discrimination while recruiting man and women workers for the same nature of work except those cases where women are prohibited to work under any law.
4. Maternity Protection Maternity benefit is provided under the maternity benefit act of 1961 in some areas and through employee's state insurance act of 1948, Plantation labour act of 1951 in some other areas.

Educated women have the ability to be productive and contribute and improve the standard of living. They can afford quality nutrition to their children. The overall quality of life is important to measure how well our society is doing and how sustainability can be attained. Economic growth can of course be beneficial by lifting people out of poverty. Economy is a means to an end. The ultimate end is the happiness of the people.

### **3. SUGGESTIONS**

1. Women education must focus on the all-round development of the women for their well being.

2. If women are educated, they can also develop the habit of developing their abilities and competence, and in that way they can contribute for the family economically and social upliftment.
  3. If proper educations are provided to women the economy of the country will increase. By getting education, women also contribute to the national income of the country.
  4. Equal opportunities should be given to women equivalent with men, so there won't be gender inequality in the society if there is a change of attitude towards women.
  5. More opportunities and political participation for women should be encouraged which will enable women to participate in public decision making.
  6. More enthusiasm should be generated for co-curricular activities, and provision of resources for co-curricular activities should be provided.
- The government can also prioritize women's representation and leadership and collaborate with women's organizations and feminist activists.

#### 4. CONCLUSION

Women are equal counterparts to men and valuable human resources without which development and sustainability does not take place. A sustainable growth and development are the aim of all countries and this is not possible without the participation and contribution of women. Increase in women's political participation, leadership and decision making has proven to be progressive towards economic and social development around the world. Gender equality is the core of human rights from which sustainable development can be achieved. Therefore, reducing gender gaps, imparting education to women, promoting social protection measures, access to employment in various sectors and empowering them politically, economically and socially can enhance their contribution towards sustainability. Throughout history the central role of women in society has ensured the stability, progress and long term development of nations. Thus, societies and nations should change the mentality towards the word 'Women' and give equal opportunities to women in all spheres to contribute equally and bring about change, development and sustainability in our societies and nation, and the world at large.

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## **Feeding Habits and its Concomitants: Formal Divulgarion among Students through Science Teaching**

**Srivastava Pratusha**

Research Scholar, Amity Institute of Education, Noida, Amity University

**Gupta Mahima**

Professor, Amity Institute of Education, Noida, Amity University

**Sharma Rakesh Kumar**

Associate Professor, CCS University, Meerut, UP

### **1. INTRODUCTION**

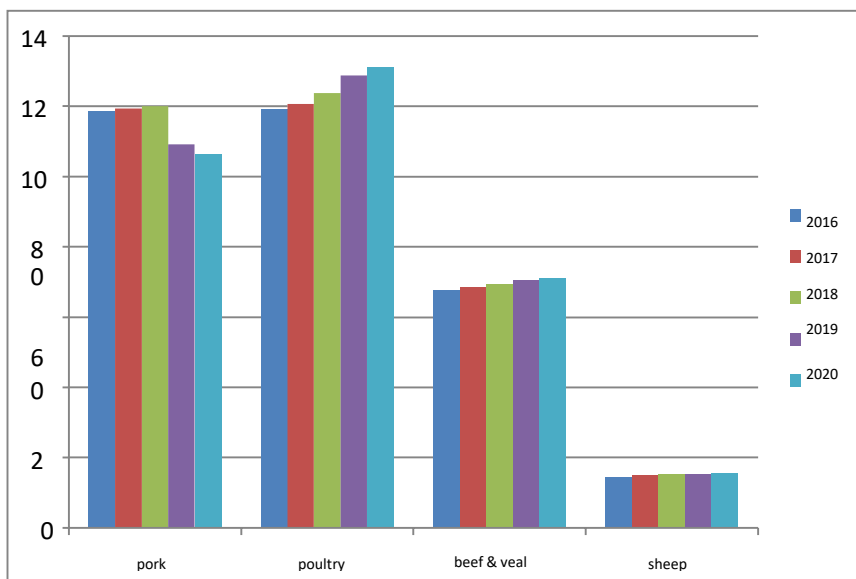
Food is one of the essential requirement of any living object. But it is not true in the case of human. Humans do eat for not only to satiate their appetite but also to satisfy their taste buds. The term 'feeding habits' consist of all the factors associated with food. This enquires for what organisms eat, why they eat, how they eat as well as the ways to store, use and dispose of food. Different type of feeding habits is adopted by different organisms, e.g., filter feeding, bulk feeding, fluid feeding, deposit feeding, suction feeding and ram feeding etc. On the basis of mode of ingestion. On the basis of food type the animals are classified as herbivores, carnivores and omnivores. The humans are omnivores in nature, i.e. they eat plants as well as animals. The humans are omnivores by choice. They eat nuts, tubers, grains, fruits, vegetables and meat of animals along with many other animal products such as milk, honey. They choose to eat meat either to get extra nutrition or to get taste. Humans are the only species who use fire to cook food. Cooking of food changes its texture and nutrition values. With the passage of time, a lot of inventions took place in this field too. Preparation of food has now converted to a profession, a business and ultimately a vast industry. Globalization has played a positive role in this context. Use of e-gadgets has turned it easier to prepare the recipes available at distant places. A wide range of food is available in market. Anyone can get leafy as well as fleshy preparations. Any platter is not a matter of choice only but a number of factors are associated with it. Food is obtained from animals and plants.

On the basis of feeding habits humans are broadly categorized as "vegetarians" and "non-vegetarians". A person who refrains from eating meat and lives on meal made up of vegetables, fruits, nuts, grains and dairy products is considered as vegetarian. In the same category the persons who give up the intake of any dairy product too, are known as "vegans". The person who eats egg, meat or fish along with veg diet is considered as non-vegetarian. The definition of these terms varies from country to country. The type of food intake is related with religion, caste and education. The residing area and availability of particular food plays an important role in deciding the nature of food consumed. United Nations's agency Food and Agriculture Organization (FAO) was established to ensure the access of people to enough high-quality food to lead active and healthy life. In September 2015, the general assembly, United Nations adopted the 2030 agenda for sustainable development. There are 17 sustainable development goals to achieve target. These goals include "zero hunger" & "good health and wellbeing" along with goal "responsible consumption and production".

The people of earth are blessed with immense natural resources. There are around 20,000 species of plants are present on the earth. The amount of vegetables we consume is very less than that available. In 2021, the global consumption of vegetables was 504.01 M metric tons. The year 2021 was designated as the International Year of Fruits and Vegetables by General Assembly, U.N. The objectives of this programme were raising awareness to the nutrition and health benefits of eating fruits and vegetables, promoting healthy diets, reduction in quantity of waste fruit & vegetables and finally to adopt sustainable production practices. The global meat consumption was 328 M metric tons in 2021 (figure 1).

The consumption of meat has increased to a vast range. It has been doubled since 1990. Billions of animals are slaughtered per year. It is not restricted to the intake of protein but it has converted to a profitable business. In 2021, the global meat industry revenue was 897.5bn USD. The market value of organic meat products was 15.44bn USD in 2021, followed by 16.85bn USD in 2022. The forecasted market value of organic meat for 2026 is 23.88bn USD. According to UN food and Agriculture organization, pork is the most widely eaten meat in the world (36%), followed by poultry (33%), beef (24%) and goats or sheep meat (5%). The nature of food consumed is directly affecting to the environment. Physical requirements of food production are land, water, and manpower. The pollution in environment & psychological facets are other intangible and indirect impacts related to food processing and food disposal. Any food system depends on natural resources as land, water, climate and population.

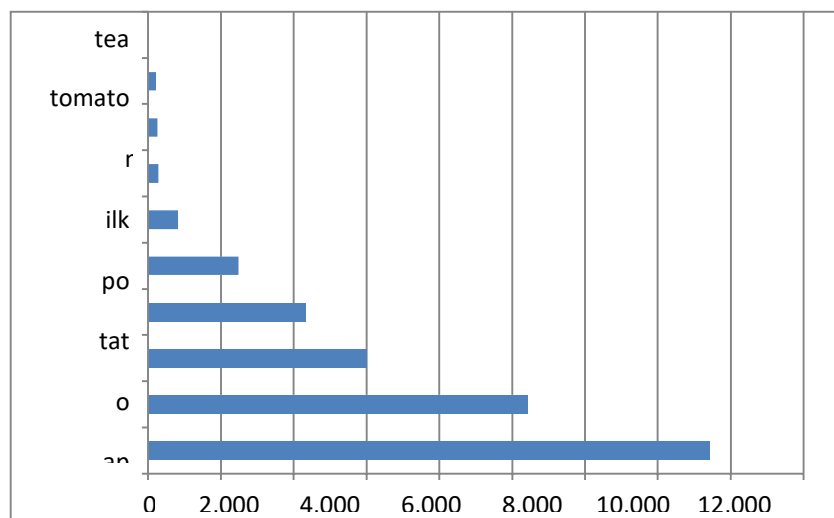




**Figure 1 - Production of meat worldwide from 2016 to 2020, by type (in million tons)**

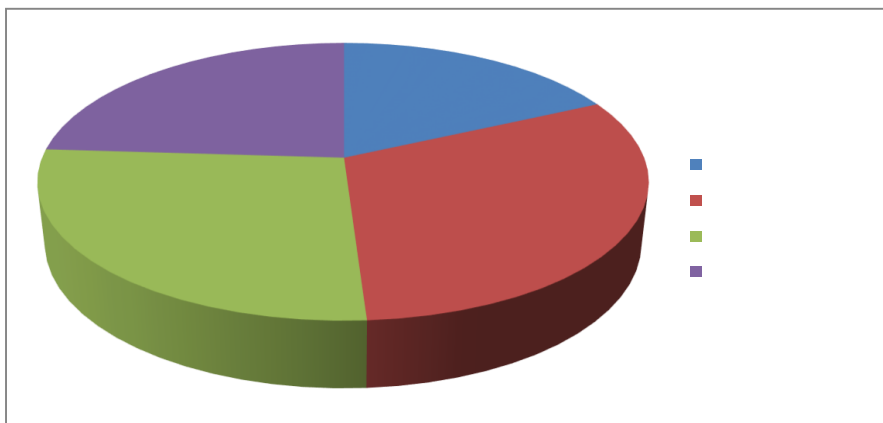
*Land* - On the basis of data obtained from FAO statistics division website, agricultural land areas 38% of the total land surface. About one-third of this is used as cropland & remaining two-third consists of meadows and pastures for grazing livestock. With the increasing population, area of cropland is shrinking. In 1961 the global cropland area per capita was 0.45hectare which had been decreased to 0.21 hectare till 2016. The largest share of cropland was in Asia (1.6 global hectares or 34%) followed by America (1.2 global hectares or 25%), Africa (1.1 global hectares or 24 %) Europe and Oceania (approximately 9-10 % each). But in terms of per capita availability cropland area per capita was smallest in Asia (0.13 hectares per capita) followed by Africa (0.22 hectares per capita), America, Europe (0.40 hectares per capita) and Oceania (1.21hectares per capita). The use of land to feed animals instead of growing crops for humans is quite unsustainable. Globally, the quantity of greenhouse gases generated through animal farming is more than theworld’s transportation systems combined.

*Water* –Meat production needs a huge volume of water than vegetables. As measured, the waterrequired to grow 1 kg of wheat is 1,790 L in comparison to 15,415 L of water required for 1 kg of beef, 6,000 L of water for 1 kg of pork and 4,300 litres of water for 1 kg of chicken meat. The water consumption is high in meat production as before slaughter much water is required to sustain animals. Such as –27 L of water required to produce 1 kg tea, 214 L for 1 kg rice, 255 L for milk, 287 L for potatoes, 822 L for apple, 2,497 L for rice, 4,325 L for chicken, 5,988 L for pork, 10,412 for sheep meat and 15,415 for beef (figure 2).



**Figure 2 - Water required (in litres) to produce foodstuff (1 kg)**

*Climate-* Different food types have different impact over climate. Increasing concentrations of greenhouse gases are responsible for 'Global Warming'. By definition "A greenhouse gas is a gas that has the property of absorbing infrared radiation (net heat energy) emitted from earth's surface and reradiating it back to earth's surface ". The carbon dioxide, methane, ozone, nitrous oxide and fluorinated gases are GHGs. These are important gases to maintain energy balance in atmosphere. Their presence is mandatory but in low concentrations. Worryingly, the proportion of GHGs has been increased since last century by human activities. The primary sources of greenhouse gas emissions are electricity and heat, agriculture, transportation, forestry, manufacturing, deforestation and dumped material. Food production creates around 26% of greenhouse gases. It clearly depicts that our diet has a magnificent impact on climate change. Food is grown, transported, consumed and disposed, this entire process produces GHGs. When waste food is dumped in landfills, it generates methane. Global greenhouse gas emissions from food production i.e. 26% could be divided on the basis of steps involved in food production. The supply chain segment is responsible for 18% of GHGs emission. The livestock and fisheries emits 31% of GHGs. During crop production 27% of GHGs are released. Further, land use is responsible for 24% emitted GHGs (Figure 3).



Source; Joseph Poore & Thomas Nemecek, (2018) (Our World in Data.org)

**Figure 3 - GHGs emission from different sectors of food production**

In different sectors emission of GHGs varies step to step.

1. Supply chain (18%)- In this sector, 3% of GHGs emission is from retail food, 5% from packaging of food, 6% during transportation and 4% as a result of food processing.
2. Livestock and fisheries (31%)- The toxic gas methane is emitted through cattle's digestion. Manure management and pasture management and fuel use from fisheries also emits GHGs.
3. Crop production (27%)- Crops production is done for humans as well as for animals. Human feeding crops emits 21% and animal feeding crops emits 6% of GHGs.
4. Land use (24%)- The land used for livestock is responsible for 16% and the land used for human food is responsible for 8% of GHGs emissions.

*Food production & employment-* According to International Labour Organization, in 2000, 1.1 billion people are engaged in agriculture sector. 300-500 million are waged workers and a large number of casual & temporary workers. The share of workers employed in agriculture fell to 884 million in 2019. To provide basic rights to employees at each level is one of the target in sustainable development goals by United Nations. The working in farms is difficult and risky. Exposure to hazardous chemicals, heavy machinery. They work more than prescribed working hours even at adverse conditions. They are coming from lower economic strata. They suffer ill- health and malnutrition. The working conditions of slaughterhouse workers are inhumane. They need to be physically fit to cut the heavy body parts of animals. In this process they are injured. They need to be numb to killing & suffering. Gruesome sights and foul smells become the part of their lives. Many researches has been done on the psychological effects of their work.

*Food type & diseases-* The type of food intake is directly related to mental and physical health of body. Fruit and vegetable intake is ethical but may be the cause of protein-deficiency diseases. Veg food lacks in calcium. The consumption of meat will maintain the amount of protein, omega fatty acids, calcium, zinc but it may be a reason to zoonotic diseases, i.e., the diseases which are transferred from animals to humans. The WHO states that consumption of meat increases the risk of cancer. While veg diet is considered as cancer busting diet. Meat, eggs and dairy products are high in cholesterol and unsaturated fats, which may cause blockage in coronary

arteries. The fats & cholesterol are also responsible for obesity. As it is depicted in table (table 1) the amount of calories present in veg food are lesser than present in non-veg food. The requirement of calories may vary with person. It depends on physical activities, age, gender, dietary restrictions, ethnic beliefs, culture.

**Table 1- list of foods with calories present (in 100 grams)**

Name of vegetables	Calories (in100gm)	Name of non-veg foods	Calories (in100gm)
Corn	365	Chicken leg	383
Black olives	115	Duck	337
Sweet potato	86	Mutton	294
Peas	81	Grilled chicken	265
Potato	77	Beef	250
Beetroot	43	Quail	227
Okra	33	Fish	206
Turnip	28	Salmon	172
Pumpkin	26	Chicken breast	168
Spinach	23	Chicken tikka	150
Tomato	18	lobster	143
Radish	16	Silver fish	132
Lettuce	15	Prawns	99
Gourd	14	Egg( 1in number)	72

Hazardous substances along with calories-vegetables grown are having chemical fertilizers unless these are organic. The excessive use of fertilizers is linked to presence of harmful elements like cadmium, mercury, arsenic in land. Non-veg food is having the traces of pesticides. Pre-slaughter stress increases the pH of meat, this affects quality of meat. To achieve UN Sustainable Goals for zero hunger, good health and well-being with responsible consumption and production, collaborative efforts are expected at international level. Efforts are required at each step from production to consumption. Strong decisions without political influence must be taken to make resources sustainable including agriculture. Influence over the students regarding to food selection habits.

The students at different levels acquire unhealthy feeding patterns. A study concluded that nutrition education programme at school level had no change on students' consumption behaviour neither on selection of fruit nor on the wasted amount of fruits and vegetables. Hence they recommended this to implement at elementary level with more efforts than classroom teaching. This could be enhanced by active participation of elementary teachers. They could encourage students by appreciating their good feeding habits. Quick poems, short slogans might be very helpful. The students at primary and secondary level are interested in food which is glamorized through various media channels. The impact of media has changed not only life styles but also feeding styles. Hunger is not always a reason of food intake. A lot of other factors are influencing the choice of food such as income, time, family, peer group and knowledge related food. Few studies have indicated the impact of education on the dietary behaviour. For adolescent's nutrition knowledge and instructions are not so meaningful as their cuisine is decided by peer group. Debates & group discussions could be supportive to select sustainable food.

1. Recognize your appetite-not to waste any bite'- could be the motto of declining food waste. Around 40% of food is thrown away in dustbins. It means the resources used for their production went in vain.
2. Natural meat could be replaced by cultured meat thus keeping the environment better.
3. The facts related to diet might be communicated to students. To speak a 'health based fact' might be introduced at morning assembly time or exactly prior to lunch hour.

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## Preference on Land Investments of Individual Investors in Tamilnadu

**Dr. S. Saravanakumar**

Formerly Professor, JKKN College of Engineering and Technology, Komarapalayam-638183, Tamilnadu

**Dr. A. Saravanan**

Assistant Professor in Economics, PSG College of Arts and Science, Coimbatore-641014, Tamilnadu

### Abstract

*Land investments are gaining popularity among different segment people. Rising population and high disposable income boosts land sector. Individual investors are also taking part in the purchase and sale of land for construction own houses, commercial buildings, apartments or even for agricultural purposes. Therefore, individual investors' preference on selection of land investments is examined. This study is carried out with 100 individual investors making investments in different types of land. Sample is selected by simple random sampling and descriptive research design is implemented to carry out this seminal work. The data for the study is collected by distributing questionnaire; it is constructed with three parts, such as demographic profile, preference of individual investors, and difficulties of individual investors. This study used percentage analysis, Kendall's Coefficient of Concordance, and Garrett ranking for data analysis. It was concluded that preference of individual investors is influenced by several factors while selecting land investments.*

**Keywords:** *Individual Investors, Preference, Land Investments, Agricultural Land, Commercial Land, Residential Land.*

### 1. INTRODUCTION AND BACKGROUND

Land is concerned with the activity related to purchase and sale of commercial or residential properties. Land business consists of land, shopping malls, residential apartments, commercial spaces, and other tangible assets in the land. Land industry consists of land owners, property developers, builders, brokers, buyers, sellers and so on. India is one of the fastest growing economies and the factors deriving such growth could be better demographic changes, people are left with better buying power, increase in income, infrastructure, education and many more. Now, Indian people are moving towards small and discrete family which requires separate housing (Saravankumar and Jayanthi, 2019). The residential and commercial properties are in great demand because of increase in the number of small families and booming business economy, which attracted large number of land developer to launch their projects. Land industry is facing fluctuations due to many uncertain factors like increased bubble trading in the market because of expansion of economy (Jayanthi and Saravanakumar, 2020). Inclusion of more and more foreign capital as an investment in to this sector also one of the reason to make it more uncertain and causes fluctuations. Besides such fluctuation foreign capital also works as a fuel for the growth engine of land which brings liquidity and open market in to the nation like India. Land sector in India is rising continuously and currently this sector is a very discreet and unorganized. It is full of crime and uncertainty, but now it is attracting more and more corporate with growing professionalism due to which, customer satisfaction comes into the picture.

The land industry is combination of segments such as commercial land, agricultural land, residential land, estate land and industrial land. All the segments are increasing at steady pace and may attain its required attention in near future. Land sector was earlier considered as unorganized sector but now it is moving towards more organized process and government is also taking interest in its development and implementing required policies for its benefit. Investor's ambition and decisions are different from one another, while considering an asset to purchase. Individual investors are usually small investors predominantly purchase land or buildings for own use purposes or resale intentions (Saravanakumar and Jayanthi, 2021). The individual investors having left out disposable income are showing more interest towards investing in properties. The living standard of individual investors has been rising and they are having easy availability of loan too. Currently, India is facing trend of urbanization. More and more rural people are migrating towards city with expectation of better employment and earning opportunity (Oyewole, 2013). Therefore, it is also a significant reason behind in the purchase of land or houses. In this way, this study considered individual investors preference concerning the purchase of land investments.

## 2. REVIEW OF LITERATURE

Review of earlier literature on land is collected and presented. Gitau (2014) revealed that property investors often consider recent performance of assets. Moreover, they make investment based on the conception of current prices are right. Fenghua et al. (2014) divulged that investors are risk aversion when they were making profit and will be risk seeking when they lost their money in the investment. Lee (2008) pointed out that illiquidity is a significant issue in direct land markets. This is because of the indivisibility of land, high transaction costs and lengthy and uncertain time taken to sell real property assets which produces additional risk for investors. Jayanthi and Saravanakumar (2021) showed that retail land performed better than residential land investment in terms of mean return, risk adjusted return, income growth and capital growth. Klimczak (2010) revealed that prices, income potential, increase in market value, tax rate and expected return on investment are the main determinants of land investment. Anupama (2017) examined the consumer preference towards purchase of land. Performance, reference, service, ability, and agents are the main factor influencing purchase of land (Jayanthi and Saravanakumar, 2022). Manivanna and Joseph (2017) revealed that buyer and developers should construct their residential flats in healthy and sanitary environment at affordable price. Sarva et al. (2019) stated that land sector vastly influenced by prices, regulations and customer preference to purchase land or buildings.

## 3. OBJECTIVES

This study makes an attempt in this direction with the following objectives.

1. To measure the demographic profile of individual investors involved in land investments.
2. To examine the preference of individual investors towards land investments.
3. To analyze the difficulties of individual investors in land investments.

## 4. METHODOLOGY

This study has been commenced with the motive to assess the individual investor's preference on selection of land investments. The target population for the study consists of individual investor making investments in land especially land. A sample 100 individual investors with an experience of purchase land or plot were randomly selected across different parts of Erode district. Questionnaire was administered as survey instrument to gather data from the individual investors. This study had used undisguised and structured questionnaire in order to collect data. The questionnaire consists of three parts, such as demographic profile, preference and difficulties in land investments. At the outset, the survey instrument was pre-tested with 20 individual investors of land. As per the pre-test results, necessary updates and changes have been incorporated like; formation of wordings, changes in information content has been performed in the final questionnaire. The content validity of the survey instrument is verified with the academicians, promoters of land, and field experts of land. Present study had been carried as per descriptive research design. This study only focused the individual investor's preference on purchase of land; it didn't consider residential apartments, shopping malls, and commercial buildings. In order to test its worthiness of data collected, simple percentage analysis, the Kendall's Coefficient of Concordance, and Garrett ranking is employed and suitable hypothesis had been framed and tested.

## 5. RESULTS AND DISCUSSION

### *Analysis of Demographic Profile*

The demographic profile of individual investors is scrutinized and its results are presented in table-1.

**Table 1 - Demographic Profile of Individual Investors**

Profile	Distribution	Sample	Frequency
Gender	Male	84	84%
	Female	16	16%
Age	18 – 30 years	26	26%
	31 – 50 years	53	53%
	More than 51 years	21	21%
Educational Qualification	Illiterate	29	29%
	School education	44	44%
	Degree	27	27%
Monthly Income	Below 50,000	23	23%
	50,001 – 1,00,000	42	42%
	1,00,001 & above	35	35%

Occupation	Agriculture	16	16%
	Business	34	34%
	Employed	32	32%
	Others	18	18%
Experience in Land Purchase	Less than 5 years	23	23%
	6 – 10 years	31	31%
	More than 10 years	46	46%
Area of Residence	Rural	39	39%
	Urban	61	61%

Table-1 depicts that, gender of the individual investor shows that 84% are male and 16% are female. Age of the respondents reveals that 26% are in 18 - 30 years of age, 53% are in 31-50 years, and 21% are in more than 51 and years. Educational qualification reveals that 29% are uneducated, 44% are completed school education, and 27% are completed degrees. Monthly salary reveals that 23% are getting monthly salary of below Rs.50,000, 42% are drawing salary between Rs.50,001 – 1,00,000 per month, and 9% are getting salary of Rs.1,00,001 and above. Occupation of individual investors reveals that 16% are agriculturists, 34% are businessmen, 32% are employed government or private concerns and 18% are retired, homemakers and others. Experience shows that 23% are having experience of less than 5 years in land purchase, 31% are 6-10 years in teaching and 46% are experienced in more than 10 years in land purchase. Area of residence shows that 39% are in rural areas, and 61% are residing in urban areas.

#### *Preference of Individual investors*

Preference of individual investors are relied on different factors. Individual investors' preference to purchase agriculture land, commercial land, residential land, industrial land and estate land are considered by selecting 20 samples from each segment. Accordingly, the most important factors considered by the individual investors while purchasing land are analyzed and its results are presented in table-2.

**Table 2 - Preference of Individual investors**

S. No	Factors	Type of Land					Total
		Agri.	Comm.	Resi.	Ind.	Est.	
1.	Growth potential	18	17	16	15	16	82
2.	Encumbrance free	13	16	16	18	16	79
3.	Easy marketability	13	14	16	19	16	78
4.	Perfect road approach	10	12	16	17	17	72
5.	Value for price sacrificed	18	14	13	10	12	67
6.	Water facility	12	12	14	16	12	66
7.	Infrastructural facility	8	7	10	12	9	46
8.	Friendly neighbor	7	4	3	2	3	19
9.	Located in prime areas	5	3	2	2	3	15
10	Income earnings opportunity	2	2	3	4	2	13

Table-2 reveals that 82 of individual investors are preferred to buy land based on prevailing growth potential of the land. Encumbrance free land is the selection choice to 79 of individual investors. Easy marketability is the another option considered by 78 of individual investors while buying land. Perfect road approach to the land is expected by 72 of them. Likewise, 67 of them expect value for the price sacrificed on a specific land. 66 of them preferred to purchase land with the availability of water facility. 46% of individual investors seeks power connectivity, drainage, irrigation sources and other infrastructure facility while considering land. Friendly neighbor (19), located in prime areas (15) and income earning opportunity (13) are the expectation to few individual investors. The sample trend has been found for all types of land.

In order to measure the degree of association between the different factors, Kendall's coefficient of concordance is implemented. It is adopted to test the validity of the data collected and analyzed. Kendall's coefficient of concordance, represented by the symbol  $W$ , is an important nonparametric measure of relationship. It is used to determine the degree of association among several ( $k$ ) sets of ranking of  $N$  object or factors. When the ranking or  $N$  objects or factors exceed two set, it is good to work out Kendall's coefficient instead of Spearman's coefficient correlation. Kendall's method is considered an appropriate measure of studying the degree of association among three or more sets of rankings. This descriptive measure of the agreement has special

applications in providing a standard method of ordering objects according to consensus when don't have an objective order of the objects. Five sets of rankings used to work out the Kendall's coefficient concordance for judging the significant difference in ranking by different segment land buyers. For checking this inference, the null hypothesis state there is no significance difference in ranking by the different segment land buyers as to purchase of land. For testing the worth of hypothesis, segment wise the factors are scheduled as per the respondents' rankings. When tied ranks occur, the average method of assigning ranks be adopted, that is, assign to each factor the average rank which the tied observations occupy. For this study, the factors noted under favorable product specific factors in Table-2, for easy way to understand, the factors are numbered from 1 to 10 and provided in the following matrix.

**Table 3 - Kendall's Coefficient of Concordance**

<b>K = 5</b>	<b>Factors</b>										<b>N = 10</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	
Agriculture land	1.5	3.5	3.5	6	1.5	5	7	8	9	10	
Commercial land	1	2	3.5	5.5	3.5	5.5	7	8	9	10	
Residential land	2.5	2.5	2.5	2.5	6	5	7	8.5	9	8.5	
Industrial land	5	2	1	3	7	4	6	9.5	9.5	8	
Estate land	2	2	2	1	5.5	5.5	7	8.5	8.5	10	
<b>Sum of ranks (R<sub>j</sub>)</b>	12	12	12.5	18	23.5	25	34	42.5	45	46.5	<b>ΣR<sub>j</sub> = 271</b>
<b>(R<sub>j</sub> - <math>\bar{R}_j</math>)<sup>2</sup></b>	228.01	228.01	213.16	82.81	12.96	4.41	47.61	237.16	320.41	376.36	<b>s = 1750.9</b>

$$\bar{R}_j = \Sigma R_j / N = 271 / 10 = 27.1,$$

$$s = 1750.9$$

$$W = S / 1/12k^2 (N^3 - N)$$

$$= 1750.9 / 1/12(5^2) (10^3 - 10) = 1750.9 / 25/12(990), = 1750.9 / 2062.5, = 0.8489$$

As N is larger than 7,  $\chi^2$  worked out to determine the W's significance at 5% level.

$$\chi^2 = k (N - 1). W \text{ with } N - 1 \text{ degrees of freedom}$$

$$= 5 (10 - 1) (0.8489), = 38.2$$

The table value of  $\chi^2$  at 5% level for  $N - 1 = 10 - 1 = 9$  degrees of freedom is 16.919. Calculated value is 38.2, this is considerably higher than the table value. This does not support the null hypothesis of there is no significance difference in ranking by the different segment land buyers as to purchase of land and as such it is inferred that W is significant at 5% level.

#### *Difficulties in Land Investments*

Individual investors are finding much difficulty while purchasing land. The difficulties are the most important bottleneck to the individual investors. Garrett ranking is executed to rank and analyze the difficulties of individual investors in land purchase. The results are presented in table-4.

**Table 4 - Garrett Ranking**

<b>S. No</b>	<b>Difficulties in Land investments</b>	<b>Mean Score</b>	<b>Total Score</b>	<b>Rank</b>
1.	Encumbrance issues	61.6	616	2
2.	Encroachment of others	47.3	473	8
3.	Boundary difficulties	47.4	474	7
4.	Downfall of realty market	52.8	528	6
5.	Registration irregularities	63.5	635	1
6.	Government norms	56.7	567	5
7.	False statement of mediators	58.3	583	4
8.	Less marketability	61.1	611	3



Table-4 demonstrates the difficulties faced by the individual investors in land investments. It is examined by using Garrett Score, registration irregularities are a main problem to the individual investors. Registration process requires various documents, therefore producing relevant documents is the most important aspect; it is a main problem to them and scored as 63.5 points. Encumbrance issues is the second most important problem to the individual investors, it gets 61.6 points. Third factor is less marketability (61.1 points) and fourth factor is false statement of mediators (58.3 points). Similarly, government norms (56.7 points), boundary difficulties (47.4 points) and encroachment of others (47.3 points) are the most important problem to the individual investors.

## 6. CONCLUSION

Individual investors consider several aspects while selecting land investments. Their motive is changing as per the features of the land, price, facility and location specific factors. Demographic profile of individual investors showed that 84% are male, 53% are in 31-50 years of age, 44% are completed school education, and 42% are drawing salary between Rs.50,001 – 1,00,000 per month. Furthermore, 34% are businessmen, 46% are experienced in more than 10 years in land purchase and 61% are residing in urban areas. Growth potential, encumbrance free land, easy marketability, and perfect road approach are mostly influenced the preference of individual investors. Results of Kendall's coefficient concordance rejects null hypothesis, hence there is significance difference in ranking by the different segment land buyers as to purchase of land. Registration irregularities, encumbrance issues, less marketability, and false statement of mediators are the most important difficulties in land investments. It can be concluded that preference of individual investors is influenced by several factors while selecting land investments.

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## Impact of Globalization with Effect of SSI

**W. Hannah**

Assistant Professor, (CSI Ewart Women's Christian College, Affiliated to University of Madras)

**J. Linta Josephine**

Assistant Professor, (CSI Ewart Women's Christian College, Affiliated to University of Madras)

**Dr. R. Anetta Marginic**

Assistant Professor, (CSI Ewart Women's Christian College, Affiliated to University of Madras)

**G. Silviyal Santhabai**

Assistant Professor, (CSI Ewart Women's Christian College, Affiliated to University of Madras)

**E. Joselin Dorcas Ratna kumara**

Assistant Professor, (CSI Ewart Women's Christian College, Affiliated to University of Madras)

### Abstract

*SSI is playing a vital role in the economic development of the country. Since it is the ancillary industry to the medium and Large scale industries, its products and services must be improved. Globalization has paved the way for the better usage of technology in small businesses and the generation of funds through SHG. Most of the SSI units have stumbled down during the COVID pandemic. The active female business owners dropped out. At present, SSI units improved in generating employment. Recent changes were approved in SSI investment in Plant & Machinery to annual turnover. The registered SSI units are eligible for subsidies by the government. Now, Small Scale Industry Leaders have transformed and adopted their businesses in the digital technology. So, small-scale enterprises depend on Government support. Moreover, SSI units are operated through private resources. India has around 8 million MSME as of March 2022. Regional Development is enabled by SSI due to its collaboration with companies at the National or International level. They can capture the Global market or Domestic market by producing good quality products and selling at a low rate.*

**Key words:** *Micro Small Medium Enterprise, Quality Goods, Employment, Technology*

### 1. INTRODUCTION

Unique Globalization alludes to the course of joining the world into one immense market. It furnishes a few things to a few groups with the expulsion of all exchange hindrances among nations. Globalization takes place through three channels: the exchange of goods and services, the development of capital, and the flow of money. Globalization in India is by and large interpreted as meaning 'coordinating' the economy of the country with the world economy. The genuine push to the globalization cycle was given by the new monetary arrangement presented by the public authorities of India in July 1991 at the command of the IMF and the World Bank. Globalization has prompted an "Inconsistent Rivalry"—a contest between "goliath MNC's and bantam Indian endeavors. The limited scale area is an indispensable constituent of the modern, generally speaking, modern area of the country. The limited scale area frames a prevailing piece of Indian industry and adds to a critical extent of creation, products, and work. In this way, the current review examines the effect of globalization on Indian limited-scope enterprises.

### 2. LIMITED SCOPE BUSINESSES

Each limited-scale industry is unique, and the development direction isn't something very similar. Nonetheless, the difficulties of limited scope enterprises are exceptionally common worldwide.

#### *Not Getting Sufficient Financing*

For limited-scope ventures, finance is a significant issue. No association can develop without sufficient assets. Business people experience issues getting advances from banks and need financial soundness since they are building another plan of action. Most limited-scale entrepreneurs don't have any of their own assets and need to get cash from banks at extravagant loan fees. Hence, some limited-scale organizations decide to apply for credit from non-banking monetary partnerships (NBFCs) and confidential money lenders rather than business banks.

### *No Promoting*

Limited-scope enterprises don't have the foggiest idea how to actually publicise themselves. There is an absence of promoting systems, and limited scope ventures can't get great market data. There is no technique for building ideal client personas, and most entrepreneurs don't ponder socioeconomics. Building brand awareness is a typical issue, and limited-scope organisations in India don't have a high promotion spending plan.

Since limited scope ventures can't transport universally, generally speaking, or don't have prevalent quality items, they can't get a more extensive reach. In any case, times are changing, and the public authorities are sending off drives to extend some assistance to such organizations, thus further developing admittance to both homegrown and worldwide business sectors. Some entrepreneurs aren't great with web-based entertainment promoting and can't stand to employ proficient assistance. Some limited-scale enterprises are based remotely and have no web-based presence. This is negative in the long haul since clients will more often than not float towards organisations with a solid virtual entertainment picture over those that don't.

### *Untalented Work*

On the off chance that a business hasn't constructed its standing yet or filled in income, getting great employed help can be troublesome. Limited scope units are compelled to fall back on utilizing untalented workers or labour supply. Gifted labourers would rather not work for limited-scope organizations and are not typically content with the wages. Ventures can't, likewise, offer the offices and conveniences that these specialists request.

### *Sub-par Quality Items*

Because of the deficiency of assets, unrefined components, or work scope, businesses can't deliver great items. Also, on the occasion entrepreneurs can, they're not ready to sell it at the market rates they need. Markets are cutthroat, and merchants face continuous competition from large players, which makes it hard to develop. The top motivations behind why item quality isn't sufficient are the expanded creation costs, low capital, absence of examination, and non-accessibility of assets. Creation is attached to execution, and staff may not be persuaded to go about their best responsibilities. In the event that the business is excessively little, getting an exchange permit from the state can be an issue.

### *Financial Advantages*

Globalization has empowered firms to practice and to expand the power of research and development, advancement, and capital in their results. Globalization has made it simpler for new organizations to begin contending with old officeholders. The exchange area has expanded the quantity of individuals that it utilizes, both through products and imports. Globalization has raised family pay and has assisted in diminishing high expansion rates in Western economies, giving purchasers more "value for the money." It has increased genuine wages by bringing down the expense of utilization. Numerous merchandise that were recently reasonable for just the trivial few-for example, a cell phone or sewing machine-are currently normal in many families. Globalization has offered economies and individuals a new chance.

Globalization has prodded the spread of new innovation, assisting in making economies greener and more useful. It has assisted in decreasing wage segregation and offering new chances to women. Globalization has changed the nature of the executives in firms and the functioning circumstances for individuals. The way that the impact of globalization has been driven by sensational changes isn't one of those "blinding blazes of the self-evident" that appear to surprise us. It is exceptionally clear and, surprisingly, unsurprising. Propulsions in innovation, markets, and conditions were precursors to the massive changes that are currently taking place. The ongoing global network powered by data has been fueled by the propulsion of innovation. The essential mission of business is to give arrangements, and this innovation blast has given open doors and market applications to those arrangements. Neighbourhood organizations currently have an amazing chance to move past their confined geography of the past into the worldwide field with the utilization of innovation. A nearby store in a faraway town in Kentucky has a similar open door as a huge store in London to get to worldwide clients. These could be invigorating times for neighbourhood organizations assuming they use innovation to their potential benefit.

### 3. PROBLEMS IN SSI

*Finance:* For the most part, private ventures start with a small capital base. A considerable lot of the units in a small area come up short using a loan value expected to raise required sums as capital from business sectors. Thus, they intensely rely on neighbourhood monetary assets and are every now and then the victims of abuse by the cash banks. These units regularly experience the ill effects of the absence of sufficient working capital, either because of deferred instalments of levy to them or because of the securing of their capital in unsold stocks.

*Administrative abilities:* Private ventures are typically advanced and run by single people who may not have all of the administrative skills required to keep the business running. A significant number of private company business visionaries have sound specialized information yet are less fruitful in showcasing the result. Besides, they may not carve out sufficient opportunity to deal with every utilitarian movement. Simultaneously, they are not in that frame of mind to be proficient supervisors.

*Quality:* Numerous independent venture associations don't stick to the wanted norms of value. Instead of focusing on reducing the expense and keeping the costs low. They don't have sufficient assets to put resources into quality examination and keep up with business principles, nor do they have the ability to innovatively redesign.

*Limit Use:* Because of the absence of showcasing abilities or absence of interest, numerous independent company firms need to work under their full limit because their working expenses will generally increase. Continuously, this prompts affliction and the conclusion of the business.

*Innovation:* Utilization of obsolete innovation is frequently expressed as a serious lacuna on account of small enterprises, bringing about low efficiency and uneconomical creation.

*Disorder:* The prevalence of disorder in small businesses has become a source of concern for both strategy makers and business visionaries. The reasons for affliction are both inward and external. Interior issues incorporate the absence of talented and prepared work, the absence of administrative abilities, and the absence of advertising abilities. A portion of the outside issues incorporate deferred installments, a deficiency of working capital, insufficient credits, and an absence of interest for their items.

*Worldwide Contest:* A private company has a serious danger to its endurance from:

1. Medium and large ventures, as well as MNCs, compete.
2. It is troublesome to endure the quality norms, innovative abilities, and monetary credit value of MNCs.

### 4. MEASURES TO ELIMINATE TROUBLES IN SSI

It will be noticed that limited-scale modern units' experience serious debilitations due to a discriminatory assignment framework for scant unrefined components, insufficient institutional money, unfortunate specialized expertise and administrative capacity, and the absence of advertising channels. In this association, the accompanying measures might be proposed. evenhanded portion of unrefined substances, imported parts and hardware. Improvement in the strategies and procedures of creation. In this affiliation, the following measures may be proposed: a reasonable amount of raw materials, imported parts and equipment Improvement in the systems and methods of creation.

### 5. SUGGESTIONS

Some prudent steps must be taken by the government to improve the activities of SSI.

1. Quick credit facilities must be provided by the government as well as by other financial institutions.
2. For uninterrupted production, a smooth flow of power supply is required.
3. First-class training by professionals and international trainees must be provided to avoid industrial sickness, heavy losses etc.
4. SSI in rural areas must be established with good back-up facilities.
5. Encourage the units to produce good quality products by adopting TQM, ISO, and FDI.

## 6. CONCLUSION

Globalization forces us to identify as proud Indians on a map of developed countries. The SSI sector of India attracts the largest share of the industrial sector. Since enormous growth is identified in the fields of manufacturing, job opportunities, technical know-how, investment in overseas units and export of goods, its flags fly high in international markets. This is possible with the help of the small entrepreneurs who started the SSI in different areas. On the other hand, SSIs paved the way for us to walk like fully equipped and empowered men by strengthening each and every citizen of India.

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## An Important Analysis on Programming in Linking with Assembly Language

Helaria Maria

New Horizon College, Bengaluru

### Abstract

A basic and very well-known programming is C program or high-level language and Microprocessor a Assemble Language Programming. C is translated to assembly language, but how its eventually gets executed on a microprocessor. A physical understanding of how a C program is executed in a microprocessor and must of the people do not understand what exactly happens in various segments of the memory, when a program is being executed, so we are bridging a gap between these two languages. Where are the local variables stored in C? we quickly answer its stored in stack. What is kind of scope do, variables in a function have, there is no understanding on these things. In this paper we ensure the understanding between two languages exactly what happens when a C program is executed in the microprocessor.

**Keywords:** Microprocessor, C Program, Assembly Language, Complier

### 1. INTRODUCTION

C is a general-purpose programming language, and is used for writing programs in many different domains, such as operating systems, numerical computing, graphical applications, etc. It is a small language, with just 32 keywords [1]. A microprocessor can simply be defined as a black box that can do certain computations so, we call this as Mup and this is also called as random access memory, a RAM (Random Access Memory) So, a microprocessor has data bus, that lines here indicates that this could be more than one bit it could typically be 8 bits, 16 bits, 32, 64. The data bus is actually going to be bidirectional means, microprocessor can send data to the memory or it can receive data from the memory. The address lines depending on the size of the memory, and you know how much memory it can access, it is that many bits will be assigned. Typically, it is going to be  $2^n$ , if n is the number of address bits, then the number of locations that it can logically address is  $2^n$ . The memory also has two other control signals called the read (RD) and the write (WR) which takes data and addresses inputs and two control signals called read and write. When a read command is requested, the read command go high for a short while, and we present an address to it, then that location will be read out and placed on the data bus, similarly.

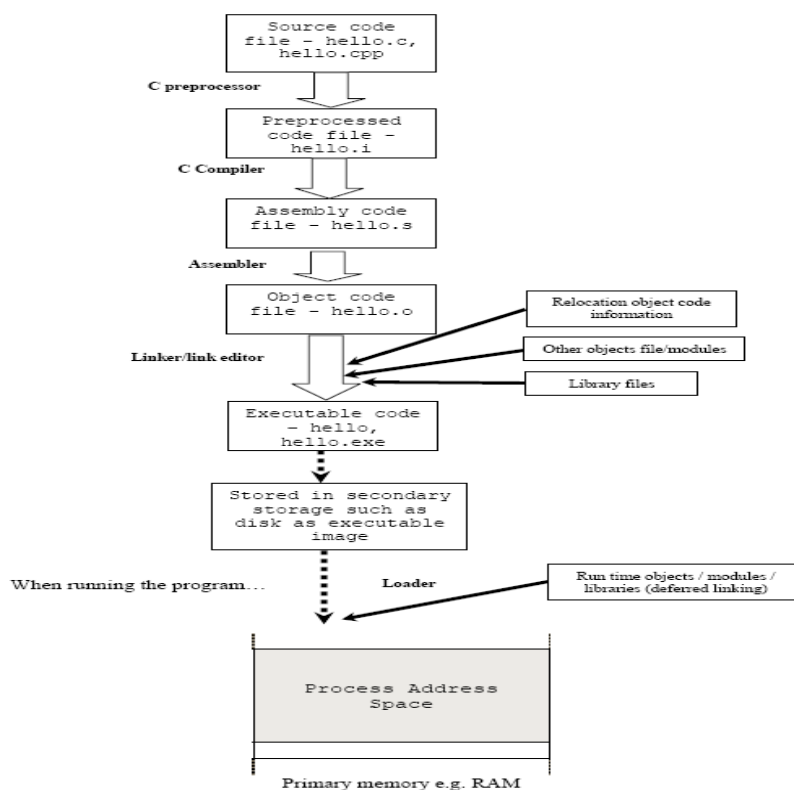


Figure 1 - C program building process

## 2. COMPILER, ASSEMBLER, LINKER AND LOADER

C program construction involves four stages and develops different tools such as a preprocessor, compiler, assembler, and linker [6]. At the end it should have a single executable image that ready to be loaded by loader for the execution of the program. As mentioned in the above diagram.

1. Pre-processing is the first pass of any C compilation. It processes include-files, conditional compilation instructions and macros.
2. Compilation is the second pass. It takes the output of the preprocessor, and the source code, and generates assembler source code.
3. Assembly is the third stage of compilation. It takes the assembly source code and produces an assembly listing with offsets. The assembler output is stored in an object file.
4. Linking is the final stage of compilation. It takes one or more object files or libraries as input and combines them to produce a single file. In doing so, it resolves references to external symbols, assigns final addresses to procedures/functions and variables, and revises code and data to reflect new addresses.
5. Loading the executable image for program running.

### Fetch Decode Execute

Fetch the instruction and execute the specified instruction and store the result. ALU (Arithmetic Logical Unit) does the calculation and store the result in the accumulator. IP Instruction pointer 8086 is 16bits in length and X86 architecture 286, 386 Pentium therefore we have EIP extend [2]. The microprocessor will know where to go and execute next instruction automatically LOCX -> EIP therefore automatically move to the next byte by the instruction EPI <- EIP + N (next byte). A B C D are the registers used in the processor; E is extended register.

32 Bit	8 Bit
EAX	AL, AH
EBX	BL, BH
ECX	CL, CH
EDX	DL, DH

Figure 2 - Register Structure

STACK POINTER ESP and BASE PONITER EBP are the stack register.

Source-Index ESI  
Source-Index EDI

SI	E	SP
DI	E	BP

The register AH, AL, BH, BL, CH, CL, DH, DL (A, B, C & D) are the 16 bit register, it can be extended to the 32bits by E. therefore EAX, EBX, ECX, EDX (32bit registers)

How do we partition the memory into different segments? For example, we have a large memory. We want to ensure is the segment where the code is stored is different from where my data is stored where my stack data is stored and so on and, this is enabled by another set of registers which are known as the segment registers. we have my segment registers which are simply going to demarcate what the different kinds of memories are in a microprocessor. example, is my code; this could be my data; this could be my stack, and this could be my extra segment.

EIP -> 0x0010. Where this location stored in external memory.

Complete address code = [ECS: EIP]

Stack = [ESS: ESP]

Data = ABCD

The data registers ABCD are associated with the data segment the EDI and ESI are associated with the data segment and extra segment respectively [3].

A combination of general-purpose registers and some segment registers, we can address the entire memory to access code and data. The last register that is needed to complete this execution process and is almost mandatory to do branching and looping is known as the flag register. So, the flag register is just an indication of a result because of an ALU operation, arithmetic, or logical operation in the microprocessor. For example, if I subtract two registers and it happens to go down to zero then the zero flag will be set. If I subtract two numbers and the result is negative, then you have a particular sign bit that is set. So, you can check the value of these bits in the flag register and make certain decisions to branch and loop.

CS - CODE	Segment 1
DS - DATA	Segment 2
SS - STACK	Segment 3
ES -EXTRA	Segment 4

**Figure 3 - Memory Segment**

*Instruction Set:* In microprocessor there are 4 types of instructions Data Transfer, ALU operation, Stack operation and Function Calls. Mnemonics are the assembly language instruction example: MOV, ADD, SUB, STA, LHLD etc.

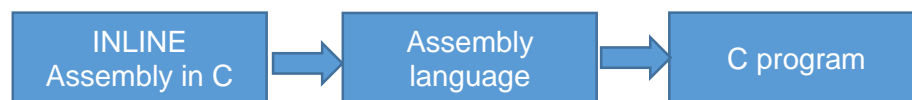
The partition of the large memory into different segments. There are four segments named as: Code segment CS, Data Segment DS, Stack Segment SS, Extra Segment ES. The Branching and looping is known as the flag. Flag indication of a result because of the ALU Operation (arithmetic logical unit) which does the arithmetic calculation like + \* / % and logical calculation like AND OR NOT XOR Operation. The Accumulator is placed inside the ALU, because ALU will only do the calculation and not store the result. Therefore, to store the temporary data we use Accumulator [4].

MOV DEST, SRC; Source data, moves from Source to the Destination. The source data will not change.

MOV Ax, Bx; Source data, moves from Source to the Destination. The source data will not change.

MOV Ax, [Bx]; the content of the Bx points too.

*C Programming and Inline Assembly*



**Figure 4 - Convert the Inline function to the C program**

Inline Assembly Program convert in the assembly to the speed out. We use directive

```

- - asm
  {
    // Write any assembly instruction inside the - - asm directives.
  }
  
```



Example:

```

Void main ( )
{
  Int x =2;
  X = x + 4;
  Printf(“%d \n”, x);
}

the Logic x = a + 2
- - asm {
    MOV EAX , x // x=2
    ADD EAX, 0x0002 // 2 + 2
    MOV x, EAX // x=4
}
    
```

Variable names in the programming will remain the same in assembly language. Translate C programming to assembly language is called INLINE.

```

Int x=2, y=3, a=4, b=5;
EAX <- x * y + a - b

- - asm
{
  MOV EAX, x;
  MUL Y; [EDX, EAX] <- x*y
  ADD EAX, a;
  SUB EAX, b;
}
    
```

Data Types used in the C program:

- Bytes of data -> CHAR
- Word Data -> Short int or int
- Dword of Data -> Long Int or Integer.

All the programs used in the paper are generated using x86 msvc 190 (WINE) C compiler on the compiler explorer tool on the website: <https://godbolt.org/>. [2].



Figure 5 - online Tool

Inline assembly C Code

```

Int x=2, y=3, a=4, b=5;
{
  - - asm{
    MOV EAX, x;
    OR EAX, a;
    OR EAX, b;
    MOV EBX, x;
    AND EBX, y;
    XOR EAX, EBX;

  }
}
    
```

```

Void main ( )
{
    
```

```
Int x=3, y=4, z=0;
-   - asm {
        XOR EAX, EAX
        MOV ECX, Y
        INC ECX
        DEC ECX
        JZ LAST
    LBL: ADD EAX, X
        DEC ECX
        JNZ LBL
LAST:MOV Z, EAX
    }
Return z;
```

The expression used in the register EAX bear  $EAX = (a | b | x) \oplus (x | y)$

The value for the register EAX =5;

If  $x=3, y= 1, a=2, b=6$

The value will the register EAX = 6;

The value of the variable CZ is 12.

### 3. CONCLUSION

This paper gives the understanding the integration of C and assembly language. Some of the instructions and register are being used for the explanation of the process. Programming in assembly language requires to understand the instruction set of the processor. Writing a program in machine language is like to understand the low-level details of how a machine may execute a set of instructions, fetch-execute cycle among the other instruction. Today most programmers don't deal directly with assembly language, unless the task requires direct interfacing with hardware. For example, a programmer may consider using an assembly language to write a device driver or optimize part of a game program. So, this paper gives the view of the how the C program is implemented in the machine learning language.

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## Advent of Christianity and the Rise of Modern Political Institutions of the Rengma Nagas

**Sinyhunlo Keppen**

Research Scholar, Department of Political Science, St. Joseph University, Nagaland

**Dr. Shonreiphy Longvah**

Associate Professor, Department of Political Science, St. Joseph University, Nagaland

### Abstract

*A tradition can take years and years to develop and once fully developed, it continues to exist for hundreds and thousands of years, it is a belief or behavior which has been passed down within a group or society with symbolic meanings or special significance from the past. Often the practice of traditions is found to have political meaning and they are carried out through an institution or in other word traditional knowledge is transmitted with the help of an institution. Without an institution, thus, a tradition loses its significance. A traditional institution refers to the indigenous socio-political arrangements whereby leaders with proven track records are appointed and installed in line with the provisions of their native laws and customs. This paper tries to make an attempt to understand, about the Rengma Naga Tribe, one of a major tribe in the present state of Nagaland among the constellation of sixteen tribes in Nagaland. The main purpose of this paper is to know about the better understanding of the Rengma Nagas, its historical background. The arrival as well as the impact of the Britishers, who along brought with them the religion of Christianity and the spread of western education which has altogether transformed the lives of the Nagas in general and the Rengma Nagas in particular.*

*Modern Political institutions can be referred to as the organizations in the government that creates, enforces and applies the laws; they often make the governmental policy on the economy and the social systems, and otherwise provide representation for the population. Thus, with the spread of western education and the spread of political consciousness, it has brought more awareness and the desire to develop and advance more in the social, economic, cultural, political fronts; one such major development can be witnessed with the recently concluded event, which has led to the demand and the creation and inauguration of the new District in the form of Tseminyu district on 22<sup>nd</sup> February 2022, also there has been a desire and aspiration, for the unified Rengma areas of Assam and within Nagaland which is yet to be addressed to. Thus with the spread of education, it has also brought political consciousness in the minds of the Nagas in general and the Rengma Nagas in particular, the political identity, and political participation, which is based on the awareness of politics, the status of the Rengma people in the political system, and the political participation between the Rengma people in particular, and the Government in general.*

**Keywords:** *Traditional political institutions, Rengma Naga, Modern Political Institutions, District demand, Political Participation.*

### 1. INTRODUCTION

Advent of Christianity and the rise of modern political institutions of the Rengma Nagas Tradition is the transmission of the customs or belief from generation to generation. The word tradition is thus derived from the French word ‘*Tradicion*’ and Latin word ‘*Traditio(n)*’, with literal meaning “to transmit, to hand over, and to give for safekeeping”, the term found original usage in Roman law when it was referred to the “concept of legal transfers and inheritance” (Graburn, 2008, 6-7). Often the practice of traditions is found to have political meaning and they are carried out through an institution or in other word traditional knowledge is transmitted with the help of an institution. Without an institution, thus, traditions lose its significance. Orji and Olali (2010, cited in Abdulquadir 2016, 2), states that, “traditional institutions refer to the indigenous socio-political arrangements whereby leaders with proven track records are appointed and installed in line with the provisions of their native laws and customs”. Subsequently, the term ‘political’ became commonly associated with traditional institutions. As a matter of fact, as cited by Baldwin and Holzinger (2019, 2) traditional political institutions are institutions whose legitimacy is based in parts on their association with modes of customs governing a community. Institutions are “political in the sense that they make decisions regulating and providing for the collective, and they are traditional in the sense that they are popularly believed to be connected by customs”; Quoting Ranger (1983), they further stated that, although the traditional political institutions are commonly “associated with customs in the popular imagination”, it need not accurately reflect the “historic governance practices”, Baldwin and Holzinger (2019, 2).

A number of factors can play its role in the loss or waning of a tradition or for that matter traditional political institution of a particular group of people. Bringing the Naga people in the perspective, advent of Christianity and subsequently the spread of western education, comprised the predominant factors in rendering their traditional

political institution to the near obsolete. In general parlance, industrialization, globalization, modernization and the assimilation or marginalization of specific cultural groups, forms the common factors. Thus, across the world, the attempt to preserve the traditions and traditional political institutions has now been started. One among them is the Rengma Nagas, who until the arrival of the British colonialist, and the advent of Christianity and modernity in their lands, strictly adhered to the rules and regulations bound by their traditional political institution.

Indeed, the Nagas in general and the Rengma Nagas in particular, were a group of people who strictly adhered to the norms laid down by their respective traditional political institutions. In this sense, therefore, they were a traditional people, who transmit their traditional values and norms orally. Such oral transmission of traditional information formally took place in the traditional institutions known as the Morung. It has been recorded that the Morung – which was not exclusively a political institution but providing socio-cultural, traditional and religious practices and knowledge as well - was a very important institution in molding the Naga youths in the warfare, learning of folk songs, dances, agriculture, handicrafts, arts and crafts that are necessary for life as an adults and afterwards.

The Rengmas is one of the major tribe in Nagaland. It is believed that they migrated from east via Myanmar and the north of Manipur and landed at Makhel. A wave of Rengma community migrated from Khezakenoma, Kigwema, Kohima, Nerhema, Tsiethuma: known to the Rengmas as Penschvünyu, Terogvüthun; the highest peak in the Rengma area, and Khwephen (Thong, 2016, 16-20). Tseminyu is the sub-divisional headquarters of the Rengmas and they all share a close affinity with each other's in terms of land and other cultural heritage.

The villages of the Rengmas maintained their own identity and sovereignty with its rights to the people. Each village had their own distinct socio-political, economic and political units. The Rengmas like the other Naga tribes usually built their villages atop the hill or on the neck of a hillock, and while selecting the site for the formation of the village the things taken into consideration were availability of spring water and position highly defensible, and it had to have a tree suitable for use as a head tree. Usually the villages were surrounded by trees and light jungles, so that the village was not exposed and visible to the enemy villages. The villages varied in sizes from 8 houses in Nishinyu “the new village” to Tseminyu (257 houses) (Mills 45- 49). The Morung has been one of the most important social constitutions of the Rengma tribe. The state of those buildings of the “Morung” gave a sure indication of the state of the village itself, a decaying “Morung” means a decaying village, and a well-used, well kept “Morung” a vigorous community. It is in the Morung that the growing youths are taught the art and craft of warfare, singing, dancing, social etiquettes, handicrafts, the importance of traditions and the heroic and valor deeds of the past generations. The Morung is common to all the Naga Tribes and it was either located in the house of the village chief or a rich man's house or built separately. Shimray R R (1985), called this institution (Morung) of the Nagas as the “Naga School”. A boy goes to the Morung, when he is small and feels ashamed to sleep with his parents. It is in the Morung, that he is taught duties in life and generally hammered into shape. Here the Morung takes the role of his parents as a disciplinarian.

Mills (1937); the Morung generally referred to, by the Rengma Naga as Rensi, A; Azüghü, B; Awikhu C, of which each “khel” possesses one or, rarely, two, are the finest and the most decorated buildings of a Rengma village. Among the Western Rengmas the rich men's house usually serves as the Morung for the village. The Morung fulfills a variety of functions, there the men sit and gossip and tell stories on “geena” days. The old men are primed with drinks, and their discourses keep alive the tradition of the village. In the olden day's warriors inevitably kept their shields, spears, crossbows and daos in the Morung. The Morung also serves as a place of sanctuary, thus no criminals, whether of that of a village or a fugitive from another, can be touched while in a Morung. The men of the khel to which the Morung belongs to must protect him at all costs, till the case against him has been discussed and calm action decided upon neither him, nor any crime be committed in a Morung. A boy enters the Morung, when he is six or seven years of age and sleeps there till he marries and sets up a house of his own.

## 2. ANCIENT RELIGION OF THE RENGMAS

Rengma religion is without priest and almost without prayers, for many ceremonies a man is his own priest, and for others he calls an old man, whose only qualification are age, membership of the right clan and knowledge of the proper formula to do the rituals. Spirits are believed to be present everywhere. Offerings are made to them and to the souls of ancestors. Genna means something forbidden, and is commonly used to denote any Naga religious festival of ritual feast; a day on which it is forbidden for the villagers to go to work. The word “*Geena*” is believed to have been derived from the Angami word “*Kenna*” which means prohibition (Thong; 1997, 24). Gennas are of two kinds, an individual or a village Gennas, when an individual observes such a day, he must remain in the village and avoid all intercourse with the people as well as strangers. Also when the whole village observes such a day, the village remains closed and the remain disconnected with the outer world. A Genna might be held for a child-

birth, or the village genna to keep the pest away from the crops. Spirits in general are called *soginyu* (a) or *aniza* (b). there is spirit of the house, the field spirit, the jungle man, spirit of water creatures, spirit of sickness, man lifters, divination and omen, and they also believed in dreams, and believed that supernatural forces communicate with the living human beings through dreams. During sleep, it is believed that a human soul wanders with the spirit of their ancestors or other supernatural spirits. While wandering with them, they convey to them of the impending dangers and also the blessings that are to come in the future. Thus dreams are taken seriously, however the interpretation of dreams varies from village to village and tribe to tribe. There are good dreams and also bad dreams.

The Rengma Naga identifies many gods and goddesses. For the Rengmas *Terugü* is the god of all gods. He is believed to be the supreme god who dwells in the sky and he is the creator of the heaven and the earth. Human beings and all other things both living and non-living things are his creations, and he is the supreme authority of the heaven and the earth. He is invisible but his presence is felt everywhere. Apart from *Teregü*, there are other deities in the form of *Terugi*, the female god or goddesses, *Kepongü* the god of abundance, *Kepongi*, the goddesses of fertility, *Shenrhwengü*, the god of wealth, *Shenrhwegi*, the goddesses of wealth, *ThekhogÜ*, the god of animal, *Thekhogi*, the goddesses of animal, *Kapügü*, the god of household, *Kapügi*, the goddesses of household (Nshoga, 2018).

#### *Belief in spirits*

Spirits are believed to be omnipresent, evil spirits dwells mostly in the forest, rivers, streams, mountains. Spirits are known for their malevolent actions against human beings. Evil spirits often brings misfortune, sickness, diseases and death. Some of the spirits believed by the Rengmas are *Songigü* the supreme spirit who dwells in the sky, *Songü* is the male spirit, and has devine power and blesses the person, who pays allegiance to him, *Songi* is the female form. *Soginyu* is the general name of spirits, when the religious rituals are offered, the name *Soginyu* and *Songperinyu* are uttered. *Niseginyu* is the general spirit for agriculture, *Nisegü* the male spirit and *Nisegi* the female spirit for crops. *Hashong-polo* is the evil spirit which dwells in the rivers, streams and dreaded place. *Rhengmen*, is the ghost of the dead man who haunts the people at night in which one feels unable to move one's body and limbs. *Nenkhenpvue* is another type of semi-human spirit, whose body is covered with black hair and causes a person to stagger in the jungle till they are hopelessly lost in the jungle or falls down a cliff (Nshoga, 2018).

#### *The village state administration and village chiefs*

The Nagas were very democratic in nature and thus the final political authority always rested in the hands of the people. In the village state government with the exception of the Konyak and the Sumi tribes, though the form of government differed from tribe to tribes, mostly followed the republic form of government (Thong 1997, 70-72). The Konyak, Sumi and the Mao had the hereditary monarchy, who was assisted by the council of ministers. The Ao's had the republican form of government, in which the council of elected members usually of a same age group, known by the name of 'Putumenden' looked after the administration of the entire village. The Angami, Lothas, Chakhesang and the Zeliang practiced a peculiar type of democracy with little variation in nature of its composition. The post of the chief was hereditary, but they were returned on the basis of election system from among the family members. In most of the villages there were generally three or more chiefs, each over a *khel*, which is a unit division of the village.

According to Thong (1997) the Rengma chieftain had despotic powers, but the office was not confined to the family, but the whole clan. The chieftain does not pass from the father to the son, but rather to the most suitable man in the leading family of the clan. Among the Rengma, the village chief holds absolute power and in the execution of his duties, he is usually assisted by the village priest and the various clan representatives and families. They decided the peace initiation with the other neighboring villages, and can also declare war when the village territories are being encroached upon by the neighboring villages or when a villager is being killed by another village. Their decision on any matter becomes law and is binding on all the villagers, since they were looked upon as the will of the people, they also decided on all the civil and criminal disputes in the village. The village chief or rulers have some personal distinction, acquired by them through the performance of sacrifices and good judgments. They also have enormous economic power which is shown by their capacity to help the poor and the needy in the village. The chief receives obedience from the villagers and enjoys certain privileges' like the construction of the house by the villagers, tasting the first brew of the rice beer during village feasts, getting the portion of every animal killed during the feasts or hunting expeditions and also receiving tributes of the various crops. The chief, be it in the *khel* or the whole village or a group of village is generally the strongest, bravest and the most resolute. He is also the champion in headhunting.

*Advent of Christianity and the political status of the Rengma Nagas*

Religion is a particular system of faith and worship; it is a pursuit or an interest which is followed with a great devotion, has been in the Naga part of life since time immemorial. Even before the Nagas converted themselves to Christianity, they believed in the existence of a creator to whom different Nagas accorded different names. The Nagas also believed in Life after death. By the late nineteenth century and the early part of the twentieth century many Nagas had converted to Christianity (Longvah, 2017, 122).

Before the advent of Christianity, the Rengma tribe practiced the tribal religion and Christianity in the Rengma areas was introduced in the early 20<sup>th</sup> Century. The religion practiced before Christianity was simple and had no sacred book as norm of authority of faith and practice of the believers. This traditional religion had rich heritage of rites and ceremonies, myths and legends, folktales, norms, moral, customs and traditions. Though they had no written documents, these traditions were orally passed down from one generation to another. Religion occupied the central place of the Rengma Nagas, thus they believed that the universe is sacred and filled with god. Thus they worshipped both natural forces like the Sun, Moon, Winds, Lightning and Thunder, Trees, Stones, Rivers etc and also super naturals such as Gods, Demons, Ghosts and other Spirits. The religious beliefs and concepts were expressed in the form of symbol and rituals, which not only influenced the individual life, but also of the community as well. Although traditional religion was simple it was strong with cultural influences.

Christianity was a foreign religion, however when it reached the Rengmas, it brought tremendous change among the lives of the people. In the initial stage, there was strong resistance and opposition but gradually Christianity was gradually accepted by the majority of the Rengmas. With the coming of Christianity, it set changes in the socio-religious, customs and traditions like in the form of oppressive cultures like headhunting and slavery was rejected by the people. According to J P Mills, J H Hutton, Elwin Verrier argued that Christianity destroyed the traditional Naga culture and religion. However, Dr. Mankekar and Micheal Scott hold that despite the influence of missionaries, the tribal's have not changed significantly (Downs F S 1994. 152), and this is particularly true up to some extent, because even today after the acceptance of Christianity, there are still some beliefs and practices of the traditional religion, that are still practiced by the Rengmas and it is deeply rooted in the lives of the people like the belief of life after Death, the pattern of worship to look to an invisible god for help, the observance of Sabbath/Sunday, the celebration of Christmas and the feast of merit, usage of indigenous instruments and tunes with Christian teaching through songs and music, the role of the Morung which was the most important social institutions in the past, which is replaced by the church which became the centre of Rengma social and religious lives.

With the advent of the Britishers, the task of civilizing and enlightening the tribal's became the work of the British missionaries. Major Jenkins, the subsequent commissioner of Assam attempted to bring the American Baptist Mission arrived at Sadiya in 1836 to take up the Missionary work in Assam. In 1838, these missionaries had made up their minds to serve the Nagas and decided to send Rev. and Mrs. Miles Bronson to construct a home and opening of a school at Namsang (Now a village in Tirap Frontier Division) (Thong 1997: 125-126) and (Mawon 2015: 157). Roughly three decades later Rev. E W Clark came from Sibsagar and arrived at Molungyimsen Village and this was the first foundation of a church in the soil of the Naga Hills. The mission work in Kohima district started in 1878, when Rev. C. D King was deputed to Kohima and the district headquarter was shifted to Kohima from Chumukedima. The missionaries had also opened up one missionary centre at Kohima. Rivenburg also worked among the Rengma, Zeliangrong, Kuki and the Sumi communities. He also opened up schools in certain villages under his mission field (Thong 1997: 126-129).

The progress of Christianity in the Naga Hills in the 19<sup>th</sup> century was rather very slow, as the attitudes of the Nagas towards the missionaries was hostile in the beginning, and thus those who got converted to Christianity were persecuted by their respective clans or villages, they were also expelled from the village and were denied facilities, however the activities of the missionaries were not only confined to conversion and education. They also carried out medical care and other social and welfare activities which were availed by all the people. The spread of Christianity to the Naga Hills with the colonial conquest during the 19<sup>th</sup> century (Thomas 2015, Lotha 2007), believed that it would definitely destroy the culture of the Nagas (Mills 1926; Hutton 1945). The Ao, Angami, Lotha, Rengma and Sema were the first to be converted as Christians by the American Missionaries (Downs 1971; Pruett 1974; Philip 1983). The Rengma Nagas commemorated the community conversion to Christianity for more than a century marked the 108<sup>th</sup> Anniversary on 28<sup>th</sup> April 2015 (as cited in The Eastern Mirror 29-04 2015). The first Rengma Convert was Lokhin Nsü of T Zisunyu Village Tseminyu sub-division under Kohima District.

With the dawn of the 20<sup>th</sup> century, by 15<sup>th</sup> August 1947, India had earned Independence and established itself as a sovereign state. Nagaland was just a district in the state of Assam, until 1957, known to the others as “the Naga hills”. The leaders of the various Naga tribes from 22<sup>nd</sup> – 26<sup>th</sup> August 1957, formed the Naga Peoples Convention (NPC), and held its first session held on 21<sup>st</sup> August 1957 under the presidentship of Dr Imkongliba Ao. Furthermore, Akbar Hydari Agreement of 1947, the governor of Assam signed the Nine Point Agreement with the Naga leaders, and by this Agreement it was decided that the Nagas would be granted judicial, executive and legislative powers, as well as autonomy in land related matters.

A further accord was reached by the Naga peoples convention meeting on 1960, and accordingly, the territory of Nagaland was placed under the Nagaland Transitional Provisions Regulation 1961 (<https://legislativebodiesinindia.nic.in>), which provided for an interim body consisting of 46 members, of which 6 were reserved for Tuensang district to be chosen by members of the Tuensang Regional Council from amongst themselves. With the formation of the state of Nagaland state as a special category state under Article 371 and the 16 Point Agreement, during the Interim Body period, the Rengmas had 2 Representation from 1961 to 1963, represented namely by Shri Riga Thong and Shri Lothi Rengma. However, with the first general election conducted in the state of Nagaland, the Rengmas were deprived and the seat was reduced to a single seat after the inauguration of the state of Nagaland (We the Nagas; Revisiting the Rengma Nagas; a Facebook page).

#### *Creation of the district of Tseminyu*

There are several instances where the people are deprived of their own rights, opportunities, and services and the people in the society tend to dwell living around living a miserable life without claiming their given rights and services, because of this, there is disparity in the distribution of aid, funds and other developmental activities, which creates a division in the society where the privilege gets more and better fortunes while the under-privilege gets to live a more miserable life. The district of Tseminyu is one such case where the due share was not given for quite a longtime, since the inauguration of the statehood of Nagaland on 1<sup>st</sup> December 1963, but Tseminyu as an administrative unit was established in the year 1948 when a Bench court was established at Tseminyu. Thus Tseminyu had served as one of the oldest Administrative headquarter in Nagaland, while other bench courts which were set up during 1947 had already become a districtheadquarter by 2021 i.e. 73 had already lapsed since the Rengma people were deprived.

It can be mentioned that the issue of the Tseminyu District had become an issue during the time of Late Kegwanye Lorin, when he was the then President of the Rengma Hoho during his tenure from (2006- 2012), and a committee was formed in 2006 to look into this issue, however no official memorandum was submitted to the government. It was only in the year 2016 that the Rengmas once again united, and a rally was organized at the Tseminyu Headquarter to support the cause. One of the main reason why the issue was kept pending for long is because the Rengmas believed and they had faith in the democratic way of government, also another constraint that had come in the way was that the Rengmas had only one (1) Representative in the Nagaland Legislative Assembly. A huge role was played by the Frontal Organization of the Rengmas, like the Rengma Hoho, The Rengma Mothers, The Rengma Selo Zi and The Rengma Students Union Association in the form of organizing Rallies, Motor Bike Rally, strikes and Walkathon in the Rengma Inhabited areas. Finally, the government paved way for the formation of the district which was declared on December 19, 2021, when the government announced Tseminyu as a new district along with Chumoukedima and Niuland, and thus the Tseminyu district was formally inaugurated on 24<sup>th</sup> of February 2022.

Another long impending issue that is there with the Rengmas is the issue of the integration of all the Rengma Naga inhabited areas in Assam and Nagaland. At present the Rengmas are divided into two different administrative jurisdictions, under Nagaland and Assam, and they are owners of both the land in Assam and Nagaland with a singular identity. The broad division of the Rengmas into the various parts of Nagaland can be fragmented into three major divisions, the Eastern, Central and Western Rengmas. The Eastern Rengmas in the Meluri Sub-division in Phek district, the Central Rengmas now presently in the Tseminyu subdivision of Kohima District, and the Western Rengmas in Mikir Hills, Assam, (Thong, 2016).

The study of political status thus refers to the study of rights, freedom and opportunities of a person with regard to decision making it is an important determinant in examining the role of development in the society, because it shows, how powerful or weak a person or a society is, in influencing the process of decision making, allocating resources, attracting developmental funds, framing programmes and policies. For instance, if the political status of a society is strong and stable, we see every particular society is well developed and well governed in terms of infrastructure, institutions that is required in enhancing growth and development, where as a weak political position or status leads to the people failing to claim even their own rights and shares and it leads to the deprivation

of their opportunities and they fail to obtain certain level of development which eventually becomes a blockade for that particular society. Thus the Rengma Nagas have also realized the goals to enhance their political status through meeting their demands in the form of the district demand and also the integration of all the Rengma areas which could also prove to enhance their political status and also build a strong society which boosts itself of a strong political and economic status, which can be achieved through and judicious management of resources and capital in the society which can lead to the way of progress and development.

### 3. SUGGESTIONS

1. The Rengma people need visionary leaders with critical thinking, with sound managerial thinking in administration and technological skills.
2. The system of education needs to be revolutionized and more emphasis needs to be given to up gradation of more High Schools and colleges of higher education.
3. Basic infrastructure needs to be addressed to like medical healthcare, transportation, banking sectors, establishing markets.
4. Educating the masses of people for a responsible citizen is also a must and must go at par with the development changes.
5. There needs to be a system of checks and balance in the process of administration and the management of public funds.
6. Also there needs to be a positive approach of the people towards their leaders with the sense of political mobilization and participation to speed up the growth and development taking place.
7. Also the use of upgrading of information and technology needs to be adopted in order to go at par with the process of development taking place.

Thus in a democracy the role of the people plays significant role however most of the people fails to understand their potentialities and tend for begging their rights and freedom, which in turn leading to the advantage of others. Thus the person needs to be well advocated and creating of awareness for their rights and freedom must be created. It is important to know that several political principles act as an agent or play a key role in formulating the path of growth and development. Politics helps to formulate laws and policies, and regulate the law and order in the society, it tries to solve the problems in the conflicting areas and field, and as in reality there is no ideal society where there is absence of issues and conflicts in the society. Politics can never walk alone and thus it has to go hand in hand with the economic factors which needs to address the policies and programmes through financing, budgeting.

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## Bifurcation of Consciousness in the Select Characters of Manju Kapur

S. Poornima

Department of English, St. Thomas College of Arts and Science, Chennai

### Abstract

*Feminism is “the belief in social, political, economic and intellectual equality for women and men. It focuses on gender equality and conceives freedom as personal autonomy to end patriarchal domination and coercion. It also aims to transform from bondage to freedom and search for identity. In a way, the study of feminism tries to analyze to a larger extent, consisting of a comparison between one character and another. The concept of bifurcation of consciousness is still prevalent in society and it is faced by all women. Even after getting a higher education and a high position in society, women are suppressed by the male-dominated society. This research focuses on the Bifurcation of consciousness technique in the women characters of Manju Kapur, an Indian novelist who writes in English. Her novels like Difficult Daughters and A Married woman explore this concept. It also aims to analyze the characters of the above-mentioned novelist. The bifurcation of consciousness constructs plays a major role in developing and representing a feminist perception in literature and life. It also explores redefining feminism in the Indian context. This research is based on the women characters of Manju Kapur and tries to create the two worlds in their life and dwell in them which leads to the emergence of ‘New Women’.*

**Keywords:** Gender equality, patriarchal domination, Bifurcation of consciousness.

The paper concentrates on the technique of bifurcation of consciousness in the select characters of Manju Kapur’s novel Difficult Daughters and A Married Woman and analyses how Manju Kapur as a postcolonial writer with the collaboration of women issues, compose on the predicament of women in the male-dominated society.

Feminism is “the belief in social, political, economic and intellectual equality for women and men”. The historical event of feminism in India can be divided into three phases, the first wave in the nineteenth century, was initiated when male European colonists began to speak out against the social evils of Sati. The second wave, from 1915 to the Indian independence, was when Gandhi incorporated women's movements into the ‘Quit India’ movement and independent women's organizations began to emerge. Finally, the third wave, post-independence, has focused on the fair treatment of women in the workplace and their right to a political party.

In the twentieth century, feminism is often divided into three streams. One such is called the “Big Three”. They are liberal, reformist or mainstream, radical or socialist /Marxist. When Feminism Focuses on gender equality. It also talks about the radical reordering of society and emphasizes the essential biological difference between men and women. Conceives freedom as personal autonomy. To put an end to patriarchal domination and coercion. Bondage to freedom and search for identity.

Western culture is customary worldwide and has generally associated power with men by considering patriarchy the sole agency that causes the victimization of women. Western feminists attempt to perceive the issues mainly concerning women by making their documents around those of male thinkers for other purposes.

Feminism has a profound effect on the lives of women across the western world. Many feminist writers like Virginia Woolf explore the society at the time and create an image of the protagonist’s life through her thoughts. Her women characters explain key questions about gender and identity. Her characters reveal the true nature of women in society. Women were given less opportunity and importance in society.

Simone de Beauvoir notes, “One is not born, but rather becomes a woman. No biological, psychological or economic fate determines the figure that the human female presents in society; it is civilization as a whole that produces this creature, intermediate between male and eunuch, which is described as feminine” (de Beauvoir 254).

Feminist writing is mainly concerned with the peculiar experience of being a woman or alternatively, writing designed to challenge existing preconceptions of gender.

Indian English fiction has many writers who were conscious of the predicament of women and that too from different dimensions. Woman problems have become a major theme for Indian writers in the modern era. Indian English fiction has come a long way and the credit for establishing Indian fiction on a strong foothold goes to the “big three”, Mulk Raj Anand, R.K. Narayan, and Raja Rao. One such eminent novelist in Indian writing in English is Manju Kapur who adds a new dimension to Indian English fiction. Manju Kapur’s contribution to Indian

English fiction is a brief survey of the portraiture of women. Marriage, living in two worlds, longingness, loneliness and the hunger for love are the major themes that dominate in the novels of Manju Kapur/.

Manju kapur acclaimed many prestigious awards for their contribution to the feministic world. Manju kapur analyses the world of women, and their sufferings as victims of a patriarchal society. They also express social, political and economic upheavals in a male-dominated society. Her characters earned space for their portrayal of womanhood, psychological insight, and self-realization of women.

Her protagonists are mostly middle-class, educated, strong-willed, sensible women. Their views on gender discrimination are highlighted through their women characters.

Standpoint theory- it is a Sub-discipline of feminism. Sandra Harding, an American theorist created the Standpoint theory. It articulates the knowledge of women and argues that hierarchies naturally create ignorance about social reality. Portrays women's struggles and inability to express their feelings. Dorothy Edith Smith, a Canadian sociologist, developed and shaped Harding's theory.

Bifurcation of consciousness- Living in two worlds or two subjectivities (public and private). The characters of Manju Kapur dwell in split consciousness. Being separated between the world as one experiences it and the dominant view to which one must adapt. It is mainly taken from the male point of view. It also explores redefining feminism in the Indian context.

Bifurcation of consciousness construction plays a major role in developing and representing a feminist perception in literature and life. Most of Manju Kapur's character struggle with double consciousness. It refers to the two phases of life; the professional and the public, along with the private and the family.

The setting up of the nation has contended a significant role in providing a platform for women that they will perform and lift their voices. To some extent, it has exhausted the concept of 'double colonization of women wherein they were colonized by paternal and imperial ethics. The role of women has undergone a remarkable modification during this postcolonial era, as they are much more under control that they lack freedom in decision-making. Manju Kapur, a recent Indian English novelist additionally craves such freedom in her novels. To date, she has written four novels *Difficult Daughters* (1998), *A Married Woman* (2002), *Home* (2006), and *The Immigrant* (2008). Among these all novels, *Difficult Daughters* fetched Manju Kapur a Commonwealth Writers Prize for the best first book and shortly became a renowned personality in the literary field. Manju Kapur demonstrates the non-acceptance of a liberated and trendy woman in a tradition-bound Indian society.

Manju Kapur's debut novel *Difficult Daughters* published in 1998 earned her considerable success, both critically and commercially, in India and as well as abroad. A feministic custom is very much powerfully noticeable in each of her novels. *Difficult Daughters* has been set up during India's independence struggle and it is largely autobiographical in perspective and content, it stirs up the atmosphere of that time as reflected within the lifetime of a Punjabi family of Amritsar. Set around the time of partition, it's the story of a woman Virmati ragged between family duty, the desire for education, and illegal love. Virmati, a young lady born in Amritsar into a strict and high-minded family, falls in love with a neighbor, the Professor—a man who is already married. The relationship equivalents India's battle for freedom and eventually, Virmati becomes the Professor's second life partner. The hunt for control over one's destiny is the key theme of the novel.

The position of a woman in the community is socially interpreted and is, as stated earlier, apt to change with the times. *Difficult Daughters* focuses on the intellectual and emotional dilemma faced by an educated daughter of a conservative joint family in India in the context of the socio-cultural situation that prevailed. The turbulent years of World War II as a far-away background and the period of the struggle for Independence concluding in the partition of India as an instant setting to the human drama enacted, the novel offers a sensible and practical portrayal of three generations of daughters starting from Virmati's mother Kasturi, Virmati, and ending with Virmati's daughter Ida. Virmati is the difficult daughter of the second generation, holding center stage. Women at a relatively advanced stage of life, laboring under various compulsions, enjoy less psychological and social freedom than men, and they are forced to live their lives in the shade, first, of parental domination, and then, of patriarchal oppression.

Freedom and fault have both been integral parts of a woman's life and women who have refused to collapse under patriarchal pressure have very often succeeded in changing their own lives and those of others who are dependent on them. One such woman is Virmati in *Difficult Daughters* who have been placed in a private, domestic world where emotions and feelings are her link to experience education bringing enlightenment and empowerment in

which she is equipped to challenge confidently the traditional framework of knowledge and to steer her way through the avenue of familial and social oppression and bias to arrive at a new consciousness of her worth and place in society.

Virmati strives to overcome the narrowed norms of her family and society and ultimately emerges from the shadow of patriarchal dominance with an exceeding awareness of a new identity, an identity that gave her space, which she had never enjoyed. Ida, the narrator, a divorcee, and a childless woman, making the interesting statement of not wanting to like her mother, is conscious of her lapse in having failed to understand her mother, to connect with her, and to emphasize with her in the reported traumatic progress of events in her life. Ida's inability to sympathize with her mother takes the form of a mother fixation; an obsession that persistently chews at her till she can reconstruct and reinterpret her fragmented bygone times by exploring the sequence of events in her mother's life. Her mother had always been shifty about her past and any study of her personal history had been frustrated by her neatly side. In the end, the certainty of knowledge that comes to her regarding her mother's past leads her to a kind of purgation that she hopes will now enable her to live in peace.

The family and the society, in the ultimate analysis, become intimidating prescriptive factors in life and are largely responsible for the rigid standards of morality imposed upon the Indian woman, who, instead of emerging as a self-determining individual is cursed with playing a subordinate role in every field of life. Though there is no gain in saying the fact that the social structure in India does provide the individual with a strengthening sense of security, the tradition-bound, male-dominated society is her cross. It does not let her grow. It courts her to the point of wreckage and then leaves her to piece the slices together. This is the juncture at which, at the level of content, literature, and sociology establish a vital relationship.

Virmati could not speak out throughout the novel and is undoubtedly situated at the juncture of two oppressions: colonialism and patriarchy. At a look, it's a plot of a freedom struggle. It's Virmati's fight against her family traditions and customs; against the antique orthodox syndromes fixated with the sub-continent women and against the society that so naturally expects her to follow the trail of a sacrificing "ideal woman." Besides this, the same plot progresses against the backdrop of India's struggle for independence. And like within the end, each attains independence only at the value of losing an area of itself. Eldest among the eleven kids, Virmati all right resembles a rebel of the 40s. She grows up in an exceedingly conservative Punjabi family of Amritsar only to fall crazy with a professor who is already married. A reason that's sturdy enough to disgrace the family and society that follows may be a tale of separation, pain, emotional outbreaks, abortion, and at last, a wedding that doesn't have a customary happy ending.

It is not gender equality as a requirement to an ideal wedding that she advocates for a woman but particular freedom within the community of men and women that may fulfill them. Like Anita Desai's women, Manju Kapur's female protagonists explore their potential or live on their terms notwithstanding the consequences that such a rebellion could have on their lives. Their predicament – Kasturi's, Virmati's, and Ida's – is not a predominantly personal one with an adorned fusion of the complex social context, family attitudes, and the relationship with the man in each one's life.

Next novel *A Married Woman*, published in the year 2002, Astha, an educated, middle-class, strong, rational, and well-balanced who lives in New Delhi. She has a loving husband and affluent background. She starts an extra-marital affair with a younger woman as she feels alienated in her married life. Astha grows as a character from extremely submissive. She adroitly captures the essence of the trials and tribulations of a working class family. The rest of the story deals with how Astha manages a double life as a lover of a woman and a married woman with kids and responsibilities.

Astha, tackles the situation of her life without creating any violence and breaking the norms of traditional society. She feels frustrated and at last, thinks to achieve her own goal for her fulfillment. This is the unique aspect of a woman who is ready to take any risk to enjoy her life at any cost.

Virmati and Astha struggle to deal with the bifurcation of consciousness and try to be independent in their thinking. Thus, Manju Kapur undertakes a bifurcation of consciousness technique through the portrayal of different female characters and dramatization of real-life situations.

To conclude, one can say that Manju Kapur holds her concern for Indian Women in her novels. She concentrates on various feministic issues like female education and their empowerment, financial independence, and eradication of child marriage. She narrates important issues of class and nationhood and connects them to the emerging sense of female identity in postcolonial India. Manju Kapur's message is loud and clear that society

would be better off if women are competent and capable. Women in Postcolonial India have opened the cage. before flying out they have to strengthen their wings and vision to avoid perching on dangerous branches and places. Characters deal with Feminine Roles: Feminist/Female Responses, Feminist consciousness, and the emergence of new women.

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## Study on the Life Cycle of *Philosamia Ricini*, Eri silkworm Reared in Dimapur, Nagaland

Chubanaro Aler

Research Scholar, Department of Zoology, St. Joseph University, Nagaland

### Abstract

*Eri silkworm, P. ricini*, is a multivoltine sericigenous insect that is mostly raised by farmers in India's northeast. Because castor plants are so readily available in rural areas, the eri culture is practised all year round in traditional areas. Being the only nation in the world to produce all five types of natural silk—Mulberry, Eri, Tasar, Oak tasar, and Muga—gives India a special distinction. Among these silkworms raised for commercial purposes, the eri silkworm is a fully domesticated, multivoltine, polyphagous species raised year-round. The complete life cycle of eri silkworm is about 30-32 days, which includes the eggs, larva, pupa and adult stage. In just a few seconds, freshly laid eggs start to turn a milky white colour. Eggs have a blackish colour before they hatch. In 8 to 11 days, eggs will hatch. The average egg length is 1.29 mm, whereas the average egg breadth is 1.19 mm. The larva goes through five instars and four moults. The larva is white in colour, covered with a white powdery material, fifth instar larva. The larval stage lasts for 22–25 days. The average length of a larva in its fifth instar is 58.45mm; its average breadth is 11.93mm. The protective cocoon is known as the "silk shell," which is formed of silk thread, here pupation occurs. The pupa is thick and brick red in color, the pupal stage last for 12-15 days. Average length is 24.08 mm and average width is 11.51 mm. The adult moths had a robust appearance, were brownish or black in colour, and were scaled in white. The female moth had a larger abdomen than the male, which was smaller. Adults have a 7–9-day lifespan. The average wing span of a female is 12.52 0.27 cm, whereas that of a male is 10.90 0.42 cm.

**Keywords:** Eri silkworm, silk, commercial, lifecycle.

### 1. INTRODUCTION

*Samia ricini*, eri-silkworm, is one of the most used silkworm commercially and for human exploitation. For their precious eri silk, these silk-producing insects are raised in great numbers. It has five to six generations per year and is multivoltine and polyphagous [1,2]. Eri silkworms are classified as non-mulberry silkworms and they reflect the richest cultural and traditional aspects of India. Eri silk is one among those that has grown in popularity recently due to its domestication and multivoltine nature [3]. Several sericigenous insects and their host plants have made North East India a rich source of Seri biodiversity. The term "Eri" is a castor-related derivative of the word "era." The lepidopteran family Saturniidae includes the multivoltine, polyphagous, and holometabolous eri silkworm, *Samia ricini* Donovan. The non-mulberry silkworm is one of the most exploited, domesticated, and commercialised species. It is fairly widespread in the Northeastern part of India and may be raised year-round indoors while being fed a variety of plants. It consumes approximately 29 different host plant species [4]. Castor (*Ricinus communis* L.), barpat (*Ailanthus grandis* Prain), kesseru (*Heteropanax Fragrans* Seem), barkessera (*Ailanthus excelsa* Roxb.), tapioca (*Manihot esculanta* Crantz), and payam (*Evodia flaxinifolia* Hook) are the main feeding plants for eri silkworms. Castor is the most popular host plant [5]. The preference of the eri silkworm for their host plant, listed in order of preference as follows: castor > tapioca > papaya > barkessera > gulancha. The two most significant host plants for the eri silkworm are castor and tapioca, however other perennial tree species, such as kesseru and payam in the north-eastern states, may provide additional food during the off-season [6].

### 2. OBJECTIVES

- To rear a batch of eri silkworm to study their complete life cycle.
- To understand the different stages of eri silkworm from larva to adult and the time taken for moulting.
- To know the incubation period and adult longevity.

### 3. METHODOLOGY

*Construction of rearing house:* The construction and maintenance of ideal rearing house is very important for significant growth of the silkworm. Eri silkworm are raised indoors, and their housing must be constructed with a sufficient number of windows to maintain a healthy atmosphere. Ventilators must also be installed with nylon netting to prevent flies from entering. The rearing house needs to have enough room for raising and mounting

young and old silkworms, as well as for leaf reservation. It ought to have easy access to a disinfection and cleaning facility.

*Selection of rearing season:* June through October is the greatest time of year to raise eri silkworms because this is when the rearing results are the best [7]. The North-eastern part of India has climatic conditions that are ideal for eri culture, and eri silkworms can be raised in 4-5 overlapping crops in a year.

*Collection of Eri silkworm seeds (eggs):* The eri silkworm seeds were collected from Dept. of Sericulture, Dhansiripar, Dimapur, Nagaland.

*Incubation and hatching:* Eggs are forced to hatch during the incubation phase under perfect conditions for temperature, humidity, light, etc. Egg boxes are used to store the disease-free layings (dfls) of eri silkworms until they hatch. For uniform hatching, the dfls are maintained in paper boxes or plastic egg hatching boxes. The eggs are retained and spread evenly in a thin layer in the box during incubation to facilitate.

*Brushing of worms:* Transferring newly emerged larvae from eggs to the rearing bed is known as brushing. Worms that have been brushed within the first three days are often deemed suitable for commercial rearing. For best results, brushing should be done in the morning.

*Feeding:* Depending on the stage of larval development, certain plant leaves are more or less suitable as feeding. When raising young age worms, 4-5 feedings should be given each day at regular intervals. Worms require five daily feedings as they get older. More than enough leaves should be available at night.

*Temperature management:* Effective rearing depends on maintaining the ideal environmental conditions at various stages. A fine weather environment refers to individual factors such as temperature, humidity, air and light. High humidity prevents leaf wilting and improves silkworm nutrition, but it also aids in the spread of silkworm diseases. Early instars have high and late instars have low temperature requirements.

*Bed cleaning:* As the larvae rise, the amount of trash and unconsumed leaves grows on the rearing bed, which ultimately encourages the growth of pathogenic organisms. Therefore, regular bed cleaning is necessary to maintain the worms' health. The worms along the new foilage should be gently transferred to a fresh raising tray before bed cleaning.

*Ripe/mature worm collection:* When the larval life cycle is over, the matured fifth stage larvae discard the entire excreta, which includes liquid and semi-solid materials. When the mature worms are gently rubbed between fingers, they make a hollow sound. It is now appropriate to select the mature worms and mount them.

#### 4. RESULTS & DISCUSSIONS

After a total duration of 35 days, the entire life cycle of Eri silkworm is completed. It was observed that with the change in temperature and humidity, the larva growth differs. Under favourable condition, the larva takes lesser date for moulting. On regular feeding and proper maintenance of the larva, the larva takes 3-5 days each to moult to the next instar. The life cycle of silkworm is divided into four parts namely – the egg (ovum), larva, pupa and moth (adult). 8-11 days are required for the egg, 22-25 days for the larvae, 12-15 days for pupa and 7-9 days for adult 7 generations of silkworm at maximum can be reared in a year.

*Egg:* The eggs are oval shaped with medium size. It is covered by a hard chitinous white coloured shell. The shell colour may be creamy as in wild forms. The eggs are attached to the surface with one another by colourless glue. A female moth after copulation lays about 300-500 eggs in cluster. The laying may continue for 3 to 4 days but the eggs of first two days are only kept for rearing.

*Larva:* The egg hatches into a larva. The larval stage comprises of 20-24 days. Larval life consists of five larval stages called the instar larva- 1<sup>st</sup> instars larva, 2<sup>nd</sup> instars larva, 3<sup>rd</sup> instars larva, 4<sup>th</sup> instars larva, 5<sup>th</sup> instar larva.

*Pupa:* Larva passes into the next stage called the pupa. The pupal stage lasts for 10-12 days. The larva of last instars before moulting ceases feeding and transform into a chrysalid. The larva excretes silk substance after settling in a crevice and spins the cocoon.

*Adult:* The adult moth emerges from pupa. The adult last for 3-5 days during this period the adult moth does not feed and lives for reproduction.

#### 5. CONCLUSION

This study briefly explains the life cycle of Eri silkworm (*Philosamia ricini*), with the proper knowledge and understanding of the life cycle of eri silkworm better rearing practices can be performed and the adequate amount of feeds to be given can also be estimated. Alternate source of feeds can also be used efficiently after knowing the life cycle thoroughly which will help in understanding the different larval stages and as to when

secondary feeds can be given as castor being the main host plant for the eri silkworm, secondary host plants can only be feed after a specific larval stage.

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## Communitisation as a Vehicle of Decentralization: A Study of Local Governance in Nagaland

**Keneilhounuo Usou**

Research Scholar, Department of Sociology, St. Joseph University, Nagaland

**Dr. Tiatula Ozukum**

Research Supervisor, Associate Professor, Department of Sociology, St. Joseph University, Nagaland

### Abstract

*The first initiative towards building a decentralized government in the country began with the 73<sup>rd</sup> and 74<sup>th</sup> Amendment of the constitution of India. Decentralization which is an important component of a democratic government is seen as a primary vehicle for transferring powers and responsibilities to the local government to participate in decision making process for the overall development of the local bodies. In Nagaland, the Village Council and the Village Development Board acts as a statutory body to deliver public services at the grass root level. In Traditional Naga society, villages prevailed independently because of the rich social capital inherent in Naga society. The informal social control accompanied by the rich social capital has facilitated coordinated action for mutual benefit. The mutual trust and network of relationships which the people share has mobilized them towards achieving shared goals. With the inception of Communitization in Nagaland in the year 2002, communitization has gained impetus as a process of decentralization which caters in delivering public services and acts as a process of transferring ownership of public resources to the user community at the grass root level. As a cross-sectoral policy, communitization is a vehicle which creates partnership between the government and the user community in managing public institutions and delivering public services. Initially, communitization was introduced in three government sectors, namely –Elementary Education, Electricity and Health Services. As envisaged by the pioneers of Communitization to create partnership between the government and the community. Communitization has been constituted into various committees – Village Education Committee (now known as School Management Committee), Village Health Care and Village Electricity Management Board which takes the responsibility of transferring of public resources and assets, empowerment, decentralization, delegation and building capacity – with an aim to improve the overall development of the community. The state government promotes decentralization and local governance through communitization by assigning the responsibility to the user community to take the governing institutions as its own and to make decisions and provide services to the people thereby participating in the development of its own. Communitization which took off successfully in a very short time owes its success to the rich social capital inherent in Naga society. The present study therefore attempts to bring out how social capital has paved the way for successful implementation of communitization, thereby enabling communitization as a vehicle of decentralization and an act of local governance in Nagaland. The methodology adopted in this paper is descriptive in nature. The data were collected from primary sources- interview method and government reports- to delve into the achievements of communitization in Nagaland and secondary sources like books, journals, research articles, web sources etc.*

**Keywords:** *Communitization, Decentralization, Local Governance, Social Capital*

### 1. INTRODUCTION

In the later part of 2001, Mr. R.S. Pandey, the then Chief Secretary to the Government of Nagaland coined the word ‘Communitization’ to express the notion of government sharing the management and operational control of Government Institutions and Services in various social sectors with the community in order to improve their functioning. He circulated a concept paper on Communitization which says that the process is aimed at (i) promoting government-community partnership; (ii) empowering community; (iii) channelizing their strong “social capital” into management and improvement of the social services; and (iv) decentralization and delegation of government powers in respect of such management (Department of School Education, 2003:17).The notion of Communitization is defined as “a unique partnership between the government and the community involving the transfer of ownership of public resources and assets, control over service delivery, empowerment, decentralization, delegation and building capacity-all with the aim of improving the delivery of public utility system” (Govt. of Nagaland, 2004: 11).

Pandey (2010) opined that the rich social capital of the traditional Nagas was diminishing with the onset of modernization and hence he put forward this concept to revive the social capital that has remained dormant in

the society (Pandey, 2010: 107). Communitization was perceived to be a good idea and subsequently the enactment, namely, Nagaland Communitization of Public Institutions and Services Act, 2002 was created in order to cater to the dire need of the situation to engage the user community in the development of its own community. Since then, communitization has become widespread throughout the State. This has instilled a sense of ownership of government institutions among the people at the grass root level. It acts as a bridge between the government and the user community thereby enabling partnership between the two organizing bodies for effective functioning of the government. In traditional Naga villages, people had a sense of belongingness and a feeling of oneness. The mutual trust and bond the community shared is undeniable. This has made possible for every single village to exist independently. All village activities were collectively carried out and every individual was conventionally responsible towards building its own community. With this backdrop in mind, it was believed that communitization could best help to revitalize the social capital inherent among the Nagas.

## **2. CONCEPTUAL FRAMEWORK: DECENTRALIZATION, LOCAL GOVERNANCE AND SOCIAL CAPITAL**

### *Decentralization*

Decentralization is an important component of a democratic government. Decentralization aims to enable people at the grass root level to participate in the decision making process. It attempts to promote community participation and delegate power, transfer political and administrative power to the local bodies to secure smooth and efficient functioning of public services. Decentralization is the process where a central government relinquishes some of its powers and management responsibilities to local governance, local leaders, or community institutions (Ribot, 2004; Dressler et al., 2010). Decentralization is defined by Rondinelli (1986) as the “transfer of authority and responsibility for public functions from the central government to subordinate or quasi-independent government organizations or the private sector”. Decentralization has also been defined as the assignment, transfer or delegation of political, administrative and fiscal responsibilities to lower levels of government’ (Singh, 2013:40).

### *Village Governance*

The concept of governance is not new to Independent India. India had been a region with many petty kingdoms having its own rulers who ruled, managed and involved in politics, administration and public affairs of the state. Concise Oxford Dictionary implies that governance is ‘the act or manner of governing; the office or function of governing’. Governance refers to self-organizing, interorganizational networks characterized by interdependence, resource-exchange, rules of the game, and significant autonomy from the state (Rhodes, 1997:15), Lindert and Verkoren argued that local governance is the key agent to local sustainability and to eradication of poverty (2019:9).

Decentralization is also studied in relation to local governance. In fact, local governance and decentralization are at times alternately used and alternatively applied to understand community mobilization or community participation for decision making process. Local governance as opposed to central governance refers to the governing system within a district or place, and which do not directly affect the nation at large (Odgers, 1899:1).

When we look at the traditional Naga society, local governance is not foreign to many communities. For instance, in Naga society, particularly the Sumis and the Konyaks, it is the village head that played significant role as the head of the village and administered the village. Among the Aos, Putu Menden (Village Council) which refers to a council of elders is a self-governing body and manages the affairs of the village within its jurisdiction. Thus, self-governing institution was prevalent even in traditional Naga society.

### *Social Capital*

Looking back at the successful implementation of communitization in Nagaland, one cannot behold its credit from social capital. Social capital has acted as one great impetus towards the success of communitization. It has played pivotal role in pushing people forward to take part in promoting and developing governmental institutions within one’s own village jurisdiction. To clearly understand the concept of social capital various definitions of social capital by various scholars and writers are mentioned below;

According to World Bank, “Social capital refers to the norms and networks that enable collective action”. In another definition, World Bank defines - “Social capital as the institutions, relationships, and norms that shape

the quality and quantity of a society's social interactions... social capital is not just the sum of the institution which underpins a society – it is the glue that holds them together". (National statistics, 2001:9)

Robert Putnam considers social capital as an attribute of community, a property of cities or nations. For Putnam, social capital includes...

‘...the features of social organizations such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefits. He mentioned that social capital enhances the benefits of investments in physical and human capital (Putnam 1994:6-7).

Pandey, who introduced the concept of communitization, has explained

‘...social capital as the intrinsic strength in the social network within a community which guides the common interest of the society’. He states that “man is a social animal and naturally lives in and is nourished by the social network...such interrelationships and connections are the glue and the strength that hold people together and enable them to relate to others (Pandey, 2010: 66-67).

### 3. FEATURES OF COMMUNITIZATION

With the enactment of Nagaland Communitization of Public Institutions and Services Act, 2002 (Act No. 2 Of 2002), management of local public utilities, public services and the activities of the Government such as – elementary education, health sector, electricity, water and sanitation and other welfare and development schemes took off successfully.

*Education:* Nagaland Communitisation of Elementary Education Institutions and Services Rules, 2002 covers all primary and middle schools as envisaged under the rules. According to this rule, the village council had constituted a Village Education Committee (VEC) which has been renamed as School Management Committee (SMC) adopts all duties and responsibilities of the VEC in managing elementary education in the village and school. The SMC has the responsibility to manage, direct, supervise and control the school(s) ensuring administrative, academic and financial affairs.

*Health Sector:* Through the Nagaland Communitisation of Health Sub-Centre Rules, 2002, rules were promulgated to create a committee for looking at the overall health care of the village community. Thus, Village Health Committee (VHCs) was set up in every village which manages the respective Health Sub-Centre in the village vicinity. The Common Health Sub-Centre Committee is responsible to supervise, manage and direct the VHC in-charge of managing the common Health Sub-Centre. (Pandey, 2010:134-135). The VHC supervises, direct, guide and support the work of the Sub-Centre staff and acts as the legal authority to manage the health centres in the village relating to health sector. The Health Centres are supported by the Health & Family Welfare Department. The Department ensures deployment of Health workers in the communitized Health Centres.

*Electricity Management:* The Village Electricity Management Board (VEMB) came into force through Nagaland Communitisation of Electricity Management in Villages by Village Councils Rules, 2002. Like the other SMCs and VHCs, the VEMB monitor the availability of the power supply in the village. VEMB acts as watchdogs and checks power theft, and also looks after the connection, disconnection of power supply, billing and collection of payments, installation of meters etc. In power sector, VEMB represents the User Community. Single Point Meter (SPM) for each village is provided to verify the total supply of power to the village. And a single bill as per the consumption shown by the SPM. The amount is then segregated into individual bills based on consumption by the households. Under communitization, the Government Department of Power and the VEMBs work as partners where the Department takes the responsibility of bulk supply of power and the village community as represented by the VEMB acts as the retailer.

### 4. ACHIEVEMENTS OF COMMUNITIZATION

Since the implementation of the Act, stories of its positive impacts- by way of better management of the public institutions, improvement in the sectors, greater people's participation have poured in from different corners of the state. Witnessing the positive impact of the programme and the overwhelming support by the people, it started with an aim to make Communitization ‘a people's movement and spread it to more areas and in many sectors such as water supply, sanitation, tourism, roads etc. One instance of the success story of Communitization in the three sectors- elementary education, electricity and health care shall be discussed below.

*Elementary Education*

In 2002, on a pilot basis, 205 elementary schools in 90 villages were identified for the project. In 2003, 197 additional schools in 182 additional villages were incorporated voluntarily into the system.

**Table 1 - Early Communitization Programme**

First Phase 2002-2003		Second phase 2003-2004	
Total schools	1566	Remaining Schools	1361
Communitized	205	Communitised	197
Non-communitized	1361	Non communitised	1164
Total Communitised Schools between 2002-2004 = 205+ 197= 402			

*Source: The First Year of Communitised of Elementary Education in Nagaland 2002-2003, Government of Nagaland 2003.*

When elementary education was communitized under the Act, it was noticed that many schools started to perform better in both academics, administrative, financial and infrastructure level. There was more enrolment of both male and female students. Increased attendance percentage of the teachers and staffs was commendable. The pass percentage of the students has also increased without a doubt in many primary and middle schools. Inclusion of the members of the village and parents in the School Management Committee has instilled in them a sense of belongingness and encouraged the people to effectively contribute towards building a strong and effective education system in the community. One VEC (SMC) that is noteworthy of mention is the Village Education Committee (SMC), Rüsoma. With the implementation of communitization in education, Rüsoma GPS and GMS had showed remarkable and visible progress in academics as well as in infrastructure.

The Annual Progress Report of VEC Rüsoma for the Year 2005-2006 published in '*Achievement of Communitization of Elementary Education in Nagaland, 2007*' gave a glimpse of its progress and achievements in education. The long pending land dispute of GPS Thephezou which the Village Council and the department of education failed to solve was settled with the efforts of the VEC. Funds from the SSA were utilized for repairing infrastructure - The School under VEC Rüsoma viz. GMS Rüsoma, GPS Thephezou and GPS Rüsö Bawe received high turn up in enrolment and the number of students had increased to 229 from the total 209 as compared to the year 2004-05. Enrolment of girl students also increased and students drop out cases was almost unknown. Provisional rooms for computer class, urine sheds, water tank etc were constructed in the school. Attendance and regularity of teachers has improved. Free text books, note books, uniforms and bags from the department encourage the students and lessen the burden of the poor parents. Upgradation of the school from class- II to class- IV was also another big achievement under the working of the VEC. Regular monitoring and assessment of the school by the VEC (presently known as SMC) has improved the overall education system of the school, and particularly in both academics and infrastructure (*Achievement of Communitization of Elementary Education in Nagaland, 2007:17-21*).

*Electricity*

After Communitization of Electricity in Nagaland, the VEMB has been playing an active role in delegating the works at the local level. In Nerhema Village, in accordance with the Act, a VEMB have been set up with one member each from the 8 khels in the village and a representative from the Village Council. The members actively monitor and manage the activities of power supply in the village. On being interviewed, VEMB Secretary explained,

“Before 2020, the VEMB members were exempted from monthly bill payment to compensate for the service they render towards the village. However, today, no allowances are provided to the committee members unless they go for bill/ meter reading. An amount of ₹ 500 per head is allotted to the members as a daily wage as reading of meter takes a day or more. Alternately, 2 members are assigned every month for bill reading and collection of payment. Once the bill readings are collected, the ledger prepares the bill/receipt which are again distributed to the users to make their monthly payment”<sup>1</sup>.

A VEMB member stated,

“An amount of ₹5 is imposed as late fine against the defaulter. 20% of the revenue collected is retained by the committee which is used to provide wages/ salary to the person in charge of collection of bills. During the Covid-19 pandemic, the VEMB also provided commodities towards few individuals who were under quarantine in 2020. During October 2021- November 2021, 2 new electrical poles were set

## Sustainable Environment, Manifestation and Augmentation

up at Pheleva and Tsakha. In the year 2020- January 2022, a total of 9 new connections has been set up.<sup>2</sup>”.

The committee also repairs lights, street lights, check underlying wires and assist in the work of clearing of trees/ objects touching the electrical lines within the vicinity of the village. With the establishment of the VEMB, electrical bill by the user is regularly paid. There is more cooperation from the community and complaints regarding high light bill has reduced. VEMB also repairs bulbs at the end of the year in regard to the festive season. In 2021, a community member also distributed 2 power saving bulbs/ tubes to every household in the village. Such initiative by the villagers has encouraged people towards building the village with efficiency and effective service delivery.

During the course of the interview, one of the respondents narrates,

“Between, December, 2021- February, 2022, transfer of power station became the need of the hour as the former station falls under private property which was to be utilized by the owner. VEMB therefore took the initiative and transferred the power station at Khobazou. No assistance was provided by the government for the transferring of the station. However, the Village Council sanctioned funds and carried out the work along with the VEMB<sup>3</sup>.”

### *Health Sector*

Communitization of health services has improved the health status of the village. Although there is still room for improvement, we cannot deny the role VHC has been playing to create awareness about health care and in providing medical facilities in the VHCs and sub- centres. The village community has adopted a feeling of ownership over the health centre and work towards the upliftment of the health condition in Nerhema Village. One VHC member exclaimed,

“In 2014-15, when the village required a new plot of land to set up a new building for Village health sub-centre, the Village Council sought the assistance and directives of the government. However, on receiving no positive response from the government, the community members took initiative to purchase a new plot of land for the new building. No specific financial assistance was allotted by the government. The VBD took up the work along with the VHC and completed the work.<sup>4</sup>”

Pathak Broome (2014) mentioned in her work “Communitization of Public Services in Nagaland - A step towards creating alternative model of delivering public services?” discussed that in Mokokchung district, almost all health centres’ infrastructure has improved largely because of the community participation in building their own society. Community contribution in cash and kind has facilitated towards better infrastructure and new development (Broome, 2014:17).

Broome further narrates,

“Before communitization there was no hospital in Kumlong ward within Mokokchung city, the local committee members collected resources and constructed the hospital building. In addition, the committee also bought some property which was rented out and resources thus generated are used for running of the Health Centre”.

Similarly, in different areas of the state, the constituted committees have encouraged the user community to contribute towards the development of its own. Since its inception, communitisation have been encouraging and enabling people to voluntarily engage in the development activities of the village, thereby benefitting the people tremendously.

## 5. CONCLUSION

Taking these few examples of the success of communitization among many, it may be argued that the aim envisaged by the pioneers of the Act has gone a long way in enabling community participation for self-governance in Nagaland. Handling responsibilities to the user community has empowered them to monitor, manage and ensure effective delivery of public services. It has also given a platform to the user community to significantly contribute towards improvement of infrastructure and services and has enabled people at the village level to participate in the decision making process and has enhanced effective functioning of the society at all levels. In Naga society, communitization has weaved the society to secure decentralization at the grass root level. The village people also became more conscious of their rights and actively participate in the development of the community as well. The achievements scored by the VHCs, VEMB and SMCs were made possible as a

result of delegating power and responsibility, assets and resources from the government to the user community. Communitization has promoted community participation at the grass root level and has engaged the local bodies to managed and maintained local resources for overall development of the community. Thus, communitization promotes democratic principles and acts as a vehicle of decentralization in Nagaland.

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## **A Study on Campus Recruitment Management System**

**Subi Khatun**

B.C.A. Final Year, Department of Computer Science, St. Joseph University, Nagaland

**Dr. S. Pradeep Kumar Kenny**

Professor and Head, Department of Computer Science, St. Joseph University, Nagaland

**A. Prem Kumar**

Associate Professor, Department of Computer Science, St. Joseph University, Nagaland

### **Abstract**

*A study on Campus Recruitment Management System for the successful placement of the outgoing students which will also help in reducing unemployment and increasing the links of various organizations. Our country like India where in there are lakhs of graduates & post graduates pass out each academic year and fall themselves into the category of unemployment leaving a very less percentage of placements. Universities and the affiliated colleges initiated this process to reduce the gap between company and academics. The companies too have joined hands with university and colleges with special recruitment teams to capture the talents within the student segment. It will lead to minimize the unemployment problem to certain extent with never give up attitude and passion towards dream job consistently will provide success as we know the opportunity doesn't knock twice.*

### **1. INTRODUCTION**

Campus Recruitment Management System is a project which provides an easy way for the company to hire candidates and also provides the facility to candidates to apply for different jobs. Presently, the system includes a manual process through files, folders, and binders. Eventually, the job seeker has to find the company which is offering the required profile. Then check the eligibility of the post or do a search on eligibility basis by visiting the various companies which he knows of. The system helps both types of users in providing the ease of manual work. This system also provides the candidate to write their skills and talents with a full interface to get a job. It helps the organization also to search for a profile with specific skills only, so they do not have to go through every job seeker asking him/her about the skill they needed.

#### *Objective of campus placements:*

The major objective of campus placement is to identify the talented and qualified professionals before they complete their education. This process reduces the time for an industry to pick the candidates according to their need. It is a cumbersome activity and hence majority of the companies find it difficult to trace the right talent.

- To understand the campus recruitment process
- To assess the importance of campus recruitment from student's perspective.
- To burst out the campus recruitment process myth
- To reduce the time for Users.
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#### *Research gap and significance of the study*

Most of the research work available post covered on the recruitment / placement of the graduate and post graduates talks about the situation today and skill set required by students or impact on placements for the year 2020 across institutions and sectors. This paper talks about the recruitment / placement scenario in general for both graduate and post graduates in India based on the primary research work done. The paper also tries to understand the recruitment drive pattern for various companies and their outlook for future.

#### *Features of the campus placements:*

- The drive initiates to recruit the freshers.
- Direct recruitment team involving and issuing offer letters.
- Job Profile & Job Description are clearly made understood during the company talk through Presentation.

*Types of campus placement:*

There are two types of campus placement. They are on- campus and off-campus.

## 2. LITERATURE REVIEW

The following section presents the literature related to the present study. The Literature review is about understanding the research on this covid, corona situation in terms of placement. Also, LR tries to study the campus recruitment across various institutes across India and what methods can be adapted for better placements. Singh (2020) discussed post COVID placement scenario and emphasized the importance of being social online to imbibe a different professional culture and new normal. The new hiring trends would be e-hiring, online training, e-joining and on-boarding with major changes in salary structure, job role and responsibility. The job focus will be on cutting edge technologies and skillsets. Ali (2020) proposed the impact on placement process due to COVID. He discusses at length on how placement scenario will not affect much for the top companies but it will give opportunity for other companies to hire in this period. Also, if there will be a different approach in hiring for summer and winter batches. Aithal et al., (2016), proposed a placement model which is relevant in today's time. It also gives an online or E-recruitment model to serve promotion of a robust green environment. The model gives high benefit and advantage factor to corporates as well as autonomy to students so that they can navigate and browse corporates online making it a paperless online recruitment model. Tagra (2020) discussed the placement scenario in fashion Institutes like NIFT etc. It says that the placement happened well in the beginning of the year but after April the students are still waiting for companies to hire. HRD Ministry appealed to the companies to not withdraw any job. The article talks about the various sectors in which the placement activity happened and the % placement like Consulting, sales & marketing and finance were the most sought-after domains. Apart from traditional recruiters, several new companies from diverse sectors were also involved in the campus placements. Some companies are rescinding job and internship offers after being negatively impacted by COVID-19. Junior students are finding it harder to find internships, especially foreign research opportunities.

## 3. RESEARCH METHODOLOGY

The researcher has conducted primary and secondary research. A strong theoretical background was derived by studying papers published in journals of repute such as Scopus, Jstor, Taylor and Francis, etc. The paper talks about the recruitment / placement scenario in general for both graduate and post graduates in India based on the primary research work done. 50 companies were selected at random and the questionnaires were emailed to them. Data was collected from 39 companies and analysed to understand the placement scenario for the students who will undergo the drive in 2021. The paper also tries to understand the recruitment drive pattern for various companies' weather the online will now be routine or are the companies willing to come to campus for the drive. Also, the paper looks to analyse company outlook for the future. The data was collected through questionnaire from 39 companies in various sectors (IT, Accounting, F&B etc.) from their offices in Pune & PCMC area. But it shows the overall trend in the company and it is based on their spread in India and Abroad. So, the data collected can be said to be true for across the globe. It was shared with industry to get their feedback or collect on the recruitment scenario. (Questionnaire is attached as Annexure 1). The companies were selected through random sampling method. The data collected was analysed using MS excel.

*Pool Campus:* This job placement program is conducted within a group of colleges/Universities. And in this job is given as an off-campus placement. This job placement program is for students from other institutions. This program will be conducted in a common place (it may be in a college or in some public place) where students from different colleges will take part.

*Project Placement:* Companies recruit students to do their academic project in the interior's industrial environment.

*Student Internship Placement:* Companies recruit the students as interns. Internship will be during their student is out.

### *Campus Recruitment Procedure*

*Pre-Placement Talk:* A presentation about the company will be made during the pre-placement talk. Basically, the presentation includes the information like selection procedure, company's milestones, organizational



achievements, candidate scope of improvement within the organization if selected, salary, employment benefits. Usually, this presentation will end up with question and answer session, students given chance to ask questions about.

*Educational qualification:* Companies who are interested in campus visit for recruitment purpose will have specific qualification criteria. Qualification criteria include marks or grade range, specific program. Basically, company go for specific professional like MCA, MBA to recruit those people because their qualification suitable for their criteria.

*Written Test:* Qualified students will undergo a test. This is usually a simple aptitude test but depending on company and the position looking for, the difficulty level of the test may be at the higher side.

*Group discussion:* Most of the companies will have this round as a filtering round. This round may or may not be conducted. A common topic is placed before the group and a formal discussion or knowledge sharing is expected by the judge. Purpose of this round is to check communication skills, etiquette of person, listening ability, convincing power, group leadership, leader or follower and many more thing are evaluated on the basis of requirement or the particular intention of organisation or company. It is very important to keep yourself updated with latest news and discussion topics for appearing in GD round.

*Technical Interview:*

Based on outcome of above said process, students will further undergo a round called technical round. This round evaluates the technical ability of the student. In most of the cases this will be an individual round but it may be grouped with the formal interview.

*Formal interview:*

Final round of the selection process, where the student's stability and his confidence level towards the particular work will be evaluated. The interview focuses on overall personality of the candidate. The more practical application knowledge a candidate has, the more chances of their selection increase. So having worked on projects in the industry, internships in relevant companies and industry visits to brands in the same sector will enhance a candidate's chance of selection.

*Post-Placement Talk:*

Once the student is selected, he will be given an offer letter. Company's executive may provide guidelines about joining procedure and other prerequisites if needed.

#### 4. OBJECTIVE OF THE STUDY

- The impact of campus placements on the growing unemployment.
- How campus placement works with a perspective to hunt.
- For talent within the student segment.

*Objectives from different perspectives*

*Company's perspective:*

- Time bond is the main key factor
- Selection can be done on basis with internship, probation, and regular.
- Young talent acquisition.
- Cost effective.

*Student's perspective:*

- Opportunities at door step.
- Visit of dream companies.
- Job offers letter before course completion.
- Get rid of gullible job consultants.
- Hassle free process focusing right job at right time.

*Advantages:*

- Explore the skill based technical and non-technical talents.
- Exposure to MNC's based online aptitude test formats, Group Discussions, Technical and HR rounds.
- Direct contact with special recruitment teams.
- Immediate selections.
- Attractive salary packages as a fresher.
- The companies will be benefited from getting wide choice of candidates to select for different job posts.
- Students have the advantage of getting a good job according to their qualification level even before the completion of their academic course in university.
- An organization through effective campus recruitment system finds an opportunity to establish a link with the next batch of students.

News Inputs: 1000 students get jobs in 10 days at IIT Kharagpur (December 11, 2015 | PTI).

*KOLKATA:* A record number of over 1000 IIT Kharagpur students have bagged lucrative jobs in just ten days of the first phase of placement season, officials said today. The total number of offers extended has crossed 1100 across engineering, management and human re-sources departments ever since placements began on December 1. "We took 20 days to hit this milestone last year.

*IIT-Indore student gets Rs 1.7 crore job offer from Google:*

INDORE: A 21-year-old B Tech student of IIT Indore has bagged a job with Google at an annual salary package of Rs 1.7 crore, one of the highest packages offered by the US-based internet giant during campus placements at the premier institutes. Gaurav Agarwal, a student of B Tech final year in Computer Science and Engineering, has ac- cepted the attractive offer made by Google.

*Facebook interviews IITians via Skype, placements:*

CHENNAI: Campus placements across the seven older Indian Institutes of Technology got off to a colourful start on Wednesday. The highlight of this placement season was at the IIT Madras, where for the first time hiring went high-tech with the popular social networking site Face- book conducting interviews for short-listed students via Skype, the Internet voice protocol service. Online job portals which are helping to minimize the gap between the industry and job seekers by posting the requirements and profiles, to name few, we have www.naukri.com, www.monster.com, www.timesjobs.com etc.

*Disadvantages:*

- Huge turn outs when it is off campus drives.
- In the current recruitment management system, candidates are not able to get full details of any organization.
- Candidates are not able to get important information on time.
- Also it doesn't provide details of the company arrival date, time and eligibility criteria because of which students fails to prepare for the interview in advance.
- It is time consuming.

*Pre Placement DO LIST:*

- Know your Skills
- Build a resume
- Know the Job description
- Know the opportunities
- Practice mock-interviewing
- Practice for written tests
- List topics for group discussions
- Know profiles of companies and industries
- File all certificates

*Purpose & importance of recruitment*

- Create a talent pool of candidates to enable the selection of best candidates for the organization.

- Determine present and future requirements of the organization in conjunction with its personnel planning and job analysis activities.
- Recruitment is the process which links the employers and job seekers.
- Increase the pool of job candidates at minimum cost.
- Help increase the success rate of selection process by decreasing number of visibly under qualified or overqualified job applicants.
- Help reduce the probability that job applicants once recruited and selected will leave the organizations only after a short period of time.
- Meet the organizations legal and social obligations regarding the composition of its workforce.
- Begin identifying and preparing potential job applicants who will be appropriate candidates.
- Increase organization and individual effectiveness of various recruiting techniques and sources for all types of job applicants.

#### *Busting common myths about campus recruitment*

College life is an important phase for all. It is a stepping stone for those who wish to pursue a lucrative job and build a successful graduate career. As a student, you need to make good use of opportunities and resource your university offers you, including the chance to get in touch with big industry names via campus recruitment events.

#### *Campus recruitment myth #1:*

Only technology and business majors tend to benefit from campus placement. The placement cell of the university is responsible for inviting industry specific organizations to recruit you and your course mates. If your college does not bring in recruiters based on full range of different disciplines and specializations it covers, then there is a possibility that the campus will talk to students from any specialization. The recruiters may have empty slots in between the scheduled interviews. You can politely insist that they interview you in one of those free slots.

#### *Campus recruitment myth #2:*

Recruiters come to your campus only to hire you and make you, their employee. It is true that recruiters conduct on-campus recruitment to mainly increase their headcount. However, they also do so in order to increase their visibility and promote their brand. Branding strategies are devised by companies' way before they step into your campus. Its as given a lot of importance because once they acquaint students with the name and nature of the firm, they will be able to find more applicants for each graduate job they need to fill. First year students are often young and impressionable and communicate a lot, making them the perfect target audience. When a company brands the graduate career profile well, it builds a positive synergy around it, making it more desirable

#### *Campus recruitment myth #3:*

Only major companies come for on-campus events. It has been long observing that most of the firms that come to universities for recruitment are big companies. But to think that only multi-national and big corporate houses invest in campus hiring is wrong. You will also find some small and mid-level companies coming to hire young employees.

#### *Campus recruitment myth #4:*

The companies coming to your college are the only forms offering jobs to new graduates. This is not true. It is not remotely close to reality, because in reality there would be other firms that have openings and would be hiring to fill up these vacancies. Only a few firms choose to take the route of campus hiring because they can make the most of it and hire in a cost-effective way. And just because one means that the remaining organizations in the same field are not recruiting students at all. They are definitely doing so; they just do it differently.

#### *Campus recruitment myth #5:*

It is no big deal to skip a scheduled campus interview. On the contrary, it's a huge deal! A single no show can earn you a temporary (up to a year) or a permanent ban from campus recruitment events. Such a ban imposed on you because when you don't turn up for a scheduled appointment, you disappoint the recruiters who were

expecting to talk to you. They may even mad and decide not to return to your school for interviews. And even if they give you a second chance, they are unlikely to hire you because you have already shown an unprofessional attitude. So, forego that temptation to sleep in as it would only end up hurting you more than anyone else.

*Campus recruitment myth #6:*

Campus recruitment conducted by the company is the sole way to land a graduate job. Winners never pin their hopes on just one option. Similarly, if you wish to emerge as a winner, you must never place your bets on just one graduate job search strategy. The answer to this diversification, which should include a job search using the following approaches

- Attending job affairs
- Boosting your presence on social media (Linkedin, Twitter, Facebook)
- Uploading a compelling resume on job search portals
- Hiring job search agents
- Networking in real world
- Applying to the openings mentioned on official company websites

The internet will play a crucial role in your graduate job search. So be smart and spread out efforts to pursue a job using different job hunt strategies.

## 5. CONCLUSION AND FUTURE ENHANCEMENTS

Campus Recruitment Management System can be used by companies to recruit the applicants based on their experience and the further interviews easily. Achieving this objective is difficult using the manual system as the information is scattered, can be redundant, and collecting relevant information may be very time-consuming. All these problems are solved by this project. This system helps in maintaining the information of potential applicants in one place. It can be easily accessed by both applicants and recruiters. It is kept safe for a long period of time without any changes or omissions. It reduces the time. This system helps the job seekers to get every information required for the process.

The following are the future scope for the project.

- Discontinue of particular student after getting placed.
- Bar code Reader based placement system.
- Individual qualification detail with photograph.

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## A Comparative Study on the Immediate Memory Span of Students Aged between 12 and 17

Obangnenia Aier

Dept. of Psychology, St Joseph University, Nagaland

Dr. Watinaro Longkumer

Associate Professor, Dept. of Psychology, St Joseph University, Nagaland

### Abstract

*The current era is always changing and making new discoveries every day and therefore with this, we have forced our brains to expand and develop from a mere primitive brain to a very complex mind which can store a very large amount of storage. Memory is the faculty of the brain by which data or information is encoded, stored, and retrieved when needed. Immediate memory is a type or stage of memory in which individual recalls information recently presented, such as a street address or telephone number, although this information may be forgotten after its immediate use. Immediate memory is frequently tested in assessing intelligence or neurological impairment. In experiments related to visual memory, the stimulus material is presented visually and subject recall in writing, in such experiments the mental images are also visual. In auditory memory experiments the stimulus material is presented auditory either verbally or through tape recorders. The subject also produces the material verbally. Developmental studies of immediate memory indicate that immediate memory span increases with age (Gibson, Osser, Pr Pick, 1963; Haith et al., 1970; Hoffmann, 1927; Keenan, 1972). Research also shows that factors like cultural background and different environmental conditions in which people live can challenge memory in different ways. With this contention, this study attempted to explore three major objectives a) to compare the immediate memory span of students aged between 12 and 17, b) to access the span of immediate memory using digits (auditory) and alphabets (visual) c) to compare if there is any difference in immediate memory span between students from rural and urban sector.*

**Keywords:** Memory, Immediate Memory Span, digits (auditory) and alphabets (visual), aged between 12 and 17, rural and urban sector.

### 1. INTRODUCTION

Memory is the ability to retain information or a representation of past experience, based on the mental processes of learning or encoding, retention, across some interval of time and retrieval or reactivation of the memory (APA Dictionary). Memory is one of the important cognitive processes. Memory involves remembering and forgetting. An influential theory of memory known as the multi-store model was proposed by Richard Atkinson and Richard Shiffrin in 1968. This model suggested that information exists in one of 3 states of memory: the sensory, short-term and long-term stores. Information passes from one stage to the next the more we rehearse it in our minds, but can fade away if we do not pay enough attention to it. Information enters the memory from the senses - for instance, the eyes observe a picture, olfactory receptors in the nose might smell coffee or we might hear a piece of music. This stream of information is held in the sensory memory store, and because it consists of a huge amount of data describing our surroundings, we only need to remember a small portion of it. As a result, most sensory information 'decays' and is forgotten after a short period of time. A sight or sound that we might find interesting captures our attention, and our contemplation of this information - known as rehearsal - leads to the data being promoted to the short-term memory store, where it will be held for a few hours or even days in case we need access to it. The short-term memory gives us access to information that is salient to our current situation, but is limited in its capacity.

Immediate memory is a type or stage of memory in which individual recalls information recently presented, such as a street address or telephone number, although this information may be forgotten after its immediate use. Immediate memory is where we put information briefly until we make a decision on how to dispose of it. It operates subconsciously or consciously and holds up data up to about 30 seconds. Immediate memory is frequently tested in assessing intelligence or neurological impairment. In experiments related to visual memory, the stimulus material is presented visually and subject recall in writing, in such experiments the mental images are also visual. In auditory memory experiments the stimulus material is presented auditory either verbally or through tape recorders. The subject also produces the material verbally. In this study we aimed at finding the immediate memory span of individuals (visual and auditory). The present study consists of twenty 12yr old students and twenty 17yr old students with the hypothesis that older age i.e; 12-year-old students than the younger age i.e; 17-year-old. Developmental studies of immediate memory indicate that immediate memory

span increases with age (Gibson, Osler, Pr Pick, 1963; Haith et al., 1970; Hoffmann, 1927; Keenan, 1972 as cited in *The Effects of Exposure Duration and Practice on the Immediate Memory Spans of Children and Adults* by Sally L. Boswell, Barbara Sanders and Stephen J. Young). With this contention, this study attempted to explore three major objectives a) to compare the immediate memory span of students aged between 12 and 17, b) to access the span of immediate memory using digits (auditory) and alphabets (visual) c) to compare if there is any difference in immediate memory span between students from rural and urban sector. The effect of any stimulus experiences do not perish immediate but it's after effect persists for less or more time in the consciousness. According to Spearman (1927) any cognitive activity starts gradually and perishes gradually.

## 2. METHODOLOGY

### *Subjects:*

There total of 40 students who voluntarily participated for the study. There were 20 twelve-year-old students and 20 seventeen-year-old students from three different institutions.

### *Materials and Apparatus*

1. Three lists of numerals for auditory, the digits were gradually increased. And three lists each of nine letters arranged in different form for visual.
2. Screen.
3. Paper & Pencil for writing.

### *Procedure*

Subject was seated comfortably and in calm and quite atmosphere. For the auditory, while preparing the lists care was taken not to write the numbers in any organized way, i.e. serially, reverse order or odd or even numbers. While presenting the number strings to the subjects, care should be taken not to present the numeral in any cluster form, e.g. 59,729 etc. But each number should be presented as a unit, e.g. 205 as two, zero and live. In each trial the pronunciation and speed should be kept constant. The list should not be shown to the subject. After subject being seated comfortably the following instructions are given. The subject is produced a three number string from the first list after giving him the signal of listen and after presenting the number string he is asked to repeat. The reproduction of string is noted down in the similar form as produced by the subject. The same procedure is repeated with each string of the list, till the subject fails to reproduce the string correctly. The numbers of last correctly reproduced string is counted and noted down. The procedure is repeated with other two lists. The subject is awarded with one point for the correct reproduction of each string of number. The average auditory memory span =  $\frac{\sum X}{N}$  ( $\sum X$ =The total correct number of last string produced by the subject from each list;  $N=3$ ).

In experiments related to visual memory, the stimulus material is presented visually and subject recall in writing, in such experiments the mental images are also visual. While preparing the lists, precautions is kept that (a) the letters are written at proper distance and by dark ink (b) No meaningful relationship exists between the letters of the list (c) organization of letters for different lists were kept different; and (d) equal number of letters were kept in each list. Lists are not shown to the subjects before the start of experiment proper. Each list is shown to the subject only for 15 seconds. After the presentation of each list a rest of 30 seconds is given to the subject. The subject is seated comfortably and the following instructions were given. After making sure that the subject has understood the instructions, the experiment proper begins. After giving the 'ready' and 'see' signals the first list is presented to the subject for 15 seconds and then the list is removed and a paper is given to the subject with the instruction to write the letters of the list in the same form. In this way all the three lists are presented to the subject. A 30 seconds inter list presentation interval is kept.

## 3. RESULTS AND DISCUSSION

### *Analysis and Scoring*

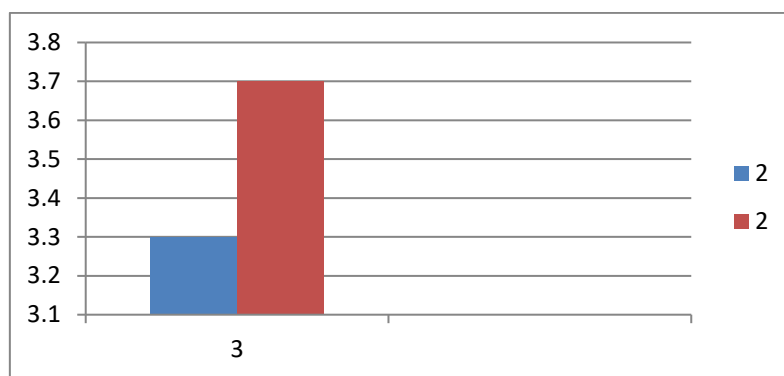
The subject is given a weightage of two for writing a letter at correct place and order, one mark for writing correct letter at wrong place or order. No marks are given for writing a wrong letter. While scoring the list attention is paid to the following errors;

- (1) Mistake of Transposition, e.g. writing MAR in place of MRA;
- (2) Mistake of Omission, e.g. writing MR in place of MRA;

- (3) Mistake of Commission, e.g. writing MRA X in place of MRA and
- (4) Mistake of Transposition and Commission, e.g. writing MAT.

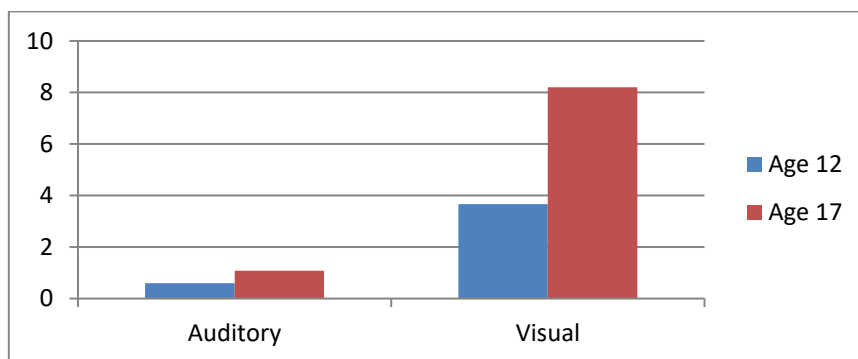
**Table 1 - Mean score of immediate memory span (Auditory and Visual) of age 12 and age 17.**

Visual Mean Score		Auditory Mean Score	
0-6	Low	0-2	Low
7-12	Average	3-5	Average
13-18	High	6-8	High



**Figure 1 - Standard Deviation**

The above data (table 1) shows mean score: 2.7 for age 12 and 3.15 for age 17 (auditory) And 11 for age 12 and 8.48 for age 17 (visual).



**Figure 2 - Standard Deviation of immediate memory span (Auditory and Visual) of age 12 and age 17.**

The above data shows the standard deviation of the participants. 0.593827903 for age 12 and 1.085538915 age 17 (auditory). And for visual it is 3.667678887 for age 12 and 8.199910141 for age 17.

**Table 2 - t-Test: Paired Two Sample for Means of Auditory between two age groups**

	Age 12	Age 17
Mean	2.7	3.155
Variance	0.352632	1.178395
Observations	20	20
Pearson Correlation	0.007348	
Hypothesized Mean Difference	0	
Df	19	
t Stat	-1.64962	
P(T<=t) one-tail	0.057728	

The p value for the t-test: Paired Two Sample for Means of Auditory between two age groups is 0.05<0.05, which indicates no significant difference between the two age groups i.e; age 12 and age 17 in visual memory.

**Table 3 - t-Test: Paired Two Sample for Means of visual between two age groups**

	Age 12	Age 17
Mean	10.935	8.48
Variance	13.45187	67.23853
Observations	20	20
Pearson Correlation	-0.1475	
Hypothesized Mean Difference	0	
Df	19	
t Stat	1.160121	
P(T<=t) one-tail	0.130185	

The p value for the t-test: Paired Two Sample for Means of Visual between two age groups is 0.13 >0.05, which indicates no significant difference between the two age groups i.e; age 12 and age 17 in visual memory.

#### 4. DISCUSSION

Developmental studies of immediate memory indicate that immediate memory span increases with age (Gibson, Osser, Pr Pick, 1963; Haith et al., 1970; Hoffmann, 1927; Keenan, 1972, as cited in *The Effects of Exposure Duration and Practice on the Immediate Memory Spans of Children and Adults* by Sally L. Boswell, Barbara Sanders and Stephen J. Young). The results of the present study also show that there is an increase in immediate memory with the increase of age i.e; the mean score for auditory (age 12) is 2.7 and (age 17) is 3.15. During the tests it was observed that the younger age groups presented it hastily and restlessly. This might link to immature emotional development and this might be one reason linking to 12-year-old students doing poor performances in auditory than the 17-year-old students. Another reason might be Piaget's cognitive development theory which indicates that human's cognition gradually develops from the tasks of simple to complex nature in terms of the increase of ages.

Whereas in contrast, the result of this study shows visual memory among the 12-year-old, is better than 17-year-old students, i.e., mean of visual memory for 12 years is 11 and 17 years old is 8.48. The extent to which these differences will be exhibited will ultimately be determined by the situation. Age related binding deficits may not be universal, as 17-year-old, bindings between surface features such as color and shape seem to be generally unaffected by normal aging. (Brockmole et al., 2008; Parra et al., 2009; Brown and Brockmole, 2010 cited from *Age-related change in visual working memory: a study of 55,753 participants aged 8–75* by James R. Brockmole and Robert H. Logie).

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## Need of Adolescence Education

**Senteinla Ao**

Department of Education, St. Joseph University, Nagaland

**Aorenla M Jamir**

Department of Education, St. Joseph University, Nagaland

**Prof. Fr. Sunny Joseph**

Department of Education, St. Joseph University, Nagaland

### Abstract

*Adolescent ranges from the early age of 12 and last up to 19 years of age. This stage is considered to be most critical of human development. This stage is very sensible yet no visible in many aspects. A person of this stage need proper guidance as this stage can be final shaping in all areas of development and need to learn to accept the change. They also need to receive proper education on sexual orientation and the role of hormonal change that go through in their body. the emotional, social and mental developmental education plays the key role in the final shaping and the quality of education and development that are given in their stage will be reflected in the later stage of life. Therefore, the main purpose of this paper is to overview the "need of adolescence education". The study's goals are to explain the significance of adolescent education and to impart on young people the vital life skills they need to behave responsibly and healthily around difficulties relating to adolescence, including substance misuse. The present study will be descriptive study using secondary sources. As general conclusion, findings will be articulated and suggestions will be given in the conclusion so as to fulfil the objectives of the present paper.*

**Keywords:** Education, Adolescence, Adolescence Education

### 1. INTRODUCTION

Adolescence, or the time between childhood and maturity, is defined as being between the ages of 10 and 19. It is a crucial period for establishing a balanced lifestyle and a special period in the growth and development of people. Teenagers have a rapid phase of physical, mental, and social development. This affects how they feel, decide, act, and perceive the outside environment.

The adolescent years are associated with a high prevalence of death, illness, and injury, according to the WHO World Health Organization, despite being considered a healthy stage of life. The majority of this can be prevented or cured. Teenagers go through this developmental stage when they start to build dietary, physical activity, substances use, and sexual behaviour patterns that can either safeguard their own well-being and the health of those around them both now and in the future.

In order for adolescents to grow and develop in good mental and physical health, they must have access to appropriate information, including time of life comprehensive sexuality education, opportunities to acquire life-enriching skills, equal and fair, satisfactory, relatable, suitable, and effective medical services, as well as safe and encouraging environments. Additionally, people should have the chance to actively engage in the development and delivery of treatment that will preserve and improve their health. These workable possibilities must be increased in order to meet the rights and requirements of teenagers.

The UNICEF has given a list of skills need for success at school and work (<https://www.unicef.org/>): They are as given below:

- Foundational skills: Literacy and math are foundational abilities that are necessary for civic engagement, successful work, and higher education.
- Digital skills: Children and young people who possess digital literacy are better equipped to utilize and comprehend technology, Information management, material creation and sharing, teamwork and communication, knowledge acquisition, and issue solving should all be done responsibly, ethically, and safely.
- Transferable skills: These enable young people to develop as flexible learners and global citizens ready to deal with personal, social, academic, and economic issues. They are also known as "life skills," "twentieth-century skills," "soft skills," or "socio-emotional skills." Youth who are experiencing a crisis can also develop resilience by utilising transferable abilities to deal with trauma. They include communication, compromise, emotion management, critical thinking, and problem-solving.

- Job-specific skills: These are also referred to as "technical" and "vocational" abilities, and they help older teenagers make the transition from school to the workforce.

## 2. NEED FOR AND IMPORTANCE OF ADOLESCENCE EDUCATION (AE)

Adolescence Education (AE) was developed as a concept to address the educational needs that teenagers frequently express in order to make sense of their fast-changing environment. The National Curriculum Framework (NCF), 2005, is the main framework for adolescent education (AE), and it suggests that education should foster qualities like "independence of thought and action, sensitivity to others' well-being and feelings, learning to respond to new situations in a flexible and creative manner, predisposition towards participation in democratic processes, and the ability to work towards and contribute to economic processes and social change." Basing on these guiding principles, AE works in giving information to teenage in a factual and culture-appropriate manner, to promote positive attitudes, and to assist them in developing the skills needed to respond appropriately to events in real life.

According to Dr. Bharti Dogra's 2016 article, *The Importance of Adolescence Education in a Globalized World*, adolescents require adolescence education in order to successfully transition to adulthood. Adolescent education aims to provide information, support, and encouragement to young people as they grow into contributing members of society while dispelling myths that they may have about themselves and their environment. Adolescents must get instruction on maintaining healthy reproductive, mental, and physical health as well as the knowledge and tools needed to do so into adulthood.

### *The Adolescence Education Programme (AEP)*

The Ministry of Human Resource Development (MHRD) National Council of Educational Research and Training (NCERT) and United Nations Population Fund (UNFPA) work together in promoting Adolescence Education Programme (AEP) at the national level. Covering larger Quality in Schools Scheme for quality improvement of MHRD, this programme is a significant initiative.

The guiding principles of Adolescence education are unmistakable in that they state that teenagers should be seen as resources rather than problems, that AEP should help realise the transformative power of education, and that the curriculum should allow teenagers to voice their concerns, understand their rights, face fear and shame, encourage identity and confidence, and develop the ability to take responsibility for one's own, connections, and (to a certain extent) one's own act. Additionally, according to the guiding principles, AEP shouldn't just be a stand-alone effort; it ought to have an influence on the entire curriculum and attitude.

Adolescent Education (AE) and fundamental educational principles must work together. For this, the National Curriculum Framework-2005 (<http://aeparc.org/upload/39.pdf>) serves as a fundamental guide and source for formulating the principles as discussed below:

Adolescence is thought of as a stage of life that is full with promise and possibilities. Teenagers (and the "peer group") should not be stereotyped negatively or assigned troublesome and painful labels. The fact that adolescents are heterogeneous should be acknowledged by AE, who should act accordingly. There is diversity in terms of rural and urban, class, caste, area, religion, cultural beliefs, sexual orientation, disability and other factors. Rather than being prescriptive, stigmatising, or fear-inspiring, the educational programme should be collaborative, process-focused and impartial. AE should help teenagers comprehend and handle their current, ever-evolving lived situations. For this curriculum to be successful, teachers must both unlearn and learn. This relates to content, attitudes, and educational strategies.

Teenagers should learn how to communicate their concerns, understand their rights, deal with shame and fear, boost their confidence and feeling of self-worth, and learn how to take responsible for oneself, their relationships, including (to a point) the community around them through the programme. The concepts of teenage education should pervade the whole school's content and culture rather than being a distinct, stand-alone programme. Students' growth in rational reflection, attitude, information, and life skills should be encouraged through the adolescent education programme, as well as actively supported. In terms of the both content and methodology, it ought to be inherently flexible. The programme should place a major emphasis on the transformative educational power and be based on the ideals of social justice and equality, rather than trying to sustain the status quo.

The objectives of this study are to first explain the significance of adolescent education and then to impart on young people the necessary life skills for developing sensible attitudes concerning ARSH problems, such as

substance misuse. Descriptive approach was employed by the researcher, who relied on secondary sources for the data.

### 3. REVIEW OF RELATED LITERATURE.

The study is reviewed in two sections, viz., studies done in India and studies done abroad, where several studies done by researchers in the area related to the need and importance of adolescence education.

#### *Studies done in India*

Roy, Amit; Et al. in their journal titled “Sustainability Education Using ICT-Supported Dialogue -- Towards Transforming Adolescents' Perceptions of Alcohol in the Punjab, India” (2018) found that in the Indian state of Punjab, where alcohol use has sharply increased, a possible health crisis is on the horizon. Teenagers are particularly susceptible to the harmful effects of alcohol.

Mala V in her research titled “Adolescent Students' Problems and Yoga as a Preventive Measure” (2018) found that the most critical stage of a person's development occurs during adolescence, which is the time between childhood and adulthood.

O'Sullivan, Lucia F.; Et al. in their study named Sexual and Reproductive Health Education Attitudes and Experience in India: How Much Support Is There for Comprehensive Sex Education?

Veena, K. P.; Noufal, P. in their article on “Emotional Integration and Social Security of Adolescents at Higher Secondary Level” (2020) demonstrates the importance of quality education for the overall advancement of humanity.

Daniels, Micajah; Sharma, Manoj; Batra, Kavita in their article titled “Social Media and Substance Use among Adolescents: Implications for Research” (2021) discovered that engagement in maladaptive behaviours is more likely to happen throughout adolescence, which is a stage between childhood and maturity.

Ballal, Vaishnavi; Et al. in their journal titled “Sexuality Education -- Do Our Children Need It? Perspective of Parents from Coastal South India” (2022) discovered that, while being essential in today's world, comprehensive sex education is still a controversial and divisive topic.

#### *Studies done Abroad*

Mellizo, Jennifer M. in their study titled “Transformative Citizenship Education and Intercultural Sensitivity in Early Adolescence” (2018) found today's early adolescent students need to develop the knowledge, skills, and attitudes they will need to understand and communicate with people from a wide range of ethnic backgrounds more than ever because of how quickly our world is becoming a more diverse, interrelated, and interdependent global society.

Park, Sira; Holloway, Susan in their journal named as “Parental Involvement in Adolescents' Education: An Examination of the Interplay among School Factors, Parental Role Construction, and Family Income” (2018) examine the factors that affect parental engagement, but it was discovered that the majority of research on the topic has focused on analysing its effects on student outcomes.

Conklin, Hilary G. in their article titled “Caring and Critical Thinking in the Teaching of Young Adolescents” (2018) examined how the middle school years offer a particularly rich opportunity to engage students in an evaluation of the period of young adolescence, let them participate in conversations about school education for the middle-school years, and use educators' preferences as a springboard for examining difficult social issues, paying particular attention to Nodding's calls to encourage youngsters to involve in ego and allow students to pursue their interests.

Jansen, Petra; Ellinger, Jan; Lehmann, Jennifer in their journal title “Increased Physical Education at School Improves the Visual-Spatial Cognition during Adolescence” (2018) studied how a well-established curriculum with a strong emphasis on physical education affected students' visual-spatial abilities in a secondary school  
Mora, Toni; Escardíbul, Josep-Oriol in their journal titled “Home Environment and Parental Involvement in Homework during Adolescence in Catalonia (Spain)” (2018) had well documented that parental behaviour strongly affects a child's general wellbeing and academic progress.

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Rispoli, Kristin M.; Et al. in their journal titled “The Parent Role in School-Based Teams for Adolescents with Autism Spectrum Disorder” (2019) found Adolescence poses special problems for children with autism spectrum disorder (ASD) and their parents, necessitating tight collaboration between home and school teams.

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Antopolskaya, Tatyana A.; Et al. in their journal titled as “The Personal Agency of Modern Adolescents: Developmental Opportunities in a Socially Enriched Environment” (2020) demonstrated on the issue with adolescents' personal agency development in a socially enriching atmosphere of further education.

Erdvik, Irina Burchard; Et al. in their journal titled “Global Self-Worth among Adolescents: The Role of Basic Psychological Need Satisfaction in Physical Education” (2020) found that Global self-worth is emphasised as a key objective in the Norwegian physical education (PE) curricula because it is crucial for healthy growth and learning.

Ginevra, Maria Cristina; Et al. in their journal titled “Development and Validation of Visions about Future in Early Adolescence” (2020) found the development and psychometric requirements of Visions About Future (VAF), a tool to measure optimism, depression, and hope in early adolescence, are described in this journal.

Australian Institute of Health and Welfare in their study titled Australia's Youth: In Brief (2021) discovered that youth and young adulthood are crucial times in a person's existence.

Mbewe, Gift; Kamchedzera, Elizabeth; Kunkwenzu, Esthery Dembo in their journal titled “Exploring Implementation of National Special Needs Education Policy Guidelines in Private Secondary Schools” (2021) found that in Malawi, the adoption of the National Special Needs Education Policy Guidelines, (2009)

Zhang, Yuzhuo; Et al. in their journal titled “Examining the Relationship between Social Class and Well-Being in Chinese Adolescents: The Mediating Role of Basic Psychological Needs” (2021) found strong evidence that socioeconomic class and wellbeing are positively correlated.

Sedibe, Mabatho; Hendricks, Nellie Gloria Patricia in their journal titled “Drug Abuse amongst Adolescent Learners in Townships” (2021) looked at adolescent students' perceptions of drug addiction in South Africa's historically underdeveloped townships.

Jefremovs, Arturs; Kozlinska, Inna in their journal titled “Music Education in Adolescence -- A Pathway to Entrepreneurial Identity?” (2022) investigates the relationship between university students' entrepreneurial identities and their entrepreneurship education (EE) and music education (ME) during adolescence.

Harris, Tanisha L.; Shields, Ashleigh; DeMaria, Andrea L. in their journal titled “Relevant, Relatable and Reliable: Rural Adolescents' Sex Education Preferences” (2022) found adolescents' sexual health has come under scrutiny as a result of an increase in STD incidence in Indiana communities.

Méndez-Giménez, Antonio; Et al. in their journal titled “Effects of the Sport Education Model on Adolescents' Motivational, Emotional, and Well-Being Dimensions during a School Year” (2022) evaluated the effect of the Sport Education Model (SEM) on teenagers' emotional, well- being and motivational dimensions are few in comparison to studies that focus on the SEM's motivating impacts alone.

#### 4. FINDINGS

From the resources analysed it is found that the adolescents regularly deal with emotional and security difficulties. In order to increase students' emotional integration and sense of security, especially during the adolescent years, counselling and guidance services must be implemented at schools.

The research done in the past has shown that although many parents supported the inclusion of sexual education in academic curriculum and understood its importance, not all of them were able to impart it to their children in an effective manner. It is observed that with suitable adolescent support system that took into account variations in the adjustments with sexual impulses both in the ability as well as the frequency were required to extend their services freely and confidentially to them so that there would be a possibility to improve their confidence and thereby their career choice could be more decisive. The failure of adolescent learners to form an identity and their desire to fit in lead to their involvement in drug use. Teenagers who were learning also ended up utilising drugs because they were unable to successfully navigate the adolescent years.

#### 5. DISCUSSION

It is found that adolescent period goes through different phase of psychological and physiological insecurities. Various courses on adolescent education are immensely needed, educational institutions must implement certain programmes to help adolescent tackle the insecurities and also to improve the wellbeing of the adolescent. It is found that presently in many societies discussion on sex is still a taboo and though many parents felt the need of sex education they are failing to impart the correct education on sex required by an adolescent. Adolescents are neglected in the context of sex education having no proper guidance with this regard, many adolescents fail to cope up with the issues and also lack the knowledge to promote their health and wellbeing as they become sexually mature in life.

The role of support system as members of the family, teachers, counsellors and as close friends or as members of the organised sector play a vital role in motivating the adolescent to remain confident and to have the know how to cope with the transition of life. Their ability to make decisions and to have deep knowledge of the same to remain with the commitment is found to be steadfast.

It is found that adolescent who felt neglected and failed to fit in the changing environment indulge in activities that are not morally accepted. As adolescent stage is a curtail period of growth and development, there is immense energy which need to channel out with care and guidance in all areas of development. Adolescence education helps them to navigate their energy in term of self-acceptance, love and care.

#### 6. CONCLUSION

The curriculum of adolescent education must include consoling and ample opportunities of activities that deals on self-worth and identifying one strength or talents so that adolescents are grown confident. Sex education must be included in the formally set up educational system so that it will act as a bridge gap for lack of parental education on sex due to sexual taboos in the society.

There is a need to ensure that all adolescents to have a steady support system. It is required that the family as well as the school or any other agencies ensure that every adolescent has a support system that ensures the well-being of the person directly and sometimes with indirect involvement. Adolescent education curriculum must provide platform and suitable opportunities to navigate energy in constructive ways keeping in mind that adolescent stage has a great impact on the future career.

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## Evolution of an Unethical Subaltern in Arvind Adiga's *The White Tiger*

Michael Arockiam

Assistant Professor, Dept. of English, St. Joseph University, Nagaland.

### Abstract

'Subaltern' is a term used for general attribute of subordination of class, castes, age, gender and office or any other similar kind. Being dominated in every way, the subaltern wishes to break the hegemony and become free from the multi-dimensional shackles. Balram Halwai, the protagonist of *The White Tiger*, evolves into an unethical subaltern by using corrupt and immoral means of stealing from his master, betraying the trust of his fellow worker, promoting prostitution by womanising, and murdering his own master; and indulging in bribery to remain remorseless and safe. Although he seems to have been externally liberated, he remains internally bonded as a mental subaltern losing his own identity as Balram Halwai, for he begins to live under the disguise of Ashok Sharma, his murdered mentor. The researcher argues that the protagonist evolves into an unethical subaltern to become a great entrepreneur. This signals the tendency of the crony capitalist dictum – 'means does not justify the end.' The protagonist, who was innocent and rustic, evolves into a selfish, opportunist criminal sowing the seeds for a negative environment. In a globalized context, the need of the hour is to disseminate noble virtues and divine values of integrity, truth, charity, and perseverance of good work to achieve success and enjoy its lasting fruits of contentment, peace and joy that would pave the way for an inclusive growth and societal transformation.

**Key Words:** Subaltern, ethics, class, caste, domination, bribery

### 1. INTRODUCTION

Bill Gates, Microsoft co-founder once said, "If you were born poor, it was not your mistake, but if you die poor, it is your mistake" (Medrut, web). The above inspirational words have propelled many a great person to scale the pinnacle of success and fame. One such person is the protagonist of Arvind Adiga's *the Man Booker Prize* 2008 winning novel, *The White Tiger*, Balram Halwai. He was ingrained with a strong idea of success by his rickshaw puller father ever since his childhood. Since his father refused to be a victim of the age-old feudal system of the village, he deliberately chose to be an independent rickshaw puller—a backbreaking job to earn his daily bread. He wishes that his children studied well so that they could liberate the family from the predicament of suffering and misery. However, the young Balram was unable to study further due to his visible timidity though he had the rare acumen for bravery that earned him the name the white tiger by a visiting school inspector. This vibe with the title of the novel that suggests the unique ability of Balram Halwai, of being intelligent and sharp among other unintelligent and lethargic students of his village, which distinguishes him as unique as a White Tiger—a creature that gets born only once every generation in the jungle (Adiga 35).

Accelerated to excel in life, Balram becomes a successful entrepreneur in Bangalore under the disguise of Ashok Sharma whom he had murdered after taking possession of his seven hundred thousand rupees with connivance. Yielding to the carnal desires of selfishness and greed, Balram employs unethical and immoral means to remain successful, and become a solid pillar of Bangalore in economy (292). Thus, the researcher logically proves the title, "The Evolution of an Unethical Subaltern in Arvind Adiga's *the White Tiger*" relevant and worth the research.

In this context, it is inevitable to resonate the following aspiration of Gus Speth, Co-Founder, New Economic Law Centre: "I used to think the top environmental problems were biodiversity loss, ecosystem collapse and climate change.... The top environmental problems are selfishness, greed, and apathy... and to deal with those we need a spiritual and cultural transformation... and we scientists do not know how to do that" (Devine; web). The researcher, through this study, makes an honest attempt to read and disseminate one of the key messages of the novel – means does not always justify the end. Hence the need of the hour is to ignite a spiritual and cultural transformation in all, especially in young minds through sensitization of moral and ethical values for a true egalitarian society.

The literary device deployed in the novel is 'epistolary,' that is, the narrative is conveyed entirely by an exchange of letters. The recompense of an epistolary novel is that it presents an intimate view of the character's thoughts and feelings without any visible interference of the author scripting it and conveys the shape of events to come with dramatic proximity (Wiehardt; web). In this novel, the main character composed a minimum of seven letters to the visiting Chinese Premier Wen Jiabao after hearing an announcement about his upcoming visit to Bangalore (Adiga 3). The letters manifest the darker areas of bondage, financial thriving, murder, and entrepreneurship.

The protagonist deliberates that despite democracy, China thrives as a socialist nation whereas despite sanitation and pure drinking water, India glorifies herself as a globalized democracy. One of the chief reasons for writing a series of letters to the Premier is to reiterate that the future of the world would lie with the yellow Chinese and the brown Indians as the white men are whiling away their life and energy through buggery, mobile phone usage, and drug abuse (6). Accordingly, the protagonist of the novel presents his inner aspirations and dreams in a dramatic streak that not an iota of interference of the author is inferred throughout the novel.

#### *Subaltern Elements in The White Tiger*

The narration of the predicament of the subaltern in *The White Tiger* forms the background of this research paper as it attempts to delve into the misery of Balram Halwai, the protagonist in the context of social and economic inequalities and injustice based on class, caste, and religion. Thus, the suffering psyche of India is highlighted for sensitization of the readers so that reformation may be brought about in socio-economic and political realms by a total elimination of individual vices like ego, pride, greed, apathy, jealousy, lust, etc., and social evils like discrimination based on caste, culture, and creed. While highlighting the appalling evil of disparity between the 'haves' and the 'have nots,' the protagonist deploys the genre of 'dark humour.' It is a genre of humour that is characterised by its dark and morbid content and is yet, still funny in nature. It can be construed as harsh as it describes a wide range of jokes including those dealing with topics like death, violence, and suffering (Upadhye; web). The novelist uses this genre that the readers might be sensitized of the untold misery of the poor and the unfortunate in a lighter vein.

The protagonist's presentation of the plights of the illiterates in India does evoke pity among the readers. He says that he and thousands of others like him are half-baked citizens because they were not allowed to complete their schooling. If someone opened their skull by a penlight, all that one could find would be an odd museum of ideas: sentences of history or mathematics remembered from school textbooks, triangles and pyramids seen on the torn pages of the old geometry textbooks, and bits of All India Radio news bulletins (Adiga 10). On disparity between the rich and the poor in the country, the protagonist says that a rich man's body is like a premium cotton pillar, white, and soft and blank while a typical poor man's spine is like a knotted rope, the kind that women use in villages to pull water from wells. He projects his father as a perfect example of a poor man (26). While deliberating on the discrimination of castes, he says that in the old days, India had several hundred castes and destinies but now the new India is divided between just two castes: Men with Big Bellies, and Men with Small Bellies. And only two destinies: eat – or get eaten up (64). He also presents election as a serious disease. India is affected by typhoid, cholera, and election fever of which the last one is the worst. This makes the people to speak on it endlessly but they have no say in it just like eunuchs discussing the *Kama Sutra* (98).

*Feudalism: The White Tiger* is replete with subaltern notions. One of the causes of suppression and oppression of the masses in India is its age-old feudal system. 'Feudalism' comes from the old French word 'fief' which means 'fee.' Accordingly, an area of land, especially a rented area for which the payment is work, not money (Cartwright; web). The protagonist spells out how this system systematically affects the poor in the rural villages and makes their life miserable through his childhood experiences in the village. He gives a glimpse of his abject upbringing in an obscure remote village in India which he refers to as Laxmangarh in the vicinity of Ganga. This village was filled with darkness of poverty, sewages, and filth, for it was under the control of four landlords: Buffalo, Stork, Wild Boar and Raven. They owned the road, the river, the agricultural land, and the dry, rocky hillside around the fort respectively.

They forcefully collected a commission from all those who worked in their respective area of land or river and sexually abused those who failed to pay the cut. They lived in high-walled mansions just outside Laxmangarh basking in the comfort of everything inside their mansions; and they had no need to go out into the village except to feed the members of their household (Adiga 24-25). Thus, the protagonist says that his village paradoxically contained everything, but, nothing worthwhile was available because people from these gloomy spaces had no knowledge of time, technology, politics, or anything in regards modernity (64). The protagonist wished to come out of this darkness ever since his childhood. Having come out of this slavish system, he voices out his achievement, "I am in the Light now, but I was born and raised in Darkness" (14).

*Political Subalternity:* Balram reveals that corruption spearheads as one of the important qualifications for contesting any election in India. He presents the Chinese Premier an example of the great socialist who had the following unique features that had made him eligible to contest election: "You see a total of ninety-three criminal cases – for murder, rape, grand larceny, gun-smuggling, pimping, and many other such minor offences are pending against the Great Socialist and his ministers at the present moment" (97). He too takes a dig at the rigging while counting votes: "I am India's most faithful voter, and I still have not seen the inside of a voting booth" (102). The



protagonist also makes a scathing comparison between the Chinese Political System and Indian political scenario. Although the Chinese have neat sewage, clean and pure drinking water; and Olympic gold medals, they still do not enjoy the freedom of democracy, but despite sanitation, portable water and flaws in sports facilities, the Indians glorify their democracy (96).

*Class Subalternity:* Though the cities become a haven for the subaltern to break free from the nexus of caste, economic and cultural barriers, the landlords, politicians, bureaucrats, and rich industrials cement their positions in the cities too. Working as a chauffeur for the Stork family, Balram feels that he has neither respect in his master's household nor in the society since he is made use of to do the odd jobs apart from driving. While driving his master to the mall, he is denied entry into the mall as his poor identity is revealed by his wearing of sandals in contrast to the rich wearing shoes. His job is to carry the bags of his master as he exits the shopping complex.

Moreover, Balram agonises over the plight of his fellow poor and innocent workers who are treated like caged animals, bonded labourers, and slaves. They are caged behind the jails in Delhi. They are languishing behind the bars because they have taken the blame for their good, solid middle-class masters. No one comes to their rescue as judges take their share of bribes and ignore the discrepancies in their case, for the judges themselves are in the racket (169). While manipulating the slave-like mentality of the servant class, the capitalists thrive to satiate their egoist needs to remain wealthy and live a luxurious life. The poor continue to remain trapped in 'Rooster Coop'—a phrase used to describe the oppressed in India. Thus, Balram drives home the glaring chasm between the rich and the poor caused by the rising global power and neo-liberalism (Anh; web).

*Mental Subalternity:* Life for the subaltern never seem normal and their ordeal never ends. And the circumstances around them are never conducive for their freedom and progress, for even though they had left their villages, they are still being enslaved by their masters in the cities. Hence, they continue to live under a new form of slavery known as mental slavery—once a subaltern, one always remains a subaltern in mind. It is more of psychological than physical. This concept is spelt out by the protagonist in a heart-wrenching manner throughout the course of the narration. "Why did I feel that I had to go close to his feet, touch them and press them and make them feel good – why? Because the desire to be a servant had been bred into me: hammered into my skull, ... poured into my blood" (193). "Once a servant, always a servant: the instinct is always there, inside you, somewhere near the base of your spine" (298). Disgusted by the way of life lived in the village, Balram dreams of a better future. He wishes to give wings to his dreams and therefore he says, "Even as a boy I could see what was beautiful in the world: I was destined not to be a slave" (41).

A prominent Indian-American scholar for the voice of the subaltern studies, Gayatri Chakravorty Spivak, in her '*Can the Subaltern Speak?*' claims that western economic interest holds that knowledge is never innocent and it expresses the interests of its producers. Certain voices, however finds no place and thus lost in the hegemonic modes of knowledge production. Disconcerting the prevailing knowledge production regime requires a conscious effort to allow the subaltern voices to be heard (Spivak; web). This is what the protagonist in *The White Tiger* aspires to execute by his connivance by breaking forth from the mental subalternity.

*Oxford English Advanced Learner's Dictionary* defines 'ethical' as something connected with beliefs and principles about what is right and wrong; and deals with issues that are morally correct or acceptable (Hornby et al. 523). In contrast, 'unethical' is something that is not morally acceptable (1705). The dreams to break from the clutches of hegemony was sown in the mind of the protagonist by his unfortunate rikshaw-puller father in his childhood which is evident from the following: "My whole life, I have been treated like a donkey. All I want is that one son of mine – at least one – should live like a man" (Adiga 30). Deeply influenced by his father's inspirational words, Balram aspires to become a successful person treading the path untravelled by most of his village lads. Nevertheless, he chooses corrupt and immoral ways to realise his dreams.

*Unethical Religious Practice:* Engaging in a deliberation on correlation between religious tenets and unethical practices may seem dichotomous. However religious beliefs and practices too inadvertently incubate a culture of corruption leading to erosion of moral and ethical values. Sociologist Suresh Kohli advocates that the objective of any religious exercise is to gain prosperity, good health, and triumph over adversities. Indians traditionally bribe gods by offering of prayers and promising good deeds in return for purging of their past sins and failures. The religious texts promote *vedas* and virtuous practices which ought to have helped those practicing religious codes to live in amity, equality and solidarity leading to universal humanhood (*Aspiring*; web). In *The White Tiger*, the protagonist uses religion to gratify his needs for monetary gains. Manipulating the apparent religious tension between Muslims and Hindus, Balram, having found out the religion of his fellow-driver, threatens him by revealing the identity of his religion which is Islam. For his co-worker Ram Prasad was living under the disguise

of a Hindu though he was a Muslim in faith and practice. This poor driver concealed his religious identity to get a job and a decent pay so that he could feed his dependant family back home.

Consequently, Ram Prasad relinquishes his job fearing impending punishment because the Stork household does not like the religious practices of the Muslims. Thus, the protagonist fans the fire of competition between Hindus and Muslims in the pretext of religion. And by sowing the seeds of animosity the protagonist replaces his fellow worker as the number one driver in Stork's household. This competitive spirit based on religious practices, instead of promoting solidarity and progress, fuels by and large immoral and unethical ways to better the other leading to unrest, tension, and hatred in society.

*Cheating:* The protagonist learns the nuances of cheating to rise from rags to riches. He gets initiated into unscrupulous ways of life by his drivers-camaraderie. Thus, he begins to siphon fuel slyly from his master's car and sell. When his master orders him to make a repair to the car, he would go to a dishonest mechanic who could issue a false bill that would benefit both. He could also at times use the empty Johnny Walker whisky bottles left behind by his careless master that would fetch him the best resale value. Moreover, he can also make use of his master's car to pick up and drop off paying customers when his master is not going to notice the absence of his car. He could also turn the car into a freelance taxi when none of his master's friends are likely on the road at the time (229). The protagonist yields to the fancy to becoming an instant success in business and comes face to face with the 'self' being juxtaposed to the 'others.' The 'self' aspires to become successful and 'others'— his fellow drivers aid him practice unethical and immoral ways and means to accomplish his end. In the process, Balram Halwai who was innocent and rustic evolves into a selfish, greedy, opportunist and criminal sowing the seed for a negative environment.

*Murder Motive:* A web of correlated humiliating events in Balram's life precedes Ashok's murder. The protagonist learns that by murdering their masters, the workers and the servants can free themselves from being subservient to the oppressive system of forced poverty and inherited repressive caste hierarchy. This makes him convinced of the act of murder that he would commit and remain fearless about its repercussion. Although America-educated Ashok treated him fairly, his other master Mukesh illtreats him by extracting extra work. The mistreatment is severe and mean that Mukesh forces Balram to go down on his knees to retrieve a rupee coin that the former had lost while alighting from his Honda City Car. The irony is that although Mukesh had given a million rupees as bribe to a prominent minister in Delhi to evade taxes from their coal trading business, he was concerned about losing a rupee coin (244). Mukesh also orders Ashok to keep a watch on him during his absence (142). Hence Balram intends to kill him initially so that he could free himself from his ill-treatment. Nevertheless, he murders Ashok when he withdraws seven lacs from a bank to bribe the same minister for the same purpose. It was propelled by a motive to live a luxurious life as he had always dreamt of. Although he had murdered Ashok, he would not say a wrong thing about him, for Balram had found him worthy of respect initially (47). However, when Ashok got divorced from his wife Pinky, his behaviour began to change. He began to drink excessively and squandered thousands of rupees in womanising. Moreover, under the influence of his old girlfriend, he was planning to sack Balram from the driver's job. Balram realises that Ashok is no different from his brother so he decides to murder him and flees with the booty of seven hundred thousand rupees.

Having committed a chain of heinous crimes, the protagonist does not use the many nights that he spent staring at the chandelier of his luxurious apartment to amend his ways to lead a moral and ethical life by self-reflection. On the contrary, he becomes self-reflexive – a way to superpower his reflective process, and deepen his path of personal growth by devising a series of crimes. The term 'reflexivity' is applied here because it takes a person deeper into anything once he becomes more aware of it; that awareness will then feed itself back into new ideas and new ways of doing thing. For, the outcome of reflexivity is more than reflection (Torres; web). Thus, what helps the protagonist is not self-reflection but self-reflexivity to indulge in corrupt activities.

*Bribing:* Although Balram becomes a great entrepreneur, the inner urge to remain at the pinnacle of success and comfort neither smoulders nor simmers in him. Hence, preceded by smooth escape from the corrupt and immoral practices, he continues to indulge in similar vicious practices in his new found home in Bangalore under the self-christened new name Ashok Sharma. Hence, he deploys corrupt means to bribe the law enforcement system to found his dream project of "The White Tiger Drivers Company." He is further able to gain influence by bribing the police to cover up a fatal hit-and-run case committed by one of his Qualis drivers. The bribed assistant commissioner puts the blame on the deceased man accusing him of riding his bicycle without working lights in the night of his fateful demise; and by changing the number plate and car. Balram ensures that money predominates at every sphere of human life. Thus, he confirms the failure of humanity and the triumph of money. However, Balram recalls the trajectories of becoming unethical, "The rest of today's narrative will deal mainly with the sorrowful tale of how I was corrupted from a sweet, innocent village fool into a citified fellow full of

debauchery, depravity, and wickedness” (Adiga 197). Nevertheless, the urge to remain successful propels him to engage in corrupt and immoral ways and means. On account of the rampant corruption prevalent in the police department, Balram was able to help himself and make his company thrive despite of his past criminal offences. This is only a tip of an ice-berg happening in every walk of life in Indian Society. Adhering to corrupt means makes people unethical and immoral. Corruption by bribing is one of the main areas which leads to inequality that gradually hinders the growth and blocks the development of the nation.

## 2. CONCLUSION

Aravind Adiga’s *The White Tiger* is a bold and uncompromising portrayal of corruption, debauchery and manipulation practiced by a section of the Indian society that has its repercussion in areas of social inequality, religious tension and conflicts across classes and cultures that cede transformation of the nation in a larger scale. The protagonist’s rise from rags to riches is a typical trajectory of his unethical, corrupt, and immoral ways unscrupulously devised. Though Balram successfully takes off as the founder of a new “The White Tiger Drivers Company” in the sprawling metropolitan city of Bangalore, humanity shrinks by this breed of criminals and thugs who resort to unethical and immoral ways and means to augment their vested interests. Thus, the novel glaringly highlights the darker sides of everyday India where corruption and unethical ways are deemed necessary to one’s career advancement and social reputation. Corrupt, immoral, and unethical ways are not unique to India as their webs are visible all over the globe. However, what is unfortunate about India is that instead of those vices getting eradicated, they are on an upward spiral. The political, economic, and religious practices in India do contribute directly or indirectly to its unprecedented growth. Thus, this study tries to disseminate the principle that ‘means does not justify the end’ by highlighting the darker areas of inequality based on castes, culture, and class. It is inevitable that everyone should employ right and just means to achieve their goals. In a globalized context, the need of the hour is to spread noble virtues and values of integrity, truth, charity, and perseverance of good work to achieve success at personal and professional realm and enjoy a rich harvest of contentment, peace and joy that would pave the way for an inclusive growth and societal transformation at every walk of life.

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## **Bhutan and GNH: An Effort towards Sustainable Development**

**Dr. Juhi Srivasatava**

Assistant Professor, Department of Political Science, Shri Ramswaroop Memorial University, Lucknow

### **Abstract**

*A strategy for a country's economic development that preserves the quality of the environment for both current and future generations is known as sustainable development. The cost of environmental harm is paid in the form of deforestation, air and water pollution, soil erosion, and other environmental deterioration in the name of economic progress. The drawbacks of generating more high-quality goods and services may exceed the advantages. In order to meet the requirements of the current generation without compromising the quality of the environment for future generations, it seeks to encourage the type of growth that minimizes environmental problems. The GNH measure was created to meet a number of requirements for an official national measure of happiness that is also pertinent to national and local policy. It strives to more accurately and profoundly reflect the happiness and general wellbeing of the Bhutanese community than a monetary metric. His Majesty the Fourth King of Bhutan, Jigme Singye Wangchuck, created the phrase "gross national happiness" in the 1970s. The idea suggests that sustainable development should approach ideas of progress holistically and give non-economic dimensions of wellbeing equal weight. Bhutan is most well-known for its philosophy, which prioritizes Gross National Happiness over output and GNP. Bhutan has significantly improved its economic, environmental, social, and governance conditions during the past forty years, guided by its Gross National Happiness. One of the four pillars of Bhutan's Gross National Happiness theory is environmental preservation. Bhutan keeps (always) 60% of its land in forest cover, as required by its constitution. The aim of the paper is to examine the efforts made by Bhutan towards sustainable development and to evaluate the same in the context of contemporary scenario.*

**Keywords:** Sustainable development, Bhutan, GNH, Environment, Holistic development

### **1. GROSS NATIONAL HAPPINESS: PHILOSOPHY AND BACKGROUND**

The fourth king of Bhutan, Jigme Singye Wangchuck, coined the phrase "Gross National Happiness," which was deemed "more important than Gross Domestic Product" in 1972. The idea suggests that sustainable development should approach ideas of progress holistically and give non-economic dimensions of wellbeing equal weight. The Vajrayana Buddhist philosophy, which the Bhutanese have practiced for generations, is where the GNH paradigm and its philosophy have their origins (Dorji, 1991). The notion of GNH and the fundamental communal goal of happiness and well-being began in Bhutan as early as the 17th century with the arrival of Shabdrung Ngawang Namgyal from Tibet, claims the Center for Bhutan Studies, the leading organization that coordinates research on GNH in Bhutan. The succeeding cultural and sociological story in Bhutan was greatly influenced by the Buddhist monk. Bhutan began to experience transition in the early 1970s, coinciding with the rise of new developmental models that were becoming popular around the world. The Fourth King intervened at that point and re-instituted the idea of GNH in a formalized structure inside the government, making it a crucial component of Bhutanese governance. Bhutan has transformed the GNH over time into a more comprehensive framework that combines traditional Bhutanese values with contemporary development theories and methods. Bhutan now offers a perfect model for addressing important global concerns including climate change, sustainable development objectives, and the inequity caused by globalization in underdeveloped nations because to the blending of external and internal concepts. Through a multiplicity of indicators contained in the GNH index, this template—which was initially a philosophical and doctrinal world view—was institutionalized into a strong framework. This framework gave the rest of the world a more thorough knowledge of the concepts that Bhutan was creating and applying to its governing. Additionally, it allowed Bhutan to use happiness as a tool for policy into its framework for government.

Contrary to what is commonly believed, this idea of happiness is not something trivial or transient. GNH, on the other hand, is a multifaceted indicator of sustained human wellbeing that takes into account nine different factors, including living standards, health, education, ecological diversity and resilience, cultural diversity and resilience, community vitality, time use, psychological wellbeing, and good governance. Happiness as a meaningful end aim is not a brand-new concept. Nearly 2400 years ago, the universal significance of happiness to humanity was noted: "Happiness is the reason and goal of life, the whole aim and end of human existence."

### **2. BHUTAN AND GNH**

Bhutan was the first nation in the world to make it a priority to make people happy. Bhutanese conceptions of happiness go deeper than those of happiness as it is understood in developed nations. The gross national happiness (GNH) philosophy has several facets: it is holistic, taking into account people's spiritual, material, physical, or social needs; it emphasizes balanced progress; it sees happiness as a collective phenomenon; it is both ecologically sustainable, pursuing wellbeing for both current and future generations; and it is equitable, achieving a fair and reasonable distribution of well-being among people. Bhutan has prioritized population wellbeing over material development since the early 1970s. Well-being, health, and happiness are all interconnected. The single most significant factor in determining well-being is frequently thought to be good health; on the other hand, unfavorable changes in health have long-lasting, detrimental consequences on well-being.

The idea of Gross National Happiness (GNH), as well as the GNH index and tool that have been developed alongside this philosophy, has been regarded as the most significant component of the Bhutanese model of development. The Fourth King of Bhutan, Jigme Singhye Wangchuk, the father of the present king, Jigme Khesar Namgyel Wangchuck, hosted GNH in Bhutan in 1972. "Gross National Happiness is more important than Gross Domestic Product," he proclaimed. The King had envisioned an economic growth model that was based on Buddhist philosophy and holistic development, with its main goals being environmental preservation and highlighting the importance of happiness and communal well-being in people's lives. This focus on pleasure was meant to take precedence over the importance of financial gains, which was at the core of the GDP-driven global growth model. Major development-related concerns including sustainability, climate change, and inequality have also been incorporated into the government's agenda with aid from international organizations and bilateral development partners. The country's Five Year Plans (FYP) include GNH, and the planning processes go all the way down to the individual *dzonkhags* (administrative and judicial districts) and *gouges* (residential blocks). A framework with a results-based methodology has been in use since the tenth FYP, and the performance of each sector as well as sixteen national key result areas has been mapped to the four pillars of GNH. In April 2012, as an extension of global efforts to assess the Sustainable Development Goals (SDG) led by the United Nations, GNH was taken into consideration as a new global economic paradigm (UN). Additionally, on March 20 of the following year, the UN proclaimed it "The International Day of Happiness." The GNH developments have taken the SDGs into consideration and included policies that are in line with the SDG objectives stated by the UN for Bhutan. The GNH index is based on Bhutan's evolving understanding of progress. The GNH index is used to establish a different framework for development, give sectors indications to direct development, aid in the design of public policies and the distribution of available resources, and assess overall well-being and happiness across areas of Bhutan.

Bhutan does not declare itself to be a nation where there is gross national happiness. Poverty remains a problem, and life is difficult for both the people and the government. The kingdom differs from the rest of the world in that it chooses happiness as the goal of its development policies and initiatives. That does not imply that the government must be in charge of bringing happiness to its citizens. The decision of whether or not to be happy is a personal one. Instead, the establishment and promotion of equal conditions that will allow all citizens to pursue and enhance happiness are acknowledged as the fundamental responsibility of the state. For any government, especially those with limited resources, this is a burdensome task. But it is a commitment that successive Bhutanese administrations have upheld. Bhutan does not argue that GNH is the most effective international replacement for the current development paradigms. In fact, the idea of GNH wasn't introduced at the 1998 Asia-Pacific Millennium Summit in Seoul, Korea, until the United Nations Development Programme (UNDP) pushed for it after more than 20 years of silent practise. Following this, GNH came under the spotlight of the worldwide media, which drew a lot of academics and development specialists and sparked the current global conversation on the issue. The issue of creating a precise set of indicators for GNH became necessary in a society where everything of worth must be measurable.

#### *Indicators of Gross National Happiness:*

Instead of gauging success solely in terms of economics, GNH is an example of an alternate paradigm and metric for measuring national progress. The four pillars of economic progress, cultural vibrancy and diversity, environmental resilience, and good governance initially served as the foundation for Bhutan's GNH. Since then, these have been expanded into a list of nine crucial domains that are connected, interdependent, and enriching individually and together. Together, they serve as the foundation for happiness and serve as a benchmark for Bhutan's advancement in creating conditions that allow its population to live happy lives. The GNH Index serves as an example of integrated thinking because it uses a process of in-depth study and discovery to link performance (national advancement) with purpose (the pursuit of happiness - an ultimate goal for humanity and the planet). In order to promote integrated thinking on how Bhutan may add value both now and, in the future, the Bhutanese government employs integrated reporting. The following is a description of the nine indicators:

1. *Living standard* - A measure of the general economic health of the population. The degrees of material prosperity or poverty experienced by various segments of the population are determined and income discrepancies are documented through the collection of information on disposable income. Data collection on topics like land ownership, food security, and employment are some examples of how economic security is determined.

2. *Health* – Refers to gauging the population's state of physical health. It combines not just mortality, morbidity, and mortality rates, but also each individual's stated health status and risky behaviour for health. Despite being arbitrary, the percentage of people reporting good or excellent health has been demonstrated to be a reliable indicator of illness incidence and mortality. The percentage of the sampled population reporting healthy levels of physical activity and the percentage reporting healthy weight are two further examples of GNH status markers.

3. *Education* – reporting on several aspects of education, such as participation, abilities, and support for learning; informal, non-formal, and monastic education; and national, local, and family resources. A high degree of family, civic, and cultural awareness, as well as the percentage of the sampled population claiming significant skills and knowledge in at least five important areas, are other examples.

4. *Ecological diversity and resilience* – evaluating the condition of natural resources, the demands placed on ecosystems, and various management approaches. The effects of domestic supply and demand on Bhutan's ecosystems are discussed in this domain. The surveys examine the state of the land, water, forest, air, and biodiversity in terms of supply. The domain examines consumption-related elements like production, waste, transportation, energy use, and ecological footprint. Bhutan is aiming to use natural resources sustainably, hence one of the status indicators is the proportion of the sampled people that indicate sustainable resource use in their localities. In order to gauge the success of renewable resource use legislation, the prevalence of sustainable resource use at the local level is measured. Measurements are also being made on the effects and dangers of global warming.

5. *Cultural diversity and resilience* - educating about the variety and tenacity of Bhutanese cultural traditions. This considers the kind and quantity of cultural amenities, linguistic diversity and usage trends, as well as involvement in communally centered religious activities. The polls also examine responses related to fundamental principles, regional traditions and customs, and changes in principles. As a result, status metrics like the percentage of people reporting having high or exceptional knowledge in a particular number of traditions show how much a group's members use and uphold traditional knowledge and skills.

6. *Community vitality* – concentrating on the positives and negatives of interpersonal relationships and community interaction. The percentage of people reporting a high level of trust in others, the percentage of people reporting a high level of vitality in the community, the percentage of people reporting volunteer work, and the percentage of people reporting feelings of safety in their own homes and communities are all status indicators. These give decision-makers the ability to monitor changes in community vitality and aid Bhutan in developing timely and effective solutions to stop the breakdown of communal life and to strengthen social capital. The family network is seen as crucial social capital in this regard. It is the strongest and longest-lasting economic, social, and emotional safety net available to society.

7. *Time use* – examining how time is spent during 24-hour periods as well as longer-lasting activities. The information aids in figuring out how the population makes use of its social, cultural, economic, and human resources. It is used to determine how much time is spent on things like employment, travel, preparing food, cleaning the house, and other activities. The percentage of people reporting a satisfactory pace of life, time spent participating in community activities, and time spent engaging in social or family activities are all status indicators. Recognizing the value of leisure time is a crucial aspect of time use.

8. *Psychological wellbeing* – includes mental health as well as contentment or satisfaction with various facets of life. As happiness is the primary goal of a GNH society, psychological health is crucial to determining how successfully the government has implemented the necessary policies and services. Since societal conditions and life circumstances have an impact on people's psychological wellness, it also serves as a barometer for community and societal wellbeing. People's perceptions and states of mental wellbeing must be taken into account in any holistic approach to development. One of the main methods for assessing a citizen's sense of psychological wellness is to ask them to rate their own level of happiness on a 10-point scale for international comparison.

9. *Good governance* – Participation in decision-making, government efficacy, just and equal law, media freedom and standard, and openness, accountability, honesty, or corruption are the five subdomains that are being

evaluated. Examples of status indicators include the percentages indicating good/excellent performance at various levels of government, participation in local government meetings, and faith in media and politicians. Every year, Parliament spends a full day debating the findings and identifying the areas that require legislation and actions to address deficits, or poor happiness.

*What is Sustainable about GNH?*

First, using regular social surveys, the GNH Index chose 33 out of 123 variables from the nine equally weighted constituent categories of GNH. There is a "sustainability" component included into the GNH technique in addition to indicators that are "sustainability" defining, such as "threshold" or "sufficiency cut off" at the indicator and domain levels. In other words, each indication is assigned a minimum value that must be met in order for a person to be happy. The second underlying tenet of GNH is the idea that there are various types of capital or resources, including ecological capital, social capital, cultural capital, human capital, and economic capital. GNH values and measures all forms of capital, whereas Gross Domestic Product (GDP) primarily gauges' economic capital and human capital to some extent. For example, the Ecological Diversity and Resilience domain assesses the traditional Bhutanese beliefs and practices that are a contributing factor in the country's strong conservation ethic. Then there is the realm of Living Standard, which serves as a stand-in for GDP and offers an alternative to the traditional GDP-focused development strategy. To illustrate my point about how the SDGs are subsets of GNH, I compare 17 SDGs and 33 GNH indicators used for constructing a GNH Index.

**17 SDGs**

1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
10. Reduce inequality within and among countries

**33 GNH Indicators**

**PSYCHOLOGICAL WELLBEING**

1. Life satisfaction in one's health, living standard, occupation, family relationship, and work life balance.
2. Spirituality measured by spirituality level, frequency of prayer and recitation and meditation, and consideration of *karma* (the law of cause and effect) in one's life.
3. Positive emotions like calmness, compassion, forgiveness, contentment, and generosity
4. Negative emotions like selfishness, jealousy, fear, worry, and anger.

**HEALTH**

5. Self-reported health status
6. Number of healthy days in a month
7. Long-term disabilities and activity limitations
8. Mental health based on 12 general health questionnaire (GHQ).

**TIME USE AND BALANCE**

9. Work time measured by hours of work
10. Sleep time measured by hours of sleep.

**EDUCATION**

11. Literacy level of the population
12. Education level measured by number of years of schooling.
13. General knowledge level measured in terms of their knowledge about local legends and folk stories, *tshechus* (Buddhist mask dances), traditional songs, the Constitution, and of HIV/AIDS transmission.
14. Precept values such as prohibition against killing, stealing, lying, sexual misconduct and creating disharmony in human relations.

**CULTURAL DIVERSITY AND RESILIENCE**

15. Proficiency in native language reckoned by one's ability to speak mother tongue
16. Cultural participation measured by number of days involved in socio-cultural activities
17. Artisan skills assessed by one's skill in the 13 traditional Bhutanese arts and crafts such as weaving, masonry, carpentry, and painting.
18. Attitude towards and change over time of the Bhutanese code of conduct and etiquette (traditional etiquette)

11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build accountable and inclusive institutions at all levels
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development
19. Performance of government (in creating jobs, reducing the andrich-poor gap, fighting corruption, preserving culture and traditions, protecting environment, providing educational needs, and improving health services)
20. Fundamental rights (freedom of speech, voting, joining political party, forming *tshogpa* (party), getting equal access to join public service, receiving equal pay for equal work, and the right to the freedom from discrimination).
21. Delivery of key services (access to health care, electricity, waste disposal, access to water, and quality of water).
22. Political participation (election and meeting).
23. Volunteerism in number of days and donations measured in-kind and money.
24. Community relationship measured by a sense of belongingness and trust in neighbours.
25. Family relationship measured by how the members care about each other, a feeling of not wishing to be a part of the family, feeling like a stranger in one's family, time spent with one's family, the level of understanding in one's family, and whether family is a real source of comfort.
26. Safety of neighborhood or community measured by crime prevalence.
- GOOD GOVERNANCE
- COMMUNITY VITALITY
- ECOLOGICAL DIVERSITY AND RESILIENCE
27. Perception towards pollution and waste: pollution of rivers and streams, air and noise, waste disposal sites and littering, landslides and soil erosion, and floods.
28. Conservation attitude assessed in terms of feelings of responsibility towards environment.
29. Crop loss to wildlife
30. Problems of urban living like traffic congestion, absence or inadequate green spaces; lack of pedestrian friendly streets, and the problem of urban sprawl.
- LIVING STANDARD
31. Household ownership of assets (phone, computer, refrigerator, washing machine, land and livestock)
32. Housing standards (toilet types, roofing materials and number of rooms)
33. Per capita household income

The comparison of the two sets of metrics above shows that GNH is broader and more comprehensive than SDGs. The indicators under the GNH areas of cultural diversity and resilience, psychological well-being, and time use do not have equivalent SDG goals. Here, 17 SDGs and 33 GNH indicators are mapped and matched for comparative purposes, although even within the categories of health, education, and the environment, where they are equivalent, there are significant discrepancies.

### 3. CONCLUSION

The GNH is a prime example of a comprehensive, all-inclusive index that guides policy and decision-making for Bhutan's sustainable development. In particular, it offers a mechanism for the nation to comprehend and implement progress based on the importance of happiness in society. The GNH makes it possible to take action at the local, regional, and national levels as well as to focus on certain underprivileged groups and problematic areas of dissatisfaction. It offers Bhutan a values-based strategy for directing policies and financial resources toward people who need them the most. Global politics have been impacted by the GNH, particularly in the thinking and discussions that resulted in the formulation of the 17 Sustainable Development Goals for the 15-year period ending in 2030. Our unsustainable behaviour is made possible by the economic worldview that underlies the GDP and holds that the goal of life is to accumulate wealth. We must rethink what national progress means in order to ensure future sustainability. Furthermore, because sustainability is just a synonym for survival, shouldn't we as intelligent, sensitive humans be working for a more important, common objective? For the Bhutanese, this



is what it means to be happy. For them, happiness is a paradigm that includes the pursuit of meaningful societal advancement by balancing the material with the spiritual and the physical with the former, all within the context of a secure and safe environment. Bhutan has kept happiness as its top priority, with the tool's ideology, authority, and responsibility driving this even though the Bhutanese do not assert to have attained a state of national happiness.

Many of the specific SDGs and the GNH categories and metrics are clearly aligned. It serves as an example of a reporting structure with integrated measurement that may guide and advise successful, unified policies, investments, and decisions on the part of government, business, and civil society. The GNH provides some crucial insights for holistic thinking and SDG implementation:

- 1) The GNH Index is cyclical; surveys are conducted annually, the results are analysed, and Parliament then deliberates on them during an annual one-day session devoted to reviewing the GNH's findings. As a result, for the upcoming year, strategies and budgets are planned to address the main areas of concern. This is a successful method of establishing the SDGs as an essential aspect of governance and a major issue for the nation.
- 2) The GNH has significant support from the populace in terms of governance, gained through their participation in its conception, framing of the issues that are important to them, with ongoing modification, and provision of the quantitative and qualitative data that, when analysed, drives the nation's agenda.
- 3) Gross national happiness (GNH), which serves as the GNH's overall driver, can also be used to integrate and emphasize the SDGs in ways that are both locally and globally significant. Each SDG has a local meaning, much as each GNH domain is either essential to the Bhutanese way of life or is viewed as a desired objective, rather than being something that is simply measured at the national and international levels to fulfil responsibilities under international law. In other words, the Index is also viewed as a teaching tool that can assist individuals understand what is meant by being "happy" in the context of leading a decent life in Bhutan.

The GNH is a practical yet comprehensive method for achieving the SDGs. It is an excellent example of integrated sustainability thinking. The holistic definition of "happiness" is thought to be connected with the social, cultural, economic, environmental, and governing aspects of the web of life. Research is interwoven into the creation of policies and the making of decisions in a manner that promotes reflection at every turn. A different paradigm for aiming for a more livable world is provided by the GNH.

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## **Nagaland Liquor Total Prohibition Act (1989): Some Issues**

**K Tohuto**

Department of Political Science, St. Joseph University, Nagaland

**Dr. Somingam Mawon**

Department of Political Science, St. Joseph University, Nagaland

### **Abstract**

*The Nagaland Liquor Total Prohibition Act of 1989 was passed without the political will and commitment of the political leaders, but it was drafted under the pressure of the church and other organizations including women's bodies. Consequently, the last 33 years have seen an improper and ineffective implementation of the Act in the state. The possession, distribution, consumption, and sale of liquor are unchecked and unregulated. This paper argues that the state government hardly attempted to address the issues such as black markets run by the liquor mafia and a free flow of costly adulterated and spurious liquor which is harming and hurting the economic security and health security of the state in general and the consumers in particular. Till today, no data or report suggests a good correlation between liquor prohibition and a decrease in liquor consumption. On the contrary, there has been a sharp rise in the sale and trade of Indian-made foreign liquor all over Nagaland, particularly in the erstwhile Dimapur district. Thus, there is a need for introspection and critique of the operation, functioning, and system that are in place today. This academic exercise attempts to understand the background on how the act was enacted, issues revolving around the act, and why it has attracted the citizens to question and debate the prohibition act of Nagaland.*

**Keywords:** NLTP Act, Nagaland, state government, NBCC, NMA

### **1. INTRODUCTION**

Prohibition refers to the legal prevention of the manufacture, storage, sale, or transportation, to obtain total abstinence through legal means. Prohibition term is also used to refer to a time when prohibition is enforced. The anti-liquor movement in the west is nearly two centuries old. The religious revivalism of the first quarter of the 18<sup>th</sup> century led to a wave of movements for state and local prohibition in western countries. An abstinence pledge was introduced by churches in the US as early as 1800. The church played a catalytic role in the movement. Generally, the history of prohibition and the demands for temperance started as a product of Christian values and beliefs. It was Christian Protestants that started the demands for prohibition and temperance, followed by the women folk (Schrad, 2021, p. 257). One of the landmarks in the internationalization of the movement was the organization of the World Prohibition Conference in London in 1909. It was instrumental in the formulation of the International Prohibition Confederation, embracing the United States, European countries, and a few other industrialized countries of the world. The spectrum of opinion over prohibition is broad. In developing countries, prohibition has been traditionally associated with religious preferences and women's welfare groups, similar to the US prohibition (Volstead Act United States, 1919). Countries with a large proportion of Muslims have tended to have alcohol prohibition due to the ban on any form of alcohol consumption stipulated in Islam. In non-Muslim countries, the main impetus tends to be the negative effects associated with alcohol use, in addition to moral considerations derived from religion (Rahman, 2018, p. 15).

### **2. PROHIBITION IN INDIA**

The denial of the right to drink alcohol in India finds its mention as early as in the early Vedic period with the Rig Veda banning *Soma* (ancient name for alcohol) for Brahmans and students. In the later Vedic period, alcohol consumption increased, but it was viewed more stringently, terming wine "unfit to be drunk, unfit to be given, unfit to be accepted" (News9, 2022). In ancient times, liquor consumption was restricted to what has been identified as the "lowest strata" of society. In Medieval India, there is not much written about alcohol regulation; however, it is seen that Alauddin Khilji in 1310 imposed total prohibition in Delhi, while Mughal emperor Akbar also banned alcohol in his court. In modern India, the first hint at the prohibition of liquor was seen in the Bombay Abkari Act of 1887. Amendments to the Act in 1939 and 1947, aimed to initiate complete prohibition, but it was never implemented. After independence, keeping in mind Mahatma Gandhi's urge to ban the sale and production of liquor, and partly influenced by the religious principles of Hinduism, liquor finds its place in the Indian constitution, under the seventh schedule it is a subject of state list (Entry 51) and Article 47 of the Directive Principles of State Policy. Madras and Bombay became the first provinces to implement prohibition.

Since independence, most states that enacted prohibition in some form have lifted it after a certain period, due to high alcohol-related revenue. The Indian state did not impose a nationwide ban. Though the central government made many efforts, including compensating the states for revenue, a national liquor ban never materialized. Currently, liquor prohibition in India is in-force in four states viz. Gujarat in 1960, Nagaland in 1989, Mizoram in 1995, and Bihar in 2016. Lakshadweep lifted the prohibition in 2021. Bihar and Gujarat are the states that prescribe the death penalty for manufacturers, suppliers and sellers of hooch in cases of death due to spurious liquor consumption.

### 3. ENACTMENT OF PROHIBITION IN NAGALAND

Nagaland has a long history of bringing the Nagaland Liquor Total Prohibition Act (hereinafter NLTP Act) to black and white. The movement began in the early 1960s wherein, the church, the Naga Mothers' Association (hereinafter NMA), and the civil society fought for almost three decades. While dwelling on the history of the liquor prohibition movement in the state of Nagaland, religion and militarization policy of the Indian state can be seen as the two determining factors behind the enactment of the NLTP Act, 1989. Christian tradition was first introduced in Nagaland by the American Baptist missionaries. The first contact was made in 1839 by Miles Bronson. But this endeavor was short-lived, and no converts were made. After about thirty years, a second attempt was made under the initiative of Edward Winter Clark, which led to the organization of the first Christian community in 1872. The American Baptist missionaries worked in Nagaland till 1955. During this period, 46 percent of the total population of Nagaland became Christian (Chongpongmeren, 2019, pp. 1-2).

Before the introduction of Christianity, the consumption and use of alcohol (rice brew/ rice beer) was part of the Naga tradition. In the Naga cultural tradition, eating food and consuming rice beer implies and carries almost the same and identical connotation (Athikho, 2018, p. 445). However, in the aftermath of Christianity, the Christian missionaries fervently sought to dissuade the Naga tribes from consumption of the traditional rice brew. The American Missionary Conference adopted a resolution in Kolkata in 1875 on "Total Abstinence from liquor". This decision was binding in all churches of the erstwhile Naga Hills (NBCC Prohibition Committee, 2010). The American Baptist missionaries were influenced by the sentiments of American Mid-West prohibition and therefore, advocated temperance in the erstwhile Naga Hills (Rodrigues, 2020, p. 4). Justified by the teachings of the Bible, which proclaimed the act of drinking as a defilement of the body, guilt and sin became attached to drinking rice beer through the propagation of imposed Christian morality. The Christian missionaries defended the banning of rice beer saying "No Madhu" means more rice to eat and no drunkenness means fewer quarrels and less sexual immorality (Kichu, 2019, p. 179). By that time the Christian missionaries introduced and popularized the drinking of "tea" among the Nagas. Baptist's Church movement on prohibition was opposed by British administrators, but prohibition was successful till the independence of India in 1947.

Though in the aftermath of India's independence, all foreign missionaries, including the American missionaries were compelled to leave Nagaland in 1955, the interpretation of Christianity and Christian values were adopted by the Nagas and under the influence of the American Baptist missionaries, the Nagaland Baptist Church Council (hereinafter NBCC) carried forward the movement of liquor prohibition in Nagaland. In 1962, for the first time, the NBCC passed a resolution in the district headquarters of Mokokchung appealing to the Governor of Nagaland to "abolish the sale and use of liquor in Nagaland" (NBCC Prohibition Committee, 2010). The Nagaland Baptist Women's Union (hereinafter NBWU) after its formation in 1967, submitted a memorandum to the state government for alcohol prohibition and along with the NBCC, it persisted for liquor prohibition in the state. In Nagaland, the support for total prohibition of alcohol is an inherited legacy of our American Baptist roots which is the dominant religious sect of the state (Longkumer, 2022). Christianity has a strong influence in the modern state practice of Nagaland, so much so that it is incorporated in the state ceremonies, even the sessions of the state Legislative Assembly began with the invocation of the Christian God by a state Chaplain appointed by the NBCC (ibid.).

The NLTP Act of 1989 is also a direct consequence of the central law – The Armed Forces Special Power Act (1958) and the policies of the Indian state. After the independence of India and the subsequent Naga national movement, the Government of India supplied huge quantities of liquor especially Indian-made foreign liquor (IMFL) into the erstwhile Naga Hills and Tuensang area. The culture of alcohol drinking became rampant in Nagaland especially after India's independence when there was a free flow of liquor (Kichu, 2019, p. 180). The Indian Parliament passed the AFSPA in 1958, specifically for the Naga areas – declared as disturbed, empowering the armed forces to shoot and kill with impunity. This led to a major influx of the Indian armed forces in the Naga areas, who brought along with them not only violence but also alcohol. Moangwati Aier, former Excise Commissioner pointed out that Central military and paramilitary forces are allowed to bring alcohol into Nagaland, and "defense" bottles are easily leaked to the open market (The Morung Express, 2013).

Tsuhah pointed out that the introduction of IMFL and commercialization of local rice brews started in the 1950s with the settlement of the army camp in the village. People exchanged firewood, rice, and other raw materials for alcohol (cited in Rodrigues, 2020, p. 6). Linyu has also pointed out that the periods of active mobilization for alcohol prohibition in Nagaland were marked by violent political actions by the Indian state against Naga insurgents (ibid.). When AFSPA was imposed in Nagaland, in 1966 and again in 1988, the NBCC called for a prohibition law. By then, the NMA, which was formed in 1984, was continuously working against alcohol abuse and drug addiction. Collaborating with the NBCC, the NMA demanded a complete ban on alcohol to protect the future generations of Nagaland amidst the increased free flow of alcohol from outside the state. At the height of the conflict between the Indian state and Naga insurgents, Nagaland saw a high influx of alcohol and drugs into the state, and the NLTP Act served as a watershed moment for the movement for alcohol prohibition. The language and the vocabulary used by the prohibition movement indicate that liquor was seen as a weapon used by the Indian state to undo the patriotism and unity of the Nagas (ibid.).

#### 4. ROLE OF NBCC

After the statehood of Nagaland, the NBCC approached Nagaland Government to abolish the sale of liquor by 1964. However, the government issued more licenses and opened many wine shops in all the districts. Also, the Government of Nagaland enacted the Nagaland Excise Act in 1967 to manufacture, sell and use more liquor. In 1969 NBCC appointed the Nagaland Central Committee on Liquor Prohibition and requested the government to cut down progressively the quota from wine dealers with the objective of ultimate prohibition. The NBCC requested the government to terminate all licenses and close down all liquor shops and enforce prohibition from 1973. Though the government agreed to abolish liquor, they went back from their commitment, and the Nagaland Excise Rule was passed in 1974 to regulate and promote wine sales in Nagaland. In 1984 the NBWU appointed an Action Committee to intensify the movement. Posters, pamphlets, educative literature were distributed, protest demonstrations, and processions were organized and they toured all over Nagaland and solicited the support of other civil societies, and pressed the government for prohibition. The NBWU was also supported strongly by NMA. By this time the church was unhappy with the government's empty promises, flattery words, and delayed tactics, passing different bills and giving wrong assurance. The church was not to be fooled for long. So the NBCC resolved to confront the government if necessary to achieve their legitimate and rightful demand. The fiercest Prohibition battle was waged in Kohima in 1989 and the NBCC Total Prohibition Action Committee was appointed to spearhead the movement. Strategies and plans of action were formulated including the non-cooperation movement and an ultimatum was submitted to declare Nagaland state "Dry" and to legislate the total prohibition of liquor by March 15, 1989, lest the hunger strike would be launched.

On 22 June, seven members of the NBCC were called and given the Bombay Prohibition law of 1949 to Nagaland, which was not acceptable to the NBCC. Shocked by the government's unreliability and wounded by its wicked design and actions, the NBCC under the leadership of the Action Committee was determined to fight to the end and never yield to the government's manipulation and subjugation. Thus, on 23 June 1989, the 125 volunteers of NBCC started indefinite hunger strike, ready to lay down their lives, with a strong commitment to the worthy cause. The situation turned worse when their health began to deteriorate. After 81 hours of hunger strike, the Excise Minister withdrew the Bombay Bill on 26 June with an assurance to introduce the Total Prohibition Bill on the floor of the state Assembly. On 30 June 1989, Chief Minister S.C. Jamir declared through the AIR Kohima. "Since the Government was already committed to bringing about legislation introducing Total Prohibition of liquor in the state, we responded to the wishes of NBCC...And here I would like to once again reiterate the commitment of my party and government towards making Nagaland a truly Dry State". Finally, the long-awaited bill was introduced in the Nagaland Assembly on 9 November 1989. Thus, after endlessly fighting for 28 years, at last on March 29, 1990, the "Nagaland Liquor Total Prohibition Act" was passed by the State Assembly, under the leadership of S.C. Jamir as the Chief Minister of Nagaland (NBCC Prohibition Committee, 2010). With this, Nagaland has finally declared a "Dry State".

Alcohol addiction plunged many into penury, ailments, and violence and this elicited radical reactions from the church and other organizations on religious and ethical concerns and rallied for the prohibition of alcohol sale in the state. It can be assessed that if the movement for total prohibition was initiated by any organizations other than NBCC, it may fail because social movement is easily to be tainted with political color and its efforts are misunderstood or misdirected. However, when the church initiates, no one dares to advance with aggressive attitudes and actions toward the church, as the church is above any suspicions. The church is the fermenting agent and conscience of a community and also the largest and highest social platform in Nagaland.

## 5. NLTP ACT

Liquor or alcohol is banned in Nagaland by its law. The NLTP Act of 1989, prohibits the consumption of liquor, sale or purchase of liquor, transport or possession of liquor, import or export of liquor, manufacture of liquor, and use of any material for its manufacture. However, it must be noted that the Act does not prohibit local brew (Zu and Rohi), provided it is used for domestic purposes only. The NLTP Act of 1989 was passed without the political will and commitment of the political leaders, but it was drafted under the pressure of the church and other organizations including women's bodies. Consequently, the last 33 years have seen an improper and ineffective implementation of the Act in the state. The possession, distribution, consumption, and sale of liquor are unchecked and unregulated. The state government hardly attempted to address the issues such as black markets run by the liquor mafia and a free flow of costly adulterated and spurious liquor which is harming and hurting the economic security and health security of the state in general and the consumers in particular. Till today, no data or report suggests a good correlation between liquor prohibition and a decrease in liquor consumption. On the contrary, there has been a sharp rise in the sale and trade of IMFL all over Nagaland, particularly in the erstwhile Dimapur district. Despite the prohibition, IMFL of all quality and quantity is readily available, for those willing to shell out the outrageous prices than that available at a general taxable rate in other non-prohibition states. As such, it is argued that despite the prominence of the tag "Nagaland for Christ" alcohol consumption and the sale cannot be controlled in Nagaland.

It has been rumored that there is a prevalence of nexus between the liquor barons and the political class and also the syndicates are among the prominent supporter of the Act along with NBCC. The Excise Department claims that the department did not possess enough staff to properly enforce the prohibition. It claims that the 335 excise personnel for a population of nearly 20 lakhs is not sufficient. It also claims that Kohima district had 31 staff, of which 11 were attached to check gates, while the remaining 20 were attached to the office, thus leaving no staff for carrying out raids. Some have pointed out that the NBCC dealt with moral and not legal issues while banning was a legal issue. The Nagaland government should not blame the church or any other organizations alone as it had the full authority to go about and take strong action. NMA claims that it was concerned about adulteration and bootlegging, besides the government's source of revenue.

As per the National Family Health Surveys-5, Nagaland (24%) stands way above the National (18.8%) average concerning alcohol consumption, which is alarming enough. Today, this Act is one significant topic taking the state government and the people into serious consultations, debate, and discussion at all platforms. In the wake of social change and modernization, drinking has slowly assumed a new meaning, becoming more of a symbol of the lifestyle, 'modern', and means of entertainment. Over time, alcohol consumption becomes a grave concern due to the availability of IMFL and distilled spirit and due to changes in its communicative value and mode of production and distribution. Each time the issue of liquor prohibition in Nagaland resurfaces in the public domain, one can read a variety of opinions in all the local dailies. It is observed that this Act stands at a point of contradiction in many spheres, be it on the ground of economy, individual rights, community security, an implementation issue, and health security, among others.

### *Views of anti-prohibitionists*

Those who are against the prohibition to acknowledge that the prohibition Act was enacted with good intentions and it had also achieved some positive results at the initial stage, but in the long run it has only encouraged liquor sellers and suppliers to expand their black market, which consequently affects the health of the consumers and also the economy of the state. It is argued that scrapping prohibition would ensure a better quality of liquor – and not adulterated ones – at cheaper prices and also help the government to generate revenue of crores of rupees. It is also argued that just destroying the seized India-made foreign liquor and police registering cases against the illegal sellers and suppliers of IMFL have not contributed anything worthwhile in achieving the aims and objectives of this Act. Available data indicated that more than 33 years of implementing the NLTP Act has not made Nagaland a dry state, in the real sense of the term, as liquors are sold in many places in Nagaland.

They also argued that we can never keep up with this Act in the present generation as the perception of the people is, "it is OK" to drink. They argued that prohibition amounts to interference with an individual's freedom of choice, to be a teetotaler or drunkard must be so by personal choice and not by force. Also, it is argued that prohibition is hampering the state to promote a tourist-friendly destination and encouraging the tourist industry. They argued that the NLTP Act has become defunct and redundant and also argued that prohibition does not address the problem of the society, as such instead of improvising the NLTP Act, it should be abrogated.

*Views of prohibitionists*

Those advocates for a total ban on liquor sale and consumption considered that the prohibition was brought into force with good intention but its implementation has failed and therefore has appealed to the state government to save the future generation by implementing the Act effectively and to refrain from lifting it either totally or partially. They argued that the Government enacted the Act, but never attempted to implement it seriously. Rule 10 of the Act provides an opportunity for amending the Act however, it was only in 1994 amendment has been made to NLTP Act. Since 1990 after the enactment of the Act, over and again the government has moved to lift the Total Prohibition. They argued that the government passed the Act haphazardly, leaving major “Legal Loopholes” which should be ratified rather than lifting the Act. For instance, there is no different degree of punishment between the illegal import and export of only 1 bottle of alcohol or a truckload or more. The implementation of “State Prohibition Council” and “Prohibition Committees” or restricted liquor stores as envisaged under Section 27 of the NLTP Act, 1989 has not been done. The advocates of prohibition also argued that licensing cannot stop adulteration nor will it guarantee a better quality of alcohol. They argued that the very nature of government and the business community in Nagaland cannot be expected to behave differently just for the alcohol business.

Concerning the loss of revenue, they argued that the life of the people is more valuable. They argued that the financial chaos was due to corruption by the government; instances such as the closing down of the Sugar Mill (Dimapur), Paper Mill (Tuli), Mini Cement Plant (Wazeho), and Semi Mechanized Brick Plant (Chumoukedima) was because of the inadequacy and corruption of the state government. Their apprehension is that the government wants to get rid of the heavy burden of the deficit without performing its responsibilities as the representative of the people and that the economy or the quality of governance will not improve just by lifting the prohibition in Nagaland. They argued that the liquor dealers' hunger for licenses and money is the impetus and the most powerful driving force behind the government's move to revoke the prohibition Act even today.

Prohibitionist also argues that alcohol prohibition improves social welfare by reducing the negative consequences of alcohol consumption. They argued that the government had enforced the law since 1990, but never attempted to implement it seriously because they want to lift the law. Soon after the enactment of the law, the government expressed its intention to relax the law. It has been mentioned that there was a period even after years of the Act coming into force, the state government used to host the customary budget dinners with a copious flow of liquor. Since 1990 over and again government moved to lift the total prohibition law but the church encountered and checked every government's move. Further, the church is demanding the proper implementation of the Act in letter and spirit. Government is duty-bound to implement the Act. For the successful implementation of the Act, NBCC Executive Committee submitted a representation to the Chief Minister requesting the amendment of the Act particularly the loophole section on 18 July 2006. Accordingly, the government appointed an 11 members Committee on 3 March 2007 but the government is yet to amend the Act.

## 6. CONCLUSION

The imposition of prohibition is known to have several adverse unintended consequences as seen from the American Prohibition experiment from 1920-1933. Its unintended consequences include the emergence of an entire black market for alcohol composed of speakeasies, bootleggers, organized crime, syndicates, etc. which operated in every segment from production to distribution and sale. Prohibition may have significant positive effects, but it may also be associated with negative side effects and therefore, should not be seen as a panacea to the problem induced by alcohol use. According to a 2010 review of the academic research on prohibition, “On balance, prohibition probably reduced per capita alcohol use and alcohol-related harm, but these benefits eroded over time as an organized black market developed and public support for national prohibition declined” (Wikipedia, 2022). Again, one study reviewing city-level drunkenness arrests concluded that prohibition had an immediate effect, but no long-term effect. Again, another study examining “Mortality, Mental Health and Crime Statistics” found that alcohol consumption fell, at first to approximately 30% of its pre-prohibition level, but over the next several years, increased to about 60-70% of its pre-prohibition level.

A more stringent regulation on violators and law enforcement agencies would be more practicable. The penalty for drunken driving must be appropriate enough to have a deterrent effect. The policies designed for the purpose must be tailor-made for local circumstances. It should be comprehensive and inclusive with clarity in the division of responsibilities. Sustained and systematic efforts will have a major bearing on public health and the general quality of life. An approach that would integrate both the regulation of alcohol production and sale on

one hand while rigorously enforcing public health regulations on the other is required. In conclusion, political will, good governance, and dynamic leadership both at the local and state level are key components in reducing the harmful use of alcohol and effective implementation of the Act. It may be concluded that whatever the differences in opinion, everyone agrees that to repeal or strengthen the NLTP Act, the state government needs to constitute a committee to revisit the decades old prohibition act in order to ascertain its relevance in the present Naga society.

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## **Bama's Karukku: A Quest for Identity and Social Acceptance in the Doubly Oppressed Society**

**Manisha Sharma K**

Department of English, Dr. M.G.R. Educational and Research Institute (Deemed to be University), Chennai

**Dr. Anuradha. V**

Department of English, Dr. M.G.R. Educational and Research Institute (Deemed to be University), Chennai

### **1. INTRODUCTION**

For the word of God is living and active, sharper than any two-edged sword, piercing to the division of soul and spirit, of joints and marrow, and discerning the thoughts and intentions of the heart. (Hebrews: 4:10). Discrimination is an important concern that needs to be addressed on a global scale in terms of the social, ethnic, economic, and cultural aspects. Whether intentionally or unintentionally, oppressed people are kept apart from the hierarchies, they struggle in the dark for survival while still being stripped of their economic, political, or religious clout. They are trapped by custom and tradition, which surround them with walls of segregation because they are thought to be unimportant to the interests of the majority. However, times are changing. This paper will provide a quick overview of a study on the underrepresented Indian Dalit community. The sons and daughters of darkness, the Indian oppressed community travelled through unimaginable horrors and sorrows. However, they see this never-ending delusion of pain as a journey towards their liberation and success.

### **2. ISSUES FACED BY THE MARGINALIZED COMMUNITY**

Literature has thrived in a positive environment as a result of the analysis of marginalized realities.

- Marginalized writers are striving for their individual identities.
- The experiences presented are based on inequity and are taken from regular social situations.
- Their works are their cultural elevation
- Their search for their cultural values

"In this society if you are born into a low caste, you are forced to live a life of humiliation and degradation until your death. Even after death, caste-difference does not disappear. If you are born into a low caste; every moment of your life is a moment of struggle". Traditionally, the structure of society is divided into such an entity that does not allow the lower castes to become independent. In this system, the lower castes are always treated as the worst human beings. They are not given that required opportunity to march forward. The so called caste and community in Indian society divide people into segments. In the selected text the speaker belongs to the Paraya caste, a lower caste group generally found in the southern state of Tamil Nadu. They are surrounded by many higher caste groups like Nadar, Naicker, Chettiyaar, Aasaari, Thevar, etc. The narrator expresses the traditional and cultural harassment done to them by the higher caste groups. The Paraya caste women are always bound to display their regard and servitude towards upper caste people and also at their own homes.

*Life of the doubly oppressed woman:*

Bama Faustina Mary was the first notable Dalit woman author in Tamil whose works have been translated into English, French, and other Indian Languages She is well known for autobiography Karukku published in the year 1958; she was born in Puthupatty, a town close to Madurai. Christianity was first introduced to her family in the 18th century. Sebasthiamma was her mother, and Susaraj was her father. She became a teacher in a school once she had finished her degree. Later, she became a nun and joined the convent. She left the convent after seven years because she realized that Dalits experience prejudice even in Christianity, which promotes the equality of all people before God.

In Karukku she deals with the Dalit people in Tamil Nadu. She expresses her grief over the pathetic and helpless condition of Dalits. Dalit women are easy targets of the non-Dalit men for sexual harassment, mental torture and education. The upper caste never assimilates the lower strata into their fold. In India, Christians also follow the same caste system of Hinduism, resulting in caste hierarchy, caste subordination and exploitation. Karukku, among other things, also depicts the casteist practices of a Christian priest who shows preconceived notions about Dalit Christians: "The priest's first response was to say, 'After all you are from the Cheri (Dalit colony). You might have done it. You must have done it'. Karukku's prime focus is on an issue which is caste oppression in Catholic Church and the journey of her lonely self-discovery. The other conflict Bama faces is between her and the community. Dalit women suffer in two ways, at first; they suffer from subjugation as a whole community.

Secondly, they suffer from existing patriarchy and tradition at their own homes. In a society where caste elements are so rigidly maintained, it left no place free for women. The line which has been drawn in between Dalit women and higher caste is not just a line. It is but the line which divides whole humanity into certain segments. The essential aspects of this novel are religion and subjugation that had caused the pain to the author. The pain of the dalit women hardly finds room in the literary creations. Their misfortunes are hardly voiced out and taken into consideration. In Bama's life the pain is doubled for being a woman and belonging to the voiceless oppressed.

#### *Social Acceptance in Karukku:*

This paper attempts to focus on the social acceptance of the community on two alternative views one as the acceptance of the dalit society as a whole and the cultural acceptance of the doubly oppressed woman of the society. The above can be cited with the experience recorded by the author in the novel. She depicts an incident that tells the dangerous effect of casteism which is deep rooted in the Indian soil. As a little girl, Bama once happened to see a man from Dalit community working in the fields of Naicker bought "something like vadai or green banana bhajji in the packet, because the wrapping paper was stained with oil. He came along holding out the packet by its string, without touching it" As he was a Dalit, he was not allowed to touch the parcel. Such is the condition of deep rooted untouchability prevailing in Indian society. The inquisitive mind of Bama then analyzes various incidents and events and questions the upper-caste people for the rights of their own people. Bama's grandmothers worked as servants in Naicker families under pathetic conditions. Even the small child there would call her grandmothers by their names and they were treated as unwanted garbage in the houses of Naickers. "One day I went with Paatti to the Naicker house. After she had finished all her filthy chores, Paatti placed the vessel that she had brought with her, by the side of the drain. The Naicker lady came out with her leftovers, leaned out from some distance and tipped them into Patti's vessel, and went away. Her vessel, it seemed, must not touch Patti's; it would be polluted. These people are the maharajas who feed us our rice. Without them, how will we survive? Have not they been upper-caste from generation to generation, and have not we been lower – caste? Can we change this? "

#### *Victim to Warrior:*

M. Stella Rose in her article, "A Journey Towards self-discovery and Spiritual Identity in Bama's Karukku" painfully states how even the young children of Dalits are exploited by the upper caste people: Bama herself worked along with her grandmother in a Naicker family during her holidays. Her own cruel experience of the hard work she did in the field and the forest enabled her to portray the plight of the oppressed in a realistic way. She helped her grandmother collect firewood and also went to collect cow dung from the streets and the fields to be used as fuel at home. At other times she along with other children, went to the field to pull up the groundnut pods.

Bama's brother was a postgraduate in City College. It was from her brother that she realized that intellectual enhancement is the basic prerequisite for her ambition and person upliftment. Education alone can emancipate her people. According to her brother, education is the only passport for their journey towards the present predicament. Despite all the social tensions and mental trauma Bama focused on her studies and topped her class tenth examinations. College life gave an elevation to focus much on her life and successful path ahead, but sooner she realized the deep rooted caste system in India. This understanding kindled her rage to be more authoritative and handle the subjugation. She relates the incidents in contempt that affected her when she was in college:

"I had thought that at such a big college, at such a distance away, among so many different students, nobody would bother about such things as caste. But even there, they did certainly consider caste differences. Suddenly one day a lecturer "will Harijan students please stand; the government has arranged that Scheduled Caste students should get special tuition in the evenings. Just two students stoop up; myself, and another girl, among the other students a sudden rustling; a titter of contempt. I was filled with a sudden rage and at once, I told the teacher that I did not want their special tuition or anything else, and sat down. It struck me that I would not be rid of this caste business easily, whatever I studied, wherever I went."

### **3. CONCLUSION**

Bama has a moral and social purpose in describing the actual conditions of the people in the form of novels. She believes that if her inherent spirit is properly promoted by proper education and employment, his people will rise up the economic and socio-political ladders on par with their masters. By treating her women, Bama is very active. She says her women have a hidden energy that is like a volcano left in the earth's crust. The necessity comes into their lives together when they prosper as the sky with inherent and sustaining fire that energizes their heads on par with other men. She asserts that sometimes her women are very passive endure all humiliation and persecution,

but when the need urges them, they become active and take positive action to achieve everything they want to get. Bama has clearly presented different solutions in her works to the different problems that women encountered.

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## Motherhood Politics: Maternal Activism of the Naga Mother's Association

Limongi

Department of Political Science, St. Joseph University, Nagaland

Dr. Achanger

Department of Political Science, St. Joseph University, Nagaland

### Abstract

*Recent studies on Women and conflict indicate a shift from women as victims to growing importance of women's agencies. Conflict resolution and peace building process has been constantly viewed as a potential site for addressing gender inequality, advancing political participation of women while their contribution towards peace are at work. 'Motherhood' is one such imperative strategies employ by women to enter into masculinized space of conflict and created a political space for women in such patriarchal societies. Many women agencies have found motherhood a spark for radical change and have used 'motherhood' strategically for the reason that speaking as mothers will give them credibility in sexist societies than they would as individual women, while others genuinely believe that motherhood grant them social sanction as 'protectors' or responsibilities to solve the problems plaguing their families and communities. Understanding 'materialist' politics in different frames, the article explores Naga Mother's Association (NMA), a Mother's Organization formed at the backdrop of looming social evils and incessant armed conflict in the state. The article attempt to examine the NMA engagement in various forms of activism i.e., peace projects, social and political activism. The paper emphasized on two major objectives; firstly, how the Naga Mother's Association politicized motherhood and uses it as a source of activism for social and political change. Secondly, it examines how in the process of carrying out maternal activism, the NMA created a political space and representation for women in a patriarchal Naga Society. The research was primarily guided by qualitative research through secondary sources in the form of published books, journal and articles.*

**Key words:** Motherhood, Maternal activism, Patriarchy, Naga Mothers Association. Peace projects.

### 1. INTRODUCTION

The institution of motherhood is often considered to be something apolitical. More often, many have the notion that mothers are by definition apolitical, and the experience that motherhood offers is isolating and individualized, far removed from the muddle of politics and social struggle. This fixed image of mothers and motherhood underlies the belief that motherhood experiences alter women's consciousness in the most conservative way, grounding and quieting the most rebellious women (Orleck, 1997). For the same reason, motherhood as an issue within feminism has been viewed quite differently. Maternity was severely rejected as feminist battle with sexism, male dominance and patriarchy. As clearly pointed out by Nathanson (2008), such examples can be drawn in the prominent Feminist texts including the 'Second Sex' where Simone De Beauvoir attacked marriage and motherhood as a barrier to women's freedom and transcendence. Similarly, Betty Friedan's 'The Feminine Mystique' vilifies work in the home as the cause of women's oppression and addictions. Also, Shulamith Fireston called reproduction 'bitter trap' for women. Many feminist writings, protest the private –public distinctions, seeking to end dominance and defying the essentialist conception, form the core ideology of feminism and hence, motherhood was understood as the very source of women's oppression. Nevertheless, recent studies on mother's movements and maternal activism indicate an alternative understanding of the institution of motherhood contrary to its conventional image that motherhood is politically unaffected. Increasingly, a new reality is taking root where motherhood in many ways has been politicized; one as a means to control women through regulations of state policies and second, as a means by which women sought to regain control of their own lives and the lives of their children. In many cases, motherhood has become the bases of maternal activism for many women and mothers' movements. Voices of mothers were radicalized at various stages of mothering experience. Once mothers became politically aware or active they used mothering experience strategically for the reason that motherhood is seen as one of the 'tolerated' spaces of protest by women in a male-dominated society.

One of the definitions of maternal activism, as given by Naples, holds that "maternal activism is the care for children beyond the nuclear family and the relationship between that care, motherhood and community action. While Orleck claims that maternal activism is the "means by which women have sought to regain control over their lives and the lives of their children (Naples and Orleck qt. in Nathanson, 2008). In most cases, mothers mobilize because they perceive inequities or threats to the well-being of their families and community. Such activism among mothers is not uncommon in all parts of the world. For example, the Mothers of Plaza de Mayo

in Argentina demanded that those who tortured and murdered their children in the Dirty War be persecuted. Similarly, the Soldiers' Mother's Committee in Russia demonstrated and held hunger strikes to protest hazing practices inflicted on their sons and to call for military reform, and also the Mothers' Against Drunk Driving (MADD) of the US raised national consciousness about the dangers of driving drunk. (O'Reilly, 2010). Maternal activism crosses race, ethnicity, and different socioeconomic groups and is prevalent among low, middle, or upper-class mothers although the nature of their activism varies. Not all maternal activism is radical in response to the crisis; rather it is evenly applied to everyday activities that embrace the needs of children in communities. Consequently, maternal activism has brought forth two important points which form the central focus of the discussion. First, the politicization of motherhood as part of maternal activism for social and political change, and second, the political space and participation that maternal activism creates for women in a patriarchal society where public and political affairs are considered to be of men's space. The paper takes The Naga Mothers Association (NMA) as one such prominent example of a women's organization that is actively engaged in a range of activism in Nagaland and beyond.

## **2. A BRIEF HISTORY OF THE NAGA MOTHER'S ASSOCIATION**

The NMA was founded on 14th February 1984, in Kohima as a voluntary organization open to all Naga women, with a "clear objective of combating all social evils confronting the society at that time in various forms, to provide a common platform for women's issues and interest and to uphold the dignity of motherhood" (Das, 2007). The organization does not have any rigid structures of rules and procedures, and operates through tribal women's organizations, calling upon them to send representatives to mass rallies, and programs and supporting local women's groups in their activities. The NMA mandate for its members is to fulfill the role of 'mothers' to make society whole and healthy. Though NMA's initial objective was to counter social evils in the form of substance abuse threatening society, the NMA has evolved from an organization of welfare to peace activism and to focusing on women's strategic rights in recent times.

## **3. MOTHERHOOD AND THE POLITICS OF MATERNAL ACTIVISM OF NMA**

Despite the common perception of the high status of women in Naga society, Naga women are missing not only in the traditional tribal structures of authority but also in the modern structures of state politics. Traditionally, they have no representation or role in decision-making be it at the village level, tribal groups (Tribal Hohos), or inter-tribal organization (Naga Hoho). Sometimes they are given token representation but often become invisible with the dominance of men. As pointed out by Banerjee and Dey (2012), electoral politics has in no way empowered women in the Northeast; rather it has led to further marginalization. However, there are some areas of the public sphere where women have been able to create a space for themselves. The NMA as an organization represents the Naga womenfolk and is able to garner support from various tribal women organizations across different districts in Nagaland. Grounded in their position as mothers, the NMA language of mobilization and appeal revolves around motherhood. The nomenclature "mother" is used rather than "women" as the word has 'dignity in Naga society. Everyone respects a mother, so the name stays' states Vamuzo, one of its members (qt in Shrivasan, TOI, Jan 10, 2013). Like many women's organizations, the NMA has played a key role in translating their traditional roles as mothers into social and political agents and has successfully used the social sanction of being a 'protector' that motherhood offers.

## **4. MATERNAL SOCIAL ACTIVISM**

Identified themselves as mothers, the NMA is founded on the very idea that mothers have a social responsibility towards their children, families, and society at large. In its formative years, it fought against the social evils of drug abuse and alcohol addiction that were hurting every home since the late 1980s. It was breaking families apart, causing lots of street violence and theft. Confronted with such circumstances, several women mostly mothers, under the leadership of one NMA founding member, Neidonuo Angami met several times to discuss how to cope with the challenges faced by the Naga society. These mothers believe that mothers at home suffer the most and thus understand better the extent of such damage to the social fabric and form a common platform for mothers- a state-level body. (Das, One People One India Feb 1, 2015) During the early 1990s, they were also actively engaged in campaigning against the spread of HIV/AIDS. They call for mass awareness in urban and rural areas and also run a drug rehabilitation center and homecare for AIDS patients (Manchanda, 2005).

## **5. MATERNAL PEACE ACTIVISM**

The social sanction for Naga women's action for peace can be attributed to their historical function as mediators between warring villages during the head hunting era, when a "Pukrelia" (a woman peacemaker) would intervene

and stop violence. (Aier, 2017). The story of women in the village of Jotsoma serves as another illustration of such a mediating gesture. She proudly recalled how women stepped forward to take action when the Indian army arrived in the village in search of the Naga armed groups. Mothers will visit the opposing sides, travel far to their camps, and plead them to refrain from killing one another and from harassing the inhabitants. The contemporary version of such similar stories is that of Neidonuo Angami, the former president of NMA, stepping in between two feuding factions in Phek district and admonishing the combatants to 'Listen to your mother before you kill your brother' (Manchanda and Kakran, 2017). As a result of the state's ongoing violence in the 1980s and 1990s, the social welfare organizations decided to take on the task of promoting peace. In the early 1990s, NMA tackled the violence that tore Nagaland apart, including atrocities committed by the Indian state army against armed groups and civilians in the region and ensuing years of fratricide among different Naga factions. The NMA worked in collaboration with the churches on many of those occasions when unclaimed bodies were spotted lying in the open markets to perform a respectable funeral rite. The establishment of the Peace Team in October 1994 to address the state's deteriorating political situation is one of the NMA's many noteworthy accomplishments. To end violence and bloodshed, the Peace Team members under the banner 'Shed No More Blood' began a peace negotiation with the government and with various rebel factions. They also initiated public peace rallies and demonstrations to call for peace in the region. The NMA's peace initiative included the Naga armed groups as a target in addition to the army's executions. On May 25, 1995, it published a leaflet that stated: 'the way in which our society is being run whether by the over-ground government or the underground government, has become simply intolerable' (Banerjee and Dey, 2012). They also urge all parties involved in the violent conflict to put an end to the killing as the: "*Assassinated man may be a husband, a father, a son or a brother. His whole family is shattered by his violent liquidation no matter what reasons his liquidators choose to give for snuffing out of his life*" (Banerjee, 2000).

Through their tribal ties, the mothers reached out to the tribally divided factions, as a "mother" by listening to their grievances and encouraging reconciliation. They asserted that because they are mothers, they are respected by all groups and that there are no factions among women. One of the members declared 'We are still united; it is the men who have misunderstandings as struggle for power has divided them' (Manchanda and Kakran, 2017). The NMA helped negotiate a cease-fire deal in 1997 between the Indian government and the NSCN (IM) group and has been actively involved in negotiations even after the truce between the Indian Government and the Naga armed groups. As a key member in significant civil society initiatives like the Forum for Naga Reconciliation (FNR), the NMA has re-envisioned itself as frontline 'peace guardians' and a stakeholder in the Naga peace process (Aier, 2017). By taking part in several community dialogues on peace both within and outside the region, they have consistently demonstrated their dedication to peace. As part of the CRG-WISCOMP effort, they travelled to Sri Lanka in 2001 to promote peace on the island. They also travelled to Myanmar to meet with Khaplang to talk interethnic peace and even went to the United Nations to promote peace. As a result, they are now regarded as one of the most credible women's peace organizations in the region (Banerjee, 2012). Similar to the Meitei, Assamese, or Nagas, the region has a long historical record of women intervening for peace. The Naga women's renowned standing as "women of peace," however, is the result of their consistent and significant contribution to peace-building. Thus, it is essential to note that NMA has often invoked the question of motherhood and employed it strategically, and enter into peace politics without succumbing to social criticism.

## 6. MATERNAL POLITICAL ACTIVISM

One of the recent developments in the agendas of the NMA is its attention on women's rights assertion. There has been a morphing of the organization's role from welfare to peace activism and then to strategic women's rights. In the beginning, some member's express uneasiness and even opposition to NMA political activity given their conservative base and orientation. Initially the NMA tried depoliticizing activism and therefore did not explicitly advocate for women's right to be a part of the decision making institutions. Defending this strategic choice, the then president Neidonuo Angami asserted, "We have our role to play as mothers and they theirs" referring it to Naga Hoho. (Manchanda, 2005). Such opposition was clearly evident in the 1990s, when NMA reorient from social welfare to peace politics. Though still engaged in motherhood politics, it provoked vociferous comments about social transgression. Over the years NMA has expanded its areas of activities depending on the needs of the situation. According to Kheslie Chishi, former president of NMA, the evolution of the role of NMA was necessary because 'the situation demanded it' (Manchanda and Kakran, 2017). As Manchanda and Kakran (2017) observes, the NMA has steadily shown that it is capable of formalizing its local power into public authority. The NMA began to confront the unequal gendered power dynamics in Naga society under the leadership of educated middle class women. By confronting and fighting the exclusion of women from decision-making, they have been leading the campaign of the new generation of tribal women.

For years, the NMA has been engaged in a legal battle to implement reservations for women. In 2006, the state government brought the 33% quota for women in the urban local bodies, but the government began to waver once

the NMA pressured it to hold elections with quotas (Deka, India Today, February 2017). In 2011, several members of NMA formed the Joint Action Committee for women's Reservation (JACWR) to push the demand further yet, following the pressure of the JACWR, in March 2012, the Nagaland Legislative Assembly unanimously passed a bill to exempt Nagaland from Part IXA of the Indian Constitution, which gives provision for women reservation. Responding to this move, the NMA on behalf of the JACWR filed a Special Leave Petition in the Supreme Court in September 2012 challenging the constitutionality of the 2012 resolution of the Nagaland Assembly. The court thus, ordered elections be held with one-third of the seats reserved for women and the government agreed. But this was strongly opposed by the Tribal bodies with a contention that the reservation for women infringe Naga customary laws and traditions as protected under Article 371(A) of the Indian constitution. With the anti-quota protest turning violent in the state, the NMA was compelled to withdraw its name from the petition (Saikia, Scroll. in November 2017) Though women's reservation in the urban local bodies was not materialized, the members were positive that the matter may still be sub-judice as the human rights organization people's Union for Civil Liberties impleaded itself as a party to the case after the withdrawal of the Naga Mother's Association and the issues continue to be widely debated in the Naga Society at present.

## 7. CONCLUSION

In the beginning when peace politics was male dominated, the NMA refrained from commenting on the political agenda so as to retain the trust on all sides and mobilized activism around the idea of motherhood. As Neidonuo the then president commented "the solution should come from our leaders, not from an ordinary mother like me. If I give a decision they may not accept it" (Manchanda and Kakran, 2017). Nonetheless, in the later stages, when conflicts simmered with ceasefire, the new generation members came out more assertive not only about peace but also on women's rights. As recent studies on women and conflict indicate, there is a shift from women as victims to growing importance of women's agencies. Conflict resolution and peace building process has been seen by women in Naga society as a potential site for addressing gender inequality and advancing political participation of women while their contribution towards peace are at work. NMA found motherhood a spark for radical change and have employed 'motherhood' strategically for the reason that speaking as mothers will give them credibility in patriarchal societies than they would as individual women while some others genuinely believe that motherhood grant them social sanction as 'protectors' responsibilities to solve the problems plaguing their families and communities.

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## **A Study on the Causes of Substance Abuse and its Effects among the Youths**

**Hovala Raoh**

Assistant Professor, Department of Social work, St. Joseph University, Nagaland

**Werhiu Poru**

Department of Social Work, St. Joseph University, Nagaland

**Eden Phaomei**

Department of Social Work, St Joseph University, Nagaland

### **Abstract**

*Substance means a matter of particular or definite chemicals compositions. Substance abuse refers to overuse or excessive use of drugs or other chemical substances. Substance abuse can lead to physical, emotional, social and job or studies related problems in one's life. Thousands of young people in Nagaland state are being abused by the substances and many have lost their lives as well and it have become one of the most concern topic in the state as social problem. The main objectives of the study were finding out the causes leading to substance abuse and analyzing the effects of substance abuse. The study was conducted among the youths in Diphupar B Village, Chumoukedima Nagaland. Samples were selected based on Simple Random Sampling techniques and a total 50 questionnaires were included for the study. The finding shows that almost half of the respondents started taking substances because of the peers' influence and some of them because of curiosity. The study also shows that almost half of them are facing health issues because of taking substances still they are not able to stop from taking it.*

**Keywords:** Substance, Abuse, Effects, Youth.

### **I. INTRODUCTION**

Youths are known as the backbone of the country, they provide not only political leadership but also helps in shaping the future of the country as a whole and focus on bringing differences in the lives of others. It is one of the most important stage in life, with full of experiences and learning especially during the teenage and early adulthood. According to WHO, youths fall from the age of 15-24. With peer influences and out of curiosity they try to experience everything both in terms of negative and positive, thus lead them to fall into trap when they are not able to control. Substance usage is one of the things many youths tried out during this age. Using of substances could bring majors problems in one's life. He or she is considered as being abused by the substances when they are not able to stop taking a particular chemical contained substance. Substances include tobacco, cigarette smoking, pan masala etc. which lead to use of other drugs later. MahMonirNahvizadeh et al., (2014), said "substance abuse is a non-adaptive model of drug use, which may result in adverse problems and consequences that include all set of cognitive, behavioural and psychological symptoms". According to Harolyn, Belcher, Harold et al., (1998), any accidental and intentional death that is associated with drug and alcohol use have a higher risk among the adolescent population including teenage pregnancy and depression. Srinivasan Gopal (2022), mentioned in his study that "The youth, of late, has drifted from the mainstream and have started indulging in the illicit trafficking of drugs, illicit export of drugs and the youth lured by western influences have taken to consumption of drugs to greater heights without knowing the ill effects not only to them but also to their family, society and the nation as a whole." Youth stage is the most crucial stage for the beginning and experimentation of new things without considering what is good and bad, thus, substance abuse has become a global health problem. There are different reasons or causes why the young people are in been abuse by substances. It varies from individual to individual, some could be due to the influences of peers, some because of curiosity and some may be because of their role model. Arya Nair Kovilveetil (2021) revealed that most of the substance users started using substances due to peer pressure and experimenting out of curiosity. M L Satyan (2022) was on the view that parents' expectation in their children at home, the insult or embarrassment treatment that young youth go through at schools, colleges and workplaces, among friends' circle and relatives also lead to drug abuse. He concluded that expectation and treatment of a person in the social environment plays a very important role in the cause of Substance Abuse for youngsters who fail to cope up with the given conditions. Robert Loddenkemper and Michael Kreuter Karger (2015) said that the impact of media, movies and TV on tobacco consumption in young people, when young people have their models they tend to follow whatever they do by watching from medias. Media has become one of the easiest sources of knowledge in this generation since decade ago; Dechenla Tsering, Ranabir Pal, and Aparajita Dasgupta (2010) said 'Easy availability' and 'Relief from tension' are some of the most frequent reasons for the young people to continue

from substance use. He also mentioned that the most frequent information's about the substance use is from media.

Substance use has now become a way for youngsters specially suffering from Mental Illness, anxiety, depression etc. who turn up to drugs to help themselves cope up with the society, to feel good and also to free themselves from stress but continuous use of this substances does not help them but results to addictions which makes the users to use more and more. Suchi Ramteke (2021), mentioned that when some enter this realm of substance abuse they started to think they can come out of it whenever they want but they have no idea that the drugs they took for pleasure is now controlling both their mind and body and leaving becomes extremely tough for the users. Many offenders under the influence of drugs commit crimes. Looking at the present context of present generation, due to this substance abuse many young youths face birth defects, damage in immune system and most importantly increase the risk of infection. Pratima Murthy, N Manjunatha et al., (2010) also mentioned that both substances be it licit and illicit substance use cause serious public health problems and the evidence for it is now available in our country. Taking of illicit substances for pleasure as part time activities (Leading to addiction) among the peer group which raised the curiosity of youngsters to indulge in Substance abuse has become one of the greatest social problem that society face in our present generation. Muhammad Zaman, Sobia Razzaq et al., (2015) pointed out that drug abuse is regarded as personality disorder also seen as worldwide epidemic with environmental influence that control and affect human behavior. The main effects of drug abuse include depression anxiety, peer pressure and personality disorder.

The youths in Nagaland are not far from the youths of other state, many have already lost their lives and many are in danger. The causes and effects differ from individual to individual like the reviews from the other studies. The study aimed to find out the causes and effects of substance abuse among the youths in Nagaland.

## 2. MATERIAL AND METHODS

The present study was descriptive in designed and the data was collected through questionnaires. Diphupar B village, Chumoukedima district was selected as the study area and the respondents were selected purposively from the age of 15 to 25 years. The consent of the respondents was taken for better participation and to get valid data. A total of 60 questionnaires were distributed among the samples and 50 filled questionnaires were used for the study.

## 3. RESULTS

### *Profile of the respondents*

The respondents consisting of 50 total out of which majority of the respondents were male with 82% and 18% are female. 56% of the respondents are from 21-25 years of age. Study shows that majority of the respondents who are involve into substances were students with 78% and most of them were college students with 82%. Through the findings it shows that majority of the respondents belong to the nuclear type of family system with 88% and more than half of them were from a medium size family with 60%.

### *Causes of Taking Substances*

The study shows that 43.64% of the respondents started consuming substances out of curiosity, 23.64% of the respondents started consuming substances due to peer pressure, whereas 16.36% of the respondents started consuming substance because of depression, 7.27% of the respondents started taking substances due to family problems, while 9.09% of the respondents started consuming because of the other problems, other than the problems.

The study also shows that 12% of the respondents said that all of their family members are addicted to substances whereas, 60% of the respondents agreed that some of their family members are addicted to substances, while 28% of the respondents responded that none of their family members are addicted to substances. This is something need to think very deeply, though there is not specific finding in this study that the youths tent to use substances if their family uses it, but this could be one of the reasons, yet still need to study more in this matter.

### *Effects of Substances Abuse*

While studying the effects of substances in one's health, it shows that 44% of the respondents have never had health issues because of substance use, 32% of the respondents responded that they do have sometimes,

Whereas, 14% of the respondents said that they are having health issues very often because of substance used, while 10% of the respondents responded they often have health issues.

#### 4. DISCUSSION

The present study attempted to study the causes and effects of substance abuse among the youths. The study revealed that the major causes of substance abuse was due to their curiosity to try and experience new thing which lead them unable to stop the substance use causing substance abuse, while many said it was due to peer's influence. This study corresponds the study of Arya Nair Kovilveetil (2021) as in his study, more of the respondents started indulging in substances because of peer pressure and self-experiment out of curiosity. From the study, it is concluded that many of the respondents are having health issues due to intake of substances, though there was bigger number on who said that they are not having any health issues after taking substances. This study has a little contrast with the study of Pratima Murthy, N Manjunatha et al., (2010) and Muhammad Zaman, Sobia Razzaq et al., (2015), where they concluded that majority of the respondents were having different types of health issues due to substance abuse. Environment plays a very vital role shaping or involving an individual's live. The study revealed that many family members are being abused by the substances, which could be one of the causes why the youths are involved in substances since it is available in the environment.

#### 5. CONCLUSION

Substance abuse is something the present generations need to take into serious for the betterment of health. It is no longer an individual problem but it has become an endemic issue for the society as a whole. Not only from this study it brought to light the danger of substance abuse but many other studies also have shown its seriousness in the society. People suffering from mental illness instead of getting treatment from the professionals; have opted for temporary and easy methods of getting rid from the problems without realizing its effect in one's live in the later years. The study revealed that many youths involved in substances because of its availability in the environment and their family members are into it which leads them to easy access to substances. Educating the society could be one of the measures that can control the substance abuse among the youths in the study area, though many are aware about the effects of substances but they don't take it into consideration about the consequences.

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## The Hegemony of White Politics Against Weak Blacks in *Invisible Man*

**Zeenat Khalil**

Research Scholar, Department of Languages, Faculty of Humanities and Social Sciences, Integral University, Lucknow.

**Dr. Mursalin Jahan**

Assistant Professor, Department of Languages, Faculty of Humanities and Social Sciences, Integral University, Lucknow.

### Abstract

*Ralph Ellison's novel Invisible Man is a magnificent work of white monopoly in which white always keeps control over blacks and tortures them brutally. A narration through a simple black boy of south America whose traumatic journey shows the hegemony of white policies against black. Ralph Ellison demonstrates the enormous social and political influences by presenting the lifetime battle of a helpless man to build a sense of identity in white America. The narrator struggles due to the heinous practice of slavery, the harsh behaviour of white culture, and their horrible implications. The brutality and racial conflict shown in Invisible Man presage the bloodshed caused by the Civil Rights Movement in communities across the United States. Ralph Ellison's novel Invisible Man is a protest which demonstrates the hegemony of white politics against blacks who are weak and oppressed people.*

**Keywords:** Egalitarianism, Hegemony, White Politics, Trauma, Aesthetic

### 1. INTRODUCTION

In *Invisible Man*, the protagonist narrates his traumatic adventures from his high school to his undergraduate days in the South and the Brotherhood membership in the North. *Invisible Man*, a narrator of a terrifying journey, struggles against a strong group that abuses and utilizes black people for political goals. In his research paper "Awakening to Race: Ralph Ellison and Democratic Individuality," Jack Turner elaborates on the struggle of a black American hero, stating that "Ellison's *Invisible Man* models a type of democratic individuality designed to engage history's shadow, confront the ways racial slavery and its legacies distort American character, explode the illusions of white supremacy imposed on all citizens, and act politically on behalf of transracial democracy" (660). His psychological freedom occurs when he asserts the right to explain the significance of his experience, making him especially suited for the hall of mirrors that is American modernity.

Ralph Ellison's *Invisible Man* is also a great exemplar of breaking the folklore of the American Dream which talks about "social equality". This complex novel is a kind of protest against the norms and rituals of white society. Sean O'Brien in his research article "Blackening Out: Ralph Ellison's *Invisible Man* and the Historicity of Antiracism" explicates in the novel that *Invisible Man* imagines the end of American economic prosperity as a crushing experience of social death, anticipating the arrival of fall in terms of weariness and apathy. A sequence of expulsions from the typical points of entry into twentieth-century American civic society is staged by *Invisible Man*. The anonymous narrator describes how he was kicked out of college, fired from the Liberty Paints Plant, and ignored by the Brotherhood before completely disappearing from the social scene while living in exile beneath the street (81, 82).

Ellison outlines the effective social and political strengths that showcase the plan of white Americans to keep black Americans away from them and put them like a slave, denying them the unavoidable right to life, freedom, and the interest of bliss ensured to all Americans. Ellison utilizes the altered truth; he gives the mirror image of the white society living in their white-collar criminal world. It demonstrates that blacks often experience a dramatically different reality giving the impression that blacks and whites live in two distinct universes. The American ideal of whites is misery for blacks because the conduct that is considered normal for whites is considered deviant (or insane) for blacks. In the research paper titled "When Ralph Ellison Unmutes the Silences of History in *Invisible Man*," Ouseynou Sy further clarifies the scars of slavery. The scars of history (slavery) and their aftereffects, as well as the issue of who is identifying or documenting history, are of importance to *Invisible Man*. The topic of nation-formation and the construction of identity is the opening theme of Ellison's story. The narrator laments his subjectivity and marginality from the very beginning of the prologue, which summarises the material and foreshadows the events that will be related (02). This represents the narrator's psychological journey towards consciousness and enlightenment, awareness, and wisdom in the novel. Each character's narrative might be considered the lesson that aids the narrator's development and consciousness, bringing him closer to the knowledge of his own people's choices, heritage, and traditions.

The protagonist frequently faces the situation of servitude. A confused, miseducated black young man whose journey for meaning and self-identity in the dark world of white America leads him into various perilous circumstances. Even though he without a doubt contains a title, he remains anonymous and “invisible” all through the novel. Ouseynou Sy adds more to this in his research article “When Ralph Ellison Unmutes the Silences of History in *Invisible Man*.” The inability of others to perceive an invisible guy demonstrates that he has been physically and verbally imprisoned in his nation. The consequences and stigmas of the past that continue to influence the present are what prevent people from seeing the invisible man (02).

*Invisible Man*, by Ralph Ellison, is a magnificent work that depicts slavery in all of its forms in America, the protagonist of the novel has been befooled by the whites in a very simple way, through the greed for good education, qualified life, and a good position in society. For the narrator, every hour of slavery is the most painful wound, and he does everything he can to eradicate it from society and strive for equality. But whites are the masterminds behind the enslavement of black and impoverished people; they value ambiguity, metamorphosis, and transcendence. The narrator always wishes for a righteous culture for all. A culture that Mathew Arnold had dreamed for the people in his book *Culture and Anarchy: An Essay in Political and Social Criticism* which was published in the year 1869 by “Cornhill Magazine”. Arnold’s definition of culture is a study in completeness, in building a better future than they are, and it is driven by an individual and spiritual desire to do good. He observes that because religion says that God’s kingdom is within you, civilization invests perfection in an internal state. He further added that culture involves an active personal quest to let go of pride, prejudice, and ultra-conservative and accept the evenly matched development of all human talents to follow in pursuit of perfection.

The narrator suffers and is unable to make decisions about his activities when working with whites. He encounters traumas from everywhere which changes the path of his journey but his struggle goes lifelong to establish a sense of identity. White always denies his presence, his right to life, his liberty, and the pursuit of happiness instead he is considered a source of earning and a source of their development. Trauma is defined as: “A traumatic event is profoundly disruptive to every element of a person’s function,” by Sandra L. Bloom in her research article “Bridging the Black Hole of Trauma: The Evolutionary Significance of the Arts.” Any experience of danger is connected to hyperarousal, a complete body reaction that results in a profoundly changed state of awareness and noticeable alterations in how our thoughts approach various situations, and feelings. The astonished person shifts into survival mode and gets ready to do whatever will increase the likelihood that they will survive (203).

According to Sandra, trauma is a forceful effect on the victim where his mind changes its function. Trauma drops the memory or emotions due to which the traumatic person who is a victim survives only on chances but not on given opportunities. Trauma is an emotional reaction for the narrator, experiencing trauma as a response to that incident he finds physically, psychologically, emotionally, socially, professionally, or personally harmful. Trauma research began in the 1990s, and it was based on Freudian theory to create a model of trauma that envisioned a traumatic event. According to Sigmund Freud, a human being is dominated by one of two drives: sex or violence. Freud used the phrases ‘Eros’ and ‘Thanatos’ to describe sex and aggressiveness, respectively.

The narrator of *Invisible Man*’s life is based on his feelings, emotions, behaviour, and needs, and he lives on both drives in different situations. When the narrator seeks to discover the big mysteries of the Brotherhood foundation and pursues white women for sex, Eros’s desire becomes a strong factor. He seeks to scrape the secret plans of white males against the black and put life into action via lovemaking. He employs the other drive, ‘Thanatos,’ to protect himself from those who want to harm him. He survives by using aggressive drive while also attempting to eradicate his opponents from the environment. He uses these urges to stay alive and to prevent others from putting a halt to or diminishing his or his community’s basic demands or necessities.

According to Sigmund Freud, Id operates on the pleasure principle. It works for the narrator in this story when he is terminated from college, but he feels wonderful if he can continue in college for which he is anxious with no regard for reality. He remains a slave there, but his only aim is to receive an education. In his research article “Sigmund Freud and Psychoanalytic Hypothesis,” Dr. K. J. Sibi succinctly defines the Sigmund Freud theory as follows: the id, ego, and superego are three significant conceptualised components of the human psyche. The id functions at the unconscious level and is based on the pleasure principle. Eros and Thanatos are two different biological tendencies that make up the id. The urge for life, Eros, guides a person’s ability to breathe, eat, and engage in sexual activity, all of which are necessary for survival in the world (77). The ego is built on the ‘reality principle,’ and it is aware of other people’s needs and requirements. It also examines the reality of the superego and maintains its demands after taking care of the genuine situation. During the Battle Royal, the narrator quickly grasps the scenario and maintains the threatening situation. He is in control of his emotions and takes their

murderous wants gently, speaking nicely but not aggressively since the narrator recognises the truth of his situation. Sigmund Freud's strongest model is the ego, which serves the needs of the Id and never has a negative attitude toward the Superego. While employing his traits, Ego never disrupts Superego's moralistic nature.

In his research article "Sigmund Freud and Psychoanalytic Theory," Dr. K. J. Sibi continues by stating that The goal of the ego is to fulfill the desires of the id in a highly secure and acceptable manner. The ego functions in both the conscious and subconscious mind; in contrast to the id, the ego adheres to the reality principle. Moral values in people are upheld by the superego. It functions according to moral ideals and encourages people to act in ways that are acceptable in society (77). To preserve the atmosphere in his favour and not turn others against him, the narrator always maintains control of his temperament and behaves politely with everyone. As a college student or as a member of the Brotherhood, he tried to make everyone happy while being true to himself. He never associates with the Superego model, which might increase his strength in enforcing inflexible standards, being too judgmental, and uncompromising in relationships with the outside world.

*Invisible Man's* narrator is a profoundly traumatised character; he is not only inwardly wounded, but his exterior wounds are also massive and deep. Repeated physical and verbal attacks, as well as other negative stereotyping, made him a victim of immediate severe trauma. "Racism in the Novel of Ralph Ellison *Invisible Man*" by S. Mahalakshmi and P. Prabhakaran also demonstrates the black shade of white nature and brutality against blacks. Throughout the story, the protagonist continually encounters this kind of uniformity. In their arsenal of repression, traditional society primarily uses racism and exploitation to keep back and thwart the rise of black society. In his account of busing, Ellison emphasises this tactic of racism and exploitation (102-103).

Improper sitting on buses, on a train, or even in public places, hurts the emotional and physical health of victims of racial trauma. Systemic racism, which encompasses healthcare disparities, pay disparity, lack of choices, police brutality, enslavement, and more, is experienced by the narrator. *Invisible Man* is a cosmopolitan story about a man's journey from rustic simplicity and consciousness to cosmopolitan adulthood, humiliation, and ultimately rehabilitation. The research article "Black Space and Trauma Ruins" by Dorota Sosnowska demonstrates the following aspects of black people's trauma black space is created by affirming the discarded items, trash, undesirable locations, and objects. It is constructed out of recycled materials, repurposed ruins, and recovered opportunities. All these objects serve as a means of communication in the absence of light, in the darkness (51).

Later, as a reward, worthless brass tokens masquerading as gold coins were tossed onto an electric rug to pick them up, the narrator was compelled to continue performing because white folks were throwing him with their feet, injuring him more and more. The narrator's physical injury continues in "Liberty Paints Factory" due to the explosion in the boiler room. It was horrible, agonising, and much worse, he lost his memory and was bouncing about erratically, which is extremely traumatic for him. Cathy Caruth explains the wounded situation of the narrator as trauma and mentions it in her book *Unclaimed Experience: Trauma, Narrative, and History* as trauma describe an overwhelming experience of sudden or catastrophic events in which the response to the event occurs in the often delayed, the uncontrolled repetitive appearance of hallucinations and other intrusive phenomena (11).

According to Gramsci, the dissemination of ideologies—beliefs, presumptions, and moral standards in social organizations such as schools, churches, courts, and the media, among others, is how the agreement to the rule of the dominant group is attained. In contrast to a society's base or its social relations of production, which are large and of marginal importance, Gramsci claims that hegemony is a type of control that is predominantly exerted through a society's superstructure. Hegemony is a state in which a core class assumes governmental, cognitive, and strong purity within a hegemonic system that is anchored by a shared worldview, according to Gramsci. Thomas R. Bates in his research article "Gramsci and the Theory of Hegemony" has given a simple understanding of the theory of Hegemony as "the concept of hegemony is a very simple one. It means political leadership based on the consent of the led, a consent which is secured by the diffusion and popularization of the world view of the ruling class (352)."

The narrator's pain not only encompasses the tension, dread, disappointment, and agony, but it also damages flashbacks. Slavery, brutality, isolation, prejudice, migration, poverty, and other forms of oppression have formed an inextricable part of Black American culture. He has witnessed similar scars in his family and society since infancy. The narrator realises how his race as a whole is affected by social dislocation and powerlessness in the reign of white supremacy. African Americans are regarded as second-class citizens who are unworthy of equality and respect in the United States. White males generate stereotyped labels and expectations for African Americans. The novel's worst victim is the narrator, who, along with his whole town, is suffering from different traumatic scars that have taken his happiness, tranquillity, progress, income, and practically everything, even his life.



## 2. CONCLUSION

The protagonist, a nameless narrator lives in the 20th-century United States where realism, hard labour, and honesty are not recognised. The novel is written from the perspective of the narrator and addresses a variety of social and intellectual difficulties that African-Americans encountered in the early twentieth century. Because whites follow their own identity and evolution, the narrator is invisible to them. However, the narrator, a black boy, believes that his invisibility is linked to whites since white culture as a whole refuse to see him. Ralph Ellison demonstrates the enormous social and political influences by presenting one man's lifetime battle to build a sense of identity as nothing more than a black man in white America. This entire novel is about the great protest against whites and their monopoly in America and the hegemony of their politics against blacks who are weak and oppressed people.

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## **A Study on the Usage of Digital Device between the Age of 2 to 6 years: A Perspective of the Parents**

**Jonathan Keyho**

Department of Social Work, St. Joseph University, Nagaland

**Thejapfu Secu**

Department of Social Work, St. Joseph University, Nagaland

**Hitolu G Assumi**

Department of Social Work, St. Joseph University, Nagaland

### **1. INTRODUCTION**

A recent research study shows that children are really capable of using an advanced type of mobile phones even without any proper guidance. Though mobile phones are the effective mode of communication, it is a well-known fact that it also has adverse side effects if being overused. Mobile phones emit shockwave radioactive radiation that affects the children body in various manners. Today's children are growing up in a radio-frequency environment that never existed in human history before. The radiation emitted by mobile phones and mobile phone masts can have adverse effects on children. Some include, Mobile Phone affects Your Immunity Status, Increase Risk of Chronic Pains, Effect of the Mobile phone on Vision Problem, Increase stress level. A child's brain is too sensitive to withstand the effects of mobile radiation. (sudhirrawat, 2021).

Information Technology has become a part of our daily activity. Mobile phone is one of the greatest inventions of mankind which made communication easier and simple. Digital devices have quickly become cultural tools within the home, at school, and in the community, (Ahmet, Sami, and Konca, 2021). With the advancement, many new applications for games and other entertainment have been created and this evolution had attracted a vast number of children and adults into watching and playing games. Smart phone has both its benefits and drawbacks for the people particularly the children. There are some kids that learn to read, write, do action songs and sing rhymes even before starting their preschool while many children also learn to speak English by imitating on the videos they watch. Digital devices can serve as a learning tool for the people and particularly for the students as they can learn new forms of technology by exploring the internet. Many children have misused the technology by excessively spending a lot of time in playing games and screen timing which can be a threat to mental health. In this 21<sup>st</sup> century mobile phones have gained its necessities and became a very common technology to every human kind. Since mobile has become a part of unavoidable device the parents should strictly regulate and monitor the amount of time their children spend on screen timing. These days it has become a trend for the parents to provide mobile phone to their kids to pacify them or reward them for their academic performance and other achievements which is not very wise unless the child is matured enough to use the technology responsibly.

Infants and toddlers are also capable of learning from screen media. This learning is dependent upon the confluence of three distinct but interrelated factors: attributes of the child; characteristics of the screen media stimuli; and the varied environmental contexts surrounding the child's screen media use. (DL Linebarger, 2010) Spending time online is associated with both potential risks and rewards. Children are afforded opportunities for self-expression, learning and consolidating friendships. On the one hand, while being online also exposes children to risks such as harmful content and cyber bullying on the other. (Livingstone, 2011). An article titled "Association between mobile technology use and child adjustment in early elementary school age" used data compiled from a group of 1,642 first-grade children in Japan to determine whether there's a link between the use of Smartphone technology and behavioural development. The researchers found that "routine and frequent use of mobile devices appear to be associated with behavioural problems in childhood" (staff, 2018).

A recent article published in the journal *Child Development* explored the physical health consequences of smart phone use for children. It stated that, as more children begin using Smartphone at earlier ages, "it is of importance that neurological diseases, physiological addiction, cognition, sleeps and behavioural problems are considered." Because of this, parents and clinicians should be aware of the repercussions of early-age Smartphone usage. (university, 2020). The World Health Organization (WHO) has begun identifying the risks associated with children using Smartphone technology. The Washington Post recently reported on the WHO designation of how much time children — particularly babies — should spend on smart phones. The organization stated that children between two- and four-years-old "should spend no more than an hour a day in front of a screen." Additionally, the writers found that a research gap exists in the field. They stated that "Long-

term consequences can be hard to measure, and ethical concerns prevent experiments” that could explore the topic more thoroughly. As a result, we will likely be unable to grasp many of the negative effects of smart phones that will put children at further risk. (siegel, 2019). "The literature now shows that around as young as around 18 months, toddlers, can start learning very basic concepts from media if they using it together with an adult," Radesky, an expert in child development at Boston Medical Centre, told NBC News (fox, 2016).

#### *Significance of the study/objective of the study*

1. To find out the increasing usage of digital device used by toddlers.
2. To study how screen time affects the child development process.

## **2. METHODOLOGY**

In this study, the researchers had adopted exploratory research to describe the characteristics of phenomena. The study is carried out in a quantitative manner using purposive sampling technique to extract accurate information. The researchers used interview schedule for data collection by using self-developed questionnaire. However, it relied on both primary and secondary sources for the data. Seiruzha colony under Chumoukedima district was selected as the study area with a sample size of thirty respondents. The participants of this study include the parents of the toddlers between two to five years of age.

## **3. FINDINGS AND DISCUSSION**

#### *Demographic details of the respondents*

In accordance with the objective of the study, data on the perspective of parents in the usage of digital device by toddlers were collected. Here, the participants are the parents and it consists of 30 respondents out of which 80% are female and the other 20% of male parents. The age group of the respondents is found to be between 20 to 40 years in which majority i.e., 65% of the respondents falls between the age group of 31 to 35 followed by 20% between the age group of 26 to 30. This study attempts to collect the data of the toddlers who are between the age group of 2 to 5 years in which majority 62% of the toddlers are found to be 4 years of age (as of October,2022) and 65% of the toddlers are male and 35% are female toddlers. 80% of the respondents belong to nuclear family.

#### *Use of Mobile phone by the toddlers*

Surprisingly, 96% of the respondents revealed that their children have the habit of screen timing at least once a day to play games or watch videos. In fact, 70% of the respondents also shared that it has now become a habit for their children to compromise with the use of mobile phones after they are done with their studies. Study results revealed that 70 percent of parents let their children play with digital devices specifically mobile phones while doing house hold chores and this has been commonly found mostly among those single parents or whose spouses are working in different area of location. 80% of the respondents stated that their child has started using mobile phone as early as one and half years old but none of the parents mentioned about the limitation of screen time that they provide to their children.

#### *Positive and negative impact in the use of digital device*

According to the present study, 68% of the respondents agreed that usage of digital devices enhances the learning potentials and capacities of the children to some extent. The parents also shared that mobile phones can be used as a learning device for the child in the sense the children can learn different religious rites, rhymes and songs. The study also revealed that screen time helps the children to advance and learn English words even before they join any formal institution. However, it is also found that most of the children are not very responsive to their parents or any other person during screen timing. Study shows 96% of the toddlers are not hostile towards their parents during or after the screen time. Visual impairment or sign of physical uneasiness is not indicated among the toddlers since majority of the parents does not allow them to spend much time on the digital devices. The present study also revealed that, there are few parents who does not allow or encourage their children to play with mobile phones as such habits may hamper their mental growth and this may even lead them to become more negligible in their studies.

#### 4. CONCLUSION

In accordance with the present study carried out, the usage of different digital devices is common to most of the toddlers. Majority of the respondent revealed that this practice has been first initiated to pacify the children, which then slowly developed into habit. However, it shows that through this habit a lot of children had received educational care, helping them to learn English alphabets and identifying the numerical numbers, rhymes, etc. even to the extent of conversing using English language at very early age which shows their mental growth and development. On the other hand, the study also revealed that the children are not responsive to the command of their parents during the screen time. Also, the respondent is concerned about the negligence of studies by the children once they get addicted with the use of digital devices, which is why majority of the respondent allows their children to use such devices in a very limited manner. Thus, the researchers conclude this study with a view and observation from both the respondents and the children that digital devices used by the toddlers have both advantages and disadvantages, in a way it shapes and prepares the child to be advanced in its learning process whereas, it may also deteriorate the relationship building and create communication gap within the family and friends. In other words, become less sociable if excessively used over the time.

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## A Study on the Traditional Fermented Foods and Beverages of Waromung Village, Nagaland, India

Akumjungla

Department of Botany, St. Joseph University, Nagaland

Bendangnaro Jamir

Department of Botany, St. Joseph University, Nagaland

### Abstract

The traditional use of fermented products has been practiced, since the early ages by the people of Nagaland. The objective of the study was to identify and document the different fermented foods and beverages by various indigenous people, to collect and preserve the knowledge of fermentation and to study and reveal the type of fermented foods and beverages made and consumed by the people. The survey was conducted between from November 20, 2021- April 21, 2022. Most of the fermented foods are still prepared in some household whereas the practice of making alcohol beverages is declining but fruit beverages are still prepared till date. A total of 10 fermented products were documented among which there were 2 vegetable based fermented product, 1 bamboo based fermented product, 1 legume based fermented product, 4 of them were fermented alcohol/ fruit beverages and 2 meats based fermented product. Most of the knowledge on traditional method of preparation of fermented food and beverages are lost due to decline in its practice in present time by people living in rural areas and only few are practiced by villagers. The need to preserve these fermented foods and beverages is important as it is practiced less and its knowledge is declining. Further research on fermented products will also help us know to improve the shelf life and nutritional value of the fermented product.

**Keywords:** Fermented food and beverages, Waromung, (Mokokchung), Nagaland.

### 1. INTRODUCTION

Present day has great concern for the decline of the use of traditional method of preserving food product and beverages. Traditional knowledge of preserving foods and beverages has passed on from generation to generation [1] (Jamir and Deb, 2014). Consumption of traditionally fermented foods and beverages started from early history [2] (Aidoo *et al.*, 2006). Nagaland state which is surrounded by different states of India lies between 13°37'09" N longitude - 123°10'53" E which is inhabited by 16 recognised Naga tribes –Angami, Ao, Chakhesang, Chang, Dimasa Kachari, Khiamniungan, Konyak, Kuki, Lotha, Phom, Pochury, Rengma, Sangtam, Sumi, Yimchungru and Zeliang [1, 3, 4, 5] (Jamir and Deb, 2014, Singh *et al.*, 2007, Das and Deka 2012, Moa and Odyuo, 2006). The present study was conducted in Waromung village under Mokokchung District which is located in the North Eastern region of India. It is located in Alongkima Circle of Mokokchung district, Nagaland. Mokokchung is one of the sixteen districts of Nagaland state in India. First-hand information was collected from the elderly villages regarding step-by-step process of fermentation of food product and beverages. It was conducted in *Chungli* and *Mongsen* dialect, a common dialect of Ao Naga. The information was collected from elderly peoples who have been practicing till date from early childhood. The documented fermented foods are categorized as follows:

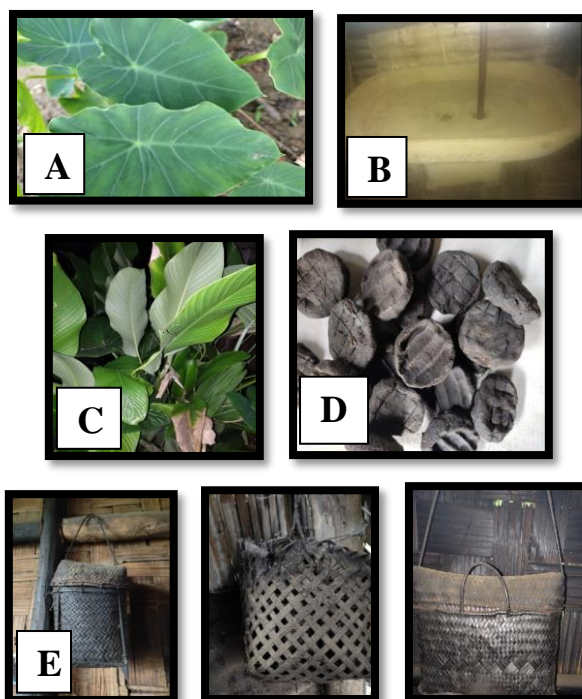
- 1) Plant based fermented products.
- 2) Bamboo shoot based fermented products
- 3) Legume based fermented products.
- 4) Fermented alcohol/ fruit beverages.
- 5) Fish based fermented products.

#### Documentation of Fermented Products

##### Plant based fermented products

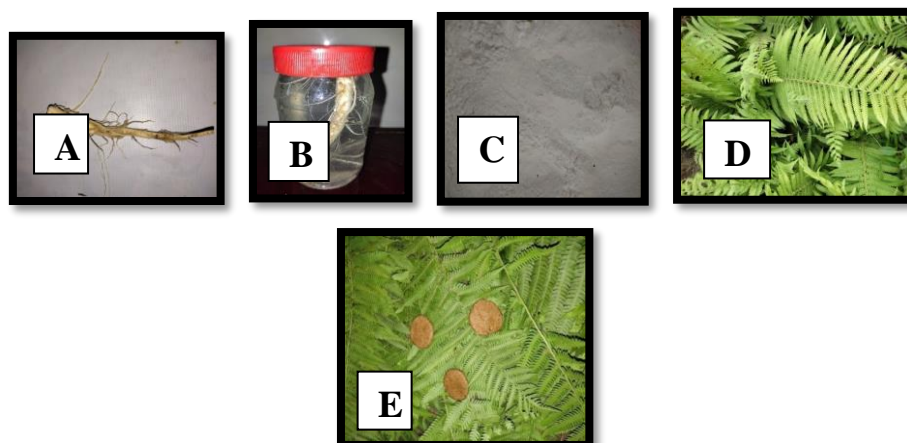
*Anishi/Moya*: *Anishi* is prepared from the leaves of *Metong toa/Nupang to* (*Colocasia* sp.) by the Ao Naga tribe. The fresh leaves of *Metong/Nupang* are gathered, cleaned, piled and the leaves are covered in banana leaves or *Phrynium pubinerve* leaves for 4-5 days. The leaves after turning yellow are pounded in the traditional mortar and pestle into a paste which are made into cakes. The cakes are kept under the fire place or outside in the sunlight until it is entirely dry and hard. It is cooked with pork meat with liquid *ejak/etsuk*. It is also used to make chutneys (Figure 1). Commercially in the local market, 1kg of *Anishi* is sold at INR 600-700/-.*Metong*

*tekong / Nupangkong* dried stem and *Rapoa/Rupoare* also sold at INR 150-200. Folk women in villages earn their daily wages by making and selling the product.



**Figure 1 - (A) Metong toa / Nupang to (*Colocasia sp.* leaves); (B) Ajem/ Sumki Traditional mortar and pestle; (C) Hemcha am/ Amchi to (*Phrynium pubinerve*); (D) Anishi/Moya; (E) Anishi/ Moya stored in Akang /Taksep (bamboo baskets)**

*Peyazu*: *Peyazu* is a fermented powder product made of *Ening* and rice powder, which is used for making alcohols. *Ening* is a root, which is collected and washed. It is then stored in bamboo containers or glass bottle with water and kept for 3-4 days for fermentation. The water is used to mix with powdered rice and makes small dough, and then it is dried on the surface of the *kejaklau* (*Thelypteriskunthii*) for 2-3 days depending on the weather. It is kept on top of the *kejaklau* to prevent infestation from the insects. The dried dough is made into powder with hands. The powder is called *peyazu* which is used as starter culture for making alcohol beverages. It is stored and keeps in bamboo and used while making beverages (Figure 2).

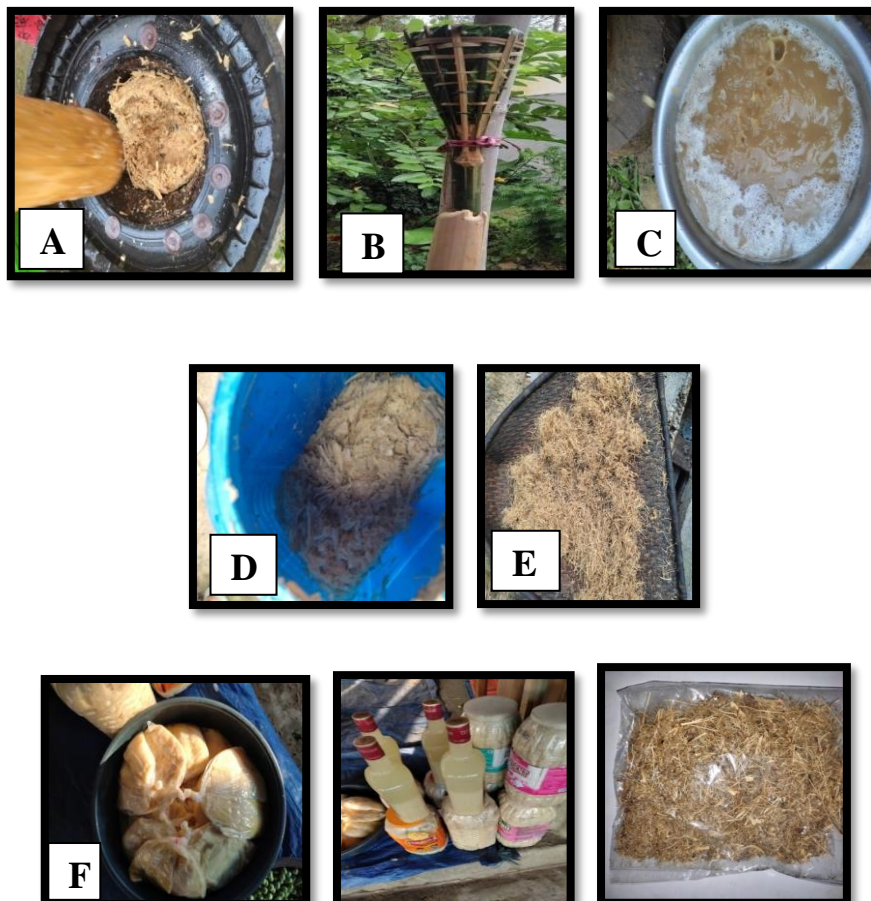


**Figure 2 - (A) Ening; (B) Ening stored in bottle with water; (C) Ayam (Powdered rice); (D) kejaklau (Fern); (E) Dough drying on the surface of kejaklau**

## 2. BAMBOO SHOOT BASED FERMENTED PRODUCTS

*Ejak/Etsuk*: *Ejak/Etsukis* mostly prepared during the month of May-June by the villagers. It is made from succulent bamboo shoots (*Dendrocalamus humiltoni*, *Bambusa tulda*), young shoots are taken and their sheaths are taken out till only soft white part of the shoot remains. The shoot is then cut into small pieces and pounded

in *Ajem/ Sumki* (traditional mortar and pestle) and made into soft paste. Soft paste is wrapped by *Hemcha am/ Amchi to* (*Phrynium pubinerve*) and placed in a traditional funnel called *Atsu*, a hole is made in the middle so as to let the juice drain out, it is kept for 6-7 days till the liquid is dried out. The soft paste and liquid is stored in separate bamboo with lid. The fermented *Ejak/Etsuk* can be stored for 5-6 years and more (Figure 3). Commercially in the local market, one container cost INR 400/- to 600/- and one liter of the fermented liquid cost INR 100/- to 130/-. It is also packed in small packets selling for about INR 50/- to 70/-.



**Figure 3 - (A) Pounding of bamboo shoots in *Ajem / Sumki* (traditional mortar and pestle); (B) *Atsu*; (C) *Sutsu / Etsu* extracted bamboo shoot liquid from paste; (D) *Ejak / Etsuk*(Bamboo shoot paste); (E) *Echi / Esu* (Dried bamboo shoots); (F) *Ejak / Etsuk, Sutsu / Etsu, Echi / Esu* being sold in the market**

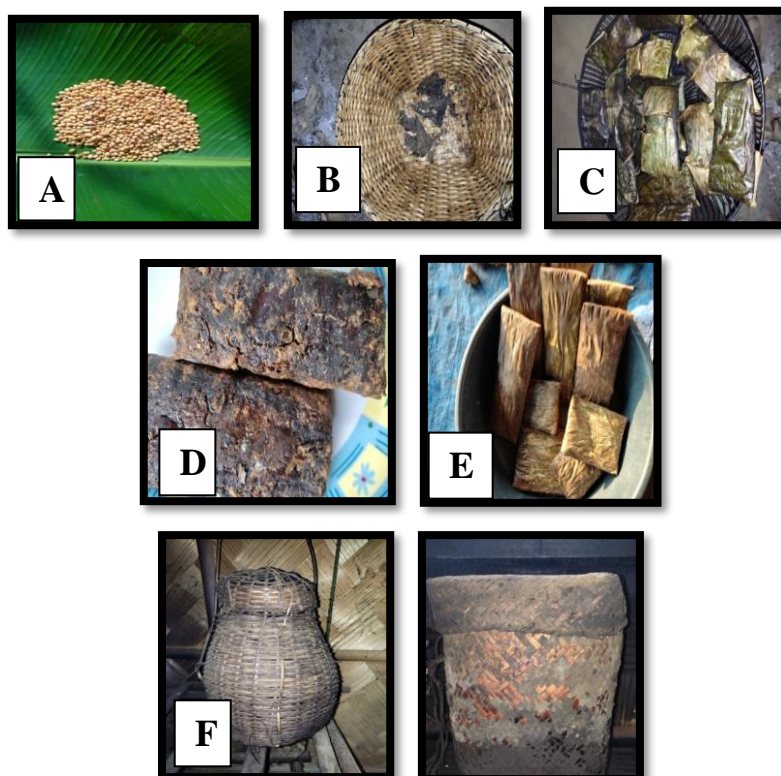
### 3. LEGUME BASED FERMENTED PRODUCT

*Chameyep*: *Chamijang* (soybean seeds) are used to make *Chameyep*. Soybean seeds are first washed properly and cooked till it becomes soft. It is then loaded or wrapped in banana leaves or *Phrynium pubinerve* leaves or it can also be loaded in bamboo basket with the bottom lined with banana leaves or *Phrynium pubinerve* leaves. The basket is kept near the fire place for about 3-4 days for the fermentation to accomplish. Drying it for more than 3-4 days of fermentation reduces the strong smell of the fermented product. The fermented soybean is then made into a paste and covered in banana leaves or *Phrynium pubinerve* leaves and kept for another 3-4 days near the fire place (Figure 4).

Commercially in the local market, per piece it cost INR 20-30/-. Folk women earn monthly wages by making *Chameyep*, exporting to other states making pickles mixed with pork or beef meat. *Chamijang* is also cooked and dried outside in the sunlight and pounded in *Ajem/ Sumki*. The powdered is then stored in a container and it is used in place of milk powder for making tea. It is still practiced till date by the villager. The flavor of the tea taste much better than milk powder.

#### 4. FERMENTED ALCOHOL/ FRUIT BEVERAGES

*Metsu yu/ Mochitsu yi* (Sugarcane alcohol): Locally available sugarcane is collected, its leaves are strapped off, and grinded by wooden machine to collect liquid. Liquid is then boiled for 3-4 hours. The sugarcane liquid is then poured in a tin container, left for 24 hours till it becomes solid, which is molasses. The molasses are broken into pieces, put into a round bottom container utensil and then over it another pot with a flat bottom is put on top of it. The pot is then covered and made to boil again in addition with water. The steam collected in flat bottom pot is used for making alcoholic beverages. *Peyazu* is added in the collected liquid and kept stored for 1-2 weeks for fermentation to complete (Figure 5). It is usually prepared during festivals.



**Figure 4:** (A) Cooked *Chamijang* placed on banana leaves; (B) Bamboo basket used for loading the cooked *Chamijang*; (C) Cooked *Chamijang* wrapped by banana leaves; (D) *Chamijang* after fermentation; (E) *Chamijang* being sold in the local market; (F) *Chameyep* stored in the *Akang/Taksep*



**Figure 5 -** (A) *Metsu / Mochitsu* (Sugarcane); (B) Process of collecting alcohol

*Achang yu* (Rice beer): Rice is first washed and cooked. *Peyazu* is added in the cooked rice and then stored in the pots for 1-2 weeks for fermentation to complete. *Achang Ayu* can be stored and kept for only 3-4 days (Figure 6). It is still practiced today.

*Sungjanglijang ayu* (fruits beverages): *Sungjanglijang ayu* is a fermented fruit beverages made by different kinds of locally available fruits (Figure 7). Fruits like plum (*Prunus* sp), moker (*Prunus persica*), naspate (*Pyrus persica*, Jero (*Ananas comosus*), Moteram (*Psidium guajava*), Mangu/sumomo (*Musa*), Entsulashi (*Passiflora edulis*), (Litchi *chinensis* sonn.), Bolong (*Artocarpus heterophyllus*, Tsukmenou/ Tsukmenatsu (*Vitis vinifera*),



Naring (*Citrus sinensis*), tesen (*Citrus lemon*). During the traditional preparation of sungjanglijang ayu using all the different fruits, Peyazu is added to it in a traditional clay pot called ali chau/ali Chipo (Figure 8) and stored for about a week or so depending on the different texture of fruits. Naspati (*Pyrus persica*), bolong (*Artocarpus heterophyllus*) and moker (*prunus persica*) are among the best fermented beverages. The beverages are sold in different prices depending on the quality.

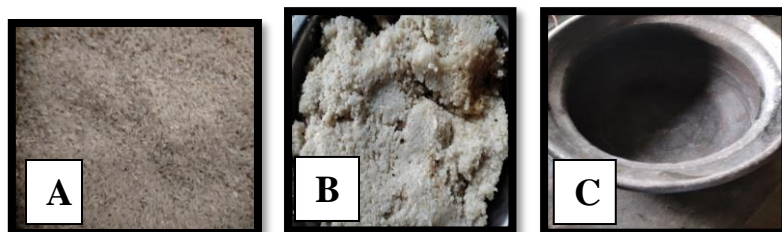


Figure 6 - (A) *Ajang / Jang* (Rice); (B) *Acha / Chi* (Cooked Rice); (C) *Ali Chau / Ali Chipo* (Clay Pot for Storing the Alcohol)

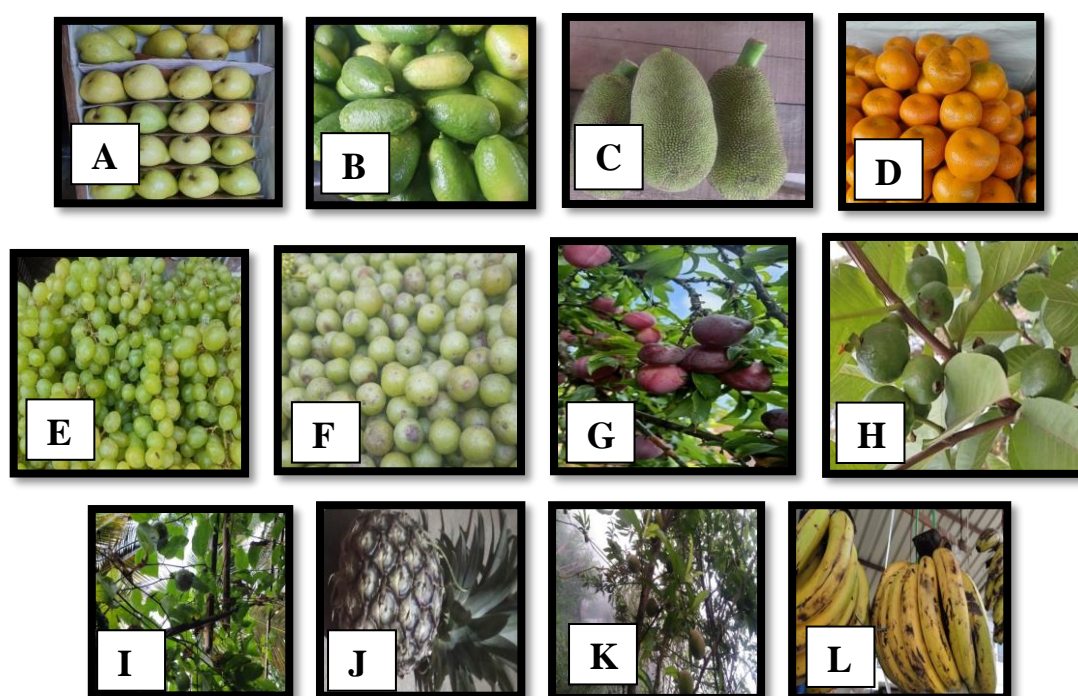


Figure 7 - (A) *Naspati* (*Pyrus communis* L.); (B) *Tesen* (*Citrus limon*); (C) *Bolong* (*Artocarpus heterophyllus*); (D) *Naring* (*Citrus sinensis*); (E) *Tsukmenou/ Tsukmenatsu* (*Vitis vinifera*); (F) *Lir / Lozu* (*Phyllanthus emblica*); (G) *Plum* (*Prunus* sp); (H) *Moteram* (*Psidium guajava*); (I) *Entsulashi* (*Passiflora edulis*); (J) *Jero* (*Ananas comosus*); (K) *Moker* (*Prenus persica*); (L) *Leso* (*Litchi chinensis sonn*)



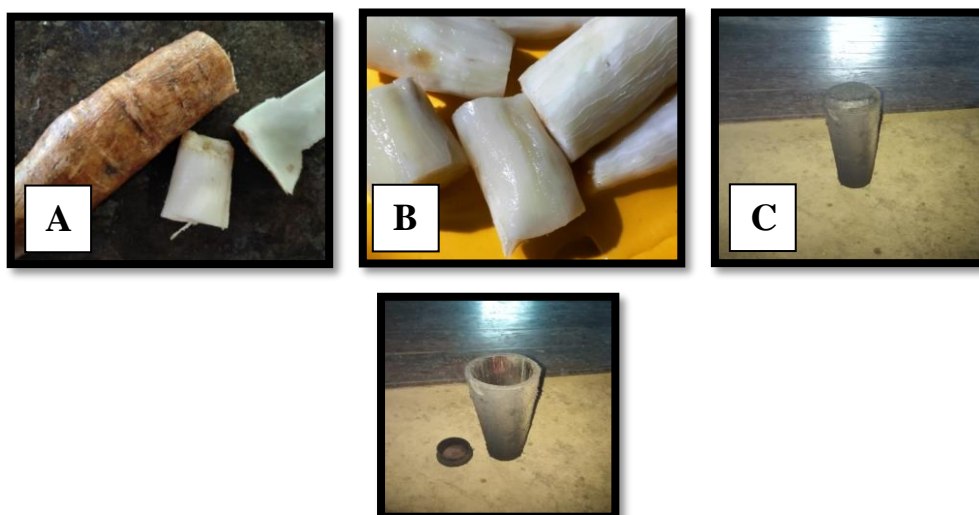
Figure 8 - *Ali chau /Ali Chipo* (Clay pot) use for fermenting fruits beverage.

*Alicha Ayu/ Alishi yi* (Tapioca alcohol): *Alicha Ayu/ Alishi yi* is a fermented alcohol made from tapioca starch. The tapioca is collected, peeled, and then boiled in the pot. It is cooled down and then the boiled tapioca is put

in *Aoa ongdang/ Au pongdang*, a bamboo container with lid. Then *Peyazu* is added and keep for 10-15 days for fermentation (Figure 9). First collection of beer is done after 10-15 days and continues after a gap of 2-3 days.

## 5. FISH BASED FERMENTED PRODUCTS

*Ngatsu onjang*: *Ngatsu onjang* is a fermented product which is made from small fishes. Small fishes are collected, washed and then dried in the sunlight. *Ayu/yi* (sugarcane alcohol) is mixed with the dried fishes and put in a bamboo basket and then kept near the fire place. It is stored for 2-3 months for fermentation to complete (Figure 10). It is practiced till date in some villages. It is used for preparation of chutneys. It can be stored for 3-4 years.



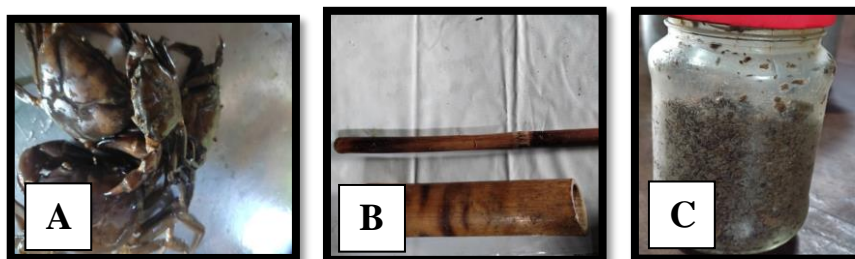
**Figure 9 - (A) Alichia / Alishi; (B) Boiled Alichia / Alishi; (C) Aoa ongdang / Au pongdang**



**Figure 10 - (A) Anga/Angu (Fish); (B) Angatakung/ Angutakong (sun dried fish); (C) Bamboo container placed near the fire for fermentation.**

*Jangpangonjang*: *Jangpangonjang* is a fermented food product made from crab. Crabs are first washed and shredded into pieces leaving the hard covering. Shredded crabs are made into paste and then mixed with *Ayu/yi* (sugarcane alcohol). It is then put in bamboo container and kept for 2-3 months near the fire place for fermentation to complete (Figure 11). It can be stored and keep for 3-4 years. It is used for preparation of chutneys and it is sold for INR 100-200 per box.

Ethnic fermented food forms a part of the daily diet and adds flavour to otherwise bland curries. The women folks of Naga villages, process various raw materials such as local vegetables, fruits, animal fats and beverages [5, 6]. These fermented foods are still prepared at the household level and usually natural or spontaneous fermentation occurs during its production. Fermentation is spontaneous and uncontrolled process, thus resulting in a product of variable quality. Spontaneous fermentation typically results from the competitive activities of different microorganisms whereby strains best adapted and with the highest growth rate will dominate during particular stages of the process [7]. Due to the diversity of ethnic groups in Nagaland, there are also various fermented food products produced by each ethnic group. Each ethnic group has its own method of fermenting food materials for the purpose of preservation, taste, and nutritional enhancement and has been carrying this tradition from time immemorial [1]. On the nutritional front studies have been reported where enhancement of nutritional value of the fermented food as compared to its raw material has been recorded [7].



**Figure 11 - (A) Jangpang / Tsungken; (B) Sungpo (Traditional bamboo mortar and pestle); (C) Mershi Chempong.**

## 6. CONCLUSION

Documentation on Traditional knowledge of fermented foods and beverages was mainly done for preserving indigenous knowledge for the benefit of the future. The present time for preserving fermented foods and beverages is practiced less and due to influence of global commercialization and socio-economic transformation, the preparation of some lesser-known fermented foods are fast declining. The details of the preparation step of the various fermented food products have not been systematically studied and recorded. It is important to document the process, quantify the ingredients and identify the key conditions for a successful fermentation in order to replicate the process under standardised conditions and ultimately at industrial level.

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## Psychosocial Problems and Resilience among the Transgender Parent

**Dr. Pramodini Magh Rengma**

Head & Associate Professor, Department of Social Work, St. Joseph University, Nagaland

**Francis Suja**

Master of Rural Development, III Semester, Department of Social Work, St. Joseph University, Nagaland

### Abstract

*A transgender person is someone whose gender identity or gender expression is different from the gender with their sex assigned at birth. Transgender is also including people who belong to the third gender. In April 2014, the Supreme Court of India formally recognized the existence of a third gender. However, the third gender community has been facing an identity crisis in the sphere of the societal norm and their identity is not accepted by society. It can lead them to face transphobia, stigma, discrimination, and an alienated attitude toward them. The finding of the study revealed that the people of the study area are more encompassing attitudes and prevalent of much social ostracism such as Transphobia, prejudice and hostile attitude towards them. Such social ostracism makes them find it difficult to disclose their sexual orientation and identity in society and look at them differently. Majority of the transgender parents are living with feelings of grief, guilt, depression, and alienation from society. The transgender parent's resilience is in dire need and emphasizes areas for self-esteem and social and emotional support. The study is determined by 50 transgender family members from the Imphal East and West district of Manipur who is openly disclosing sexual identity. Descriptive research and purposive sampling for the selection of respondents were used for the present study. The paper is attempted to highlight the issues and problems faced by the family member of transgender and how they are resilient from it.*

**Keywords:** *Transgender, Identity crisis, Third gender, Social ostracism*

### 1. INTRODUCTION

A transgender person is someone whose gender identity or gender expression is different from the gender with their sex assigned at birth. Transgender is also including people who belong to a third gender or conceptualize as a third gender. The third gender is a concept in which individuals are categorized, either by themselves or by society, as neither man nor woman. It also includes people who identify as transgender, trans woman, trans man, transsexual, cross-dressers, or gender non-conforming, gender variant or gender queer. For some transgender people, the difference between their gender orientation at birth and the gender they know themselves can lead to emotional distress that affects their health and everyday lives. Meyer (2003) said that according to the minority stress theory, sexual and gender minority populations experience chronic stress due to discrimination and prejudice in societies which leads marginalized individuals to experience emotional and behavioural issues. The study also revealed that the source of distress that transgender people experience are stigma, prejudice, and discrimination. Most transgender people face discrimination in the workplace and in accessing public accommodations and healthcare. It is not easy to lead a life as a transgender because they are neither categorized as male nor as female and this deviation is unacceptable to society. One of the important problems which transgender people face in society is the lack of social acceptance, insecurity feeling, emotional conflict, and adjustment problems.

In the family, they have experienced personal and family conflicts. Family members of the transgender face psychological and social issues. There is a prevailing negative attitude in society towards the family member such as rejection by society as seen in stigma and discrimination at the workplace, harassment, prejudice, homophobia and social ostracism. As the visibility of transgender people increases in the present day and it is time to help them to join the mainstream of society. Therefore, there is a need to understand the psychological problems, social issues and challenges faced by the family member of transgender people. Thus, this paper will try to address the psychosocial issues and problems faced by the family member of transgender people with reference to Imphal East and Imphal West District of Manipur.

### 2. REVIEW OF LITERATURE

Gender is often defined as the duties and responsibilities expected of women and men at a certain time. Gender is also referred to as a social construction, determined by social norms, culture, attitudes, values, traditions, beliefs and practices. Fuller KA and Riggs DW (2018) expressed that transgender individuals experience a period of increased stress and vulnerability during their coming-out process. From the finding of the study, it

comes to know that the coming out experience is unique and influenced by biological, psychological, social, and cultural factors and family support. It plays a critical role in the psychological resiliency or distress of transgender individuals. The same study also found that because of decreased access to social support services, employment discrimination, and increased healthcare costs, transgender individuals often rely on their families for housing and financial support. Santrock's (2011) study revealed that through actions and role models in the family, parents have an influence in shaping the gender of the child. The study by Gagne & Tewksbury (1998) found that the development of sexual identity occurs within the family. While this process they encounter or experience of rejection or violence begins in the family. The study also expressed that many have been punished for feminine behaviour during their childhood and even forced out of their home.

The study by Factor & Rothblum (2007) revealed that transgender individuals reported less support from their families, and greater harassment, discrimination, and violence than their non-transgender siblings. The study also suggested that there is evidence regarding the different treatment among the siblings and differences in life outcomes. Coolhart D, Shipman DL (2017) said that gender transition can also be difficult for families. The finding of the study elaborated that a transgender child's gender expression can be assisted to foster a more affirming environment in which a child's gender identity can be explored and supported. It is found that parental coaching may not provide so that the appropriate environment for parents to explore their own feelings in a compassionate and empathetic setting. Dierckx M, Motmans J, Mortelmans D, et al. (2016) study expressed that there are distinct differences in the nature of the distress experienced by the adolescent children of transitioning parents, parents of transitioning adult children, and partners or ex-partners of transitioning adults. Veldorale Griffin A (2014) study also found that transgender adults and their adult children experience similar levels of distress during the transition.

### 3. METHODOLOGY

Descriptive research is used for the present study. The study is determined by 50 transgender family member from the Imphal East and West district of Manipur who is openly disclosing their sexual identity. For the study, purposive sampling technique was used for selecting the respondents. During the interview schedule, various life experience, issues and problem face by family member of transgender were discussed.

### 4. MAJOR FINDING

#### *Recognition of sexual behavior*

In the study, a maximum of the parents recognized their son's sexual behaviour in childhood. However, some of them had recognized in puberty and the teenage period. Some parents identified their sons' behaviour in concurrence with the style of walking, talking, playing and dressing. This can be recognized from the following expression: Linthoi (name changed) expressed: *"Since childhood, I found some kinds of strange behaviour in my son. He did not like playing with boys and used only girls' toys, clothes, etc. Since a young age, I tried to change his behaviour"*.

#### *The feeling of grief and guilty*

Grief is a response, particularly to the loss of someone or something in which a bond was formed. Grief and guilty are seen when the relationship between parent and child becomes deteriorates due to the discovery of his or her son's homosexual identity. The majority of the respondent parents in the study area felt grief when they came to know of their sons' homosexual behaviour. They felt that having a homosexual child in the family entailed the loss of future dreams, loss of control, loss of security, loss of relationship and loss of generation. These multiple losses faced by family members might trigger a grief reaction that could last for months or even several years. Some parents felt guilty about their sons' homosexual behaviour. They even asked themselves why such things were happening with their children only, is it because of not looking after their children properly or of their poor parenting system that affected their sons'/ brothers' behaviour? Parents often take years for realizing their sons' sexual behaviour. So, parents commonly asked themselves 'Where did we go wrong'. Therefore, the feeling of guilt is one of the aspects encountered by transgender family members.

#### *Denial of sons' homosexual identity*

The study found that a maximum of family members denied their sons' and brothers' homosexual identity. The finding revealed that family members did not believe in their sons' or brothers' homosexual behaviour. So they denied their sons' homosexual identity even after they disclosed to them. Soon after acknowledgement of their

sons' homosexual behaviour, parents often experienced fear, guilt and denial of their son's identity. Sometimes parents got angry and blamed someone else for their son's sexual orientation, such as peer group, sexual abusers, etc. During those stages, parents often threatened, abused their sons or forced them for changing their behaviour. Such action drives a wedge between the parents and son leading to escape or running away from home. It is also seen that some parents themselves had thrown them out of the house thus they were forced to live on the streets and tend to engage in risky behaviour such as sex work, multiple sexual partners, substance abuse, etc. However, few family members do accept their son's homosexual identity and that he is the only one who financially supports them. However, some families of transgender remain in threats, denial and expelled from home.

#### *Fear of social rejection*

Fear and misunderstanding about homosexuality are widespread. It became challenging for the development and maintenance of a positive self-image for transgender and for their families as well. It can be a very emotional stage when a transgender person disclosed their sexual orientation and sexual identity in front of parents and family members. The majority of the parents expressed that they feel fear of social rejection for having transgender sons. There is a prevalence of stigma and discrimination in society and look down the transgender people as well as their family members. They are even regarded as a bad omen in society and family. The family members even believe and feel that their sons have put down the families' prestige and image in society. Therefore, most transgender parents have fear of rejection by their own neighbors, friends, relatives, religious person or social groups. Memma (name changed) said: *"Sometimes, I feel shy to go out and meet others. People in society have looked down upon me because of my son's homosexual behavior and identity. Some of my friends have commented with abusive words in front of others. I did not have words to express but was very angry and felt rejected in the public"*.

#### *Conflicts in the family atmosphere*

A peaceful family is regarded as a happy family and it depends on the types of people living together that reflect the understanding and respect, etc. among the members. Having a deviant character as a child in the family disturbs the peaceful atmosphere of the family. A maximum of family members expressed that their sons' homosexual behaviour had affected badly the peaceful family atmosphere. So the finding of the study revealed that there is conflict, misunderstanding, and quarrelling due to the homosexual nature of their son's behaviour. Komla (name changed) said: *"My husband started drinking after my son had disclosed his homosexual behaviour in public. My husband scolded, beaten and blamed me that I did not look after my son's behavior in time"*.

#### *Experienced depression*

Parents have consistently tried to bring a change in their children's sexual behaviour to normalcy but in vain. In such situations, parents usually experienced shame, guilt, and depression. A maximum of family members had experienced stress after knowing their sons' homosexual behaviour. The finding revealed that family members felt upset, guilty and grief of being having homosexual sons. Nando (name changed) expressed: *"I am very upset and disappointed with my son's homosexual behaviour. He is the only son in the family. Now, I give up on bringing a change to his behaviour. I am totally helpless and hopeless. I can't think of my next generation. I do not know what to do?"*

## **5. DISCUSSION**

The study revealed that the family members of the transgender have encountered stigma, discrimination, prejudice and homophobia at a societal level. Family members showed negative attitudes due to their role conflict in the family. They even use abusive words, threatening, neglecting and expelling from home. Family members of the transgender felt grief and guilty for their son's behaviour and identity. Some of them feel scared of getting social rejection and not accepting their son's sexual behaviour and identity. They felt insecure for their son in society as they were abused and harassed by police, local goonda, friends and partners. The condition made them suffer from psychological problems such as stress, depression, worry, anxiety, guilty, isolation, suicidal thoughts etc.

## 6. CONCLUSION

Though there is legal acceptance of homosexual identity, transgender people are looked down upon in society. They become vulnerable in every aspect of their life. To a certain extent, it made them psychologically impaired. Almost the same situations are encountered or faced by the parents or family members of transgender people. The family members need support, encouragement and empowerment to get resilience from the situation. The finding will help to bring up a platform where the family member expresses how they feel about having a transgender son or daughter. Social media and print media can rise up public awareness about diverse sexual orientations and identities. Moreover, some of the psychotherapy and education may facilitate to restoration and strengthening of familial relationships leading to improved mental health outcomes for all.

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## **Influencing Mechanism of Green HRM Practices and CSR on Organizational Sustainable Performance in Manufacturing Sector**

**Ramya M**

Research Scholar, College of Management, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu, Tamil Nadu

**Dr. G. Prabu**

Assistant Professor, College of Management, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu, Tamil Nadu

### **Abstract**

*As there is escalate in the industrialisation, urbanisation in accordance with changes in the life patterns businesses are experiencing a shift from profit-motives to sustainable performance. The increase in the quantities of wastes leading to increased threats to the environment. Stakeholders have put pressure on organisations to adopt environmentally friendly business practises in recent years, making it critical to identify green practises that boost sustainability. Despite academic interest in green human resource management, studies on green practises are limited and are still emerging in the context of developing countries. In the existing literature, there are only a few studies that have attempted to investigate the relationship between green human resource management (GHRM) and organisational commitment. Hence, the present study intends to address the research gap by extending the ability-motivation-opportunity theory (AMO) and Stakeholders theory to determine the indirect and direct impact of GHRM in the manufacturing Sectors in India. The main objective of the study is to investigate the relationship between Green Recruitment, Green Selection, Green Training, Green Performance Evaluation, Green Rewards, Green Attitude, Green Competency, Green Compensation that influences the organisational sustainable performance. Further the paper hands out the influence of corporate social responsibility that sustains the organisational performance in manufacturing sector. The study also spells out to gain a better understanding for sustainable performance and researches the significance of Organizational Citizenship Behaviour towards Environment and Organisational Commitment in manufacturing sector. This paper reviews on literature relationship between GHRM bundle practises and four dimensions of organisational sustainable performance. The findings provide policymakers and managers with GHRM guidelines to promote environmental culture and employee green behaviour in the workplace on the relationship between GHRM bundle practices and four dimensions of organization performance.*

**Keywords:** *Green Human Resource Management (GHRM), Green Human Resource Management Practice Ability Motivation Opportunity (AMO), Organisational Commitment (OC), Organisational Citizenship Behaviour towards Environment (OCBE), Sustainable Performance.*

### **1. INTRODUCTION**

Green Human Resource Practice has a greater influence with the technological up gradations in the manufacturing sector for its sustainable performance. Researchers have debated the employees' environmental values as indispensable aspects of applying green culture, including coherent use of resources, well planned utilisation of energy and pollution, waste and recycling (Graves and Sarkis, 2018). In broader perspective developing countries do not fully adopt green practices in all functional areas; few departments adopt green practices (Gupta, 2018).

### **2. THEORETICAL BACKGROUND**

AMO theory and Stakeholders Theory: Green HRM can be smarter to be figured out in the idea of Capacity Inspiration Opportunity (AMO) theory. AMO is one of the most popular theories to describe and understanding the concept of HRM on organizational perspective. (Appelbaum, 2000). In 1984, Edward Freeman stated that the stakeholder theory of organisational management and business ethics that addresses morals and values in managing an organisation.

*Green Human Resource Management Practise:* Green human resources management practices, corporate social responsibility can be better understood with AMO and stakeholder theory Boselie, P.; Dietz, G.; Boon, C (2005). Dumont et al., 2017; Pham et al., 2019; Yu et al., 2020 gave importance for green HRM in achieving environmental sustainability. The paper focuses on explore the meaning of the green HRM, reason for moving forward for greening and achieving sustainable performance.



<b>GHRM Practices</b>	
<b>Authors &amp; Year</b>	<b>Implications</b>
Renwick et al., 2016;	Summarize recruitment and selection, training and development, along with the leadership as well as practices for developing environmental management.
Al Kerdawy, 2019	Integrates environmental management (EM) and sustainable performance to support organizational performance
<b>Green Recruitment &amp; Selection</b>	
<b>Authors &amp; Year</b>	<b>Implications</b>
Nayak & Mohanty 2017	Educating employees like lowering waste and environmental damage thereby helps to improve environmental performance.
Masri & Jaaron 2017	Signifies organization's willingness to cooperate with the benefits of the environmental performance.
Pavitra Mishra 2017	Employing eco-friendly ways of hiring and measuring green attitudes and follow basic environment-friendly activities.
Opatha. 2015	Measures competency and attitudes of employees' participation in Green management initiatives.
Renwick et al, 2008 & 2013	Framing policies like- becoming a green employer and reflecting environmental policy.
<b>Green Training &amp; Development</b>	
Genty, 2021	Training employees with the environment friendly nature such as energy, safety, recycling and management of wastes.
Ojo et al., 2020	Mobilizing skills and expertise needed to make informed decisions about green HRM practices.
Yusoff, Nejadi, Kee, & Amran, 2020	Designing education and creating awareness among employees to integrate environmental sustainability.
Teixeira, Jabbour, et al , 2018	Practices economically and eco-friendly approach for enhancing green value.
Mishra, 2017; Mandago, 2018	Workers' desire to contribute to environmentally friendly efforts requires environmental training.
<b>Green Performance Evaluation &amp; Green Rewards</b>	
Darvishmotevali & Altinay, 2022	People are more particular to alter their habits in response to critical success factors evaluated through green performance management.
Pavitra Mishra, 2017	Behavior is measured to judge an individual; which will facilitate their adoption among employees.
Opatha , 2015	Integrating green criteria in appraisals for evaluating employee's job performance accordingly to progress on greening the performance feedback interview.
<b>Green Attitude</b>	
Opatha & Arulrajah, 2014	A reasonable beliefs (cognitive), feelings (affective) and intentions to behavior (behavioral) with respect to greening of the environment.
Coskun 2018	Defines an attitudes towards the environment and known as ecological attitudes, environmental-friendly attitudes and also environmentally sustainable attitudes.
Opatha 2014 & Kim et al. 2016	States that environmental attitudes and behavior of workers are the critical considerations for enhancing the organization's environmental efficiency.
<b>Green Competency</b>	
Alvarez-Garcia, et .al (2018)	The environmental competencies consist of green knowledge, green attitude and green behaviour which influence the variables such as gender, residence, type of leisure, and education.
Cabral and Dhar (2019)	The dimensions consist of green knowledge, green skills, green abilities, green attitudes, green awareness, and green behaviour.
Dlouh´a et al. (2019)	Sustainability is distributed in socio-emotional learning competences associated with changes as well as sustainable transformation.
<b>Green Compensation &amp; Green Rewards</b>	
Mandago, 2018	Intended to monetary and nonmonetary incentive program to encourage people in supporting green environmental priorities.
Ahmad, 2015	Suggests such as (1) rewards for skill; (2) cognitive and interpersonal; (3) sustainable technology appreciative inquiry; and (4) rewards for green, and

	sustainable behaviour acceptability.
Rawashdeh, 2018	Incentives increases and acknowledges based on environmental performance positively impacts staff willing to try out green projects.

#### *Corporate Social Responsibility*

As stated earlier that green human resource practice and corporate social responsibility can be better understood with the help of AMO theory, it further gives a clear picture regarding ability as GHRM practices and CSR as the outcome of the opportunity which is given to the employees output and promotes employers brand Boselie, P.; Dietz, G.; Boon, C (2005).

#### *Organisational Commitment*

Hierarchical responsibility consolidates the level of worker recognizable proof, reliability, and inclusion (Singh & Onahring, 2019) also Organizational Commitment incorporates the degree of employee identification, loyalty, and involvement. Jawaad et al., (2019) Suggests that organizations should come up with incentive plans and motivation initiatives to enhance employee commitment. Rubel et al., (2018) Employee commitment can be depicted through their attitudes and behaviors and other organizational outcomes such as job satisfaction, affective commitment, and retention levels.

#### *Organisational Citizenship Behaviour towards Environment*

Green human resource management practise has an association to accomplish environmental manageability, it is vital to comprehend how HRM rehearses and influence the eco-friendly conduct of workers (Kim et al., 2019) research proposes that when representatives become worried about their ecological execution, they will add an extra-role to the ways of behaving and engaging green practices (Pham et al., 2019) suggests that OCBE addresses the willingness of workers to take part in ways of behaving that there are far more than their sets of responsibilities and that benefit the climate (Luu, 2017). Hierarchical citizenship conduct toward the climate (OCBE) gives a hypothetical base to a worker's mental cycle toward an association's green endeavors. Anwar et al. (2019) claimed that OCBE deliberates the actions made by employees to meet the environmental performance requirements of their employers.

#### *Sustainable Performance*

UN and shared future coined “sustainable development”. It described it as a transformation that fulfills today's requirements without sacrificing future generations' ability to satisfy theirs. (WCED, 1987). Elkington, J. (1994) in addition, the most widely recognized notion of sustainable performance (SP) includes three components: economic performance, social performance, and environmental performance. Yusliza et al., (2020) Dealing with financial matters falls under economic performance, handling environmental issues falls under environmental performance, and taking care of the interests of stakeholders is related to social performance. Yusliza, M et al., (2019) stated that the Social sustainability refers to the quality of human system depending on a variety of ethical principles, including justice, fairness, and commitment. Sustainability Some of the human activities harm our ecosystem, like emission of CO2 which comes from burning fossil fuels, deforestation, dumping plastics into the oceans, and millions of animals are on the verge of extinction, are almost uncountable. Anwar, N.; Mahmood, N.H.N, et.al, 2020 Paulet et al (2021) Many stakeholders are challenging for more effective measures and more active participation by governments and businesses. The assumption that we want to prevent further harm while also looking for ways to reverse the damage that has already been done. Customers are using their purchasing power to ensure that, as individuals, they avoid purchasing items or services from companies that are not seen to be acting in environmentally responsible ways, and that, as citizens, they influence government policies to limit business activities that may harm the environment.

### **3. OBJECTIVES**

- To investigate the relationship between Green human resource practices that influences the organisational sustainable performance.
- To analyse the influence of corporate social responsibility that sustains the organisational performance in manufacturing sector.

#### 4. RESEARCH METHODOLOGY

Aim of the study is to achieve the above stated objectives; a conceptual review of literature was foregone to perceive theoretical understanding. This paper employs secondary data, to review the articles from different databases, websites and other available sources. The present study seeks support from literature review so that it enables the researcher to structure the research, find gaps, scopes for further study and authentic knowledge base in this field of study.

#### 5. DISCUSSION

The study marks the effects of green human resource management practice for its sustainable performance in the manufacturing sector. In addition, the study takes the support role of mediation as organisational commitment and organisational citizenship behaviour towards environment. Further the study looked into the pathways of green human resource management practise with the help of AMO (Ability, Motivation, Opportunity theory and Stakeholder). Green recruitment incorporates the policies and environmental related tasks that communicate employers' green concerns to its employees thereby to become environmentally sustainable. Green selection keeps keen concerns on candidate's green attitude and competency in ones' own private life which might reflect in their work behaviour to attain organisational objective. Green human resource practice incorporates overall employee identification with the attitudes and behaviour, innovation and loyalty towards the organisation. Green training and development foster the environmental awareness and educating the workforce for sustainable performance. Green performance appraisal will encourage employees to adopt the system to achieve strategic focus, measurability and completeness of the employee performance. Green Attitude will influence the employee's positive attitude of employees and exhibits belief, feelings and behaviour towards greening the environment by their organisational sustainability. Green Competency with employees with green behaviour, green attitude intends to environment friendly behaviour thereby to maintain environment sustainability. Green Compensation influences monetary and non-monetary benefits to encourage best quality of work life, improves sustainable performance and encourages green environment. Green rewards are to motivate employees financially and also through promotions for their cognitive and interpersonal skills for achieving sustainable behaviour. Organisational citizenship behaviour towards environment motivates the workforce, increases productivity and also contributes to financial and environmental performance. Finally, the outcomes of green human resource management practice though scuffles because of the rising CO<sub>2</sub> emissions and issues related to the climatic change have adverse effects.

##### *Further recommend to study*

Further the study can be done through longitudinal data but which takes better understanding with all hierarchical levels of the employees. Other variables like Green Human Capital, Green innovation can be taken as a support for wider and deeper understanding of the concepts. The study can also have proceeded with empirical pathways to have a higher level of acceptance. Finally, the data collection may be in mixed methods and can be done with several other sectors like tourism, hospitality, higher education rather than confining to manufacturing Sector.

#### 6. CONCLUSION

This paper extends its idea about GHRM practices had captivated the consciousness of the researchers and embraced the practical implications through the green practices firms can accomplish environment as well as organizations sustainability. CSR could carve out its legal, environmental, philanthropic, and ethical obligations towards society and retain sustainability.

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# **A Study on Financial Performance of Nagaland State Co-Operative Bank Ltd., Nagaland**

**Riweu Kenye**

Research Scholar, Department of Economics, St. Joseph University, , Nagaland

**Dr. J. Suresh Kumar**

Associate Professor, Department of Economics, St. Joseph University, Nagaland

## **Abstract**

*Today, banking sector is considered as the fastest growing sector. Cooperatives can act as an effective media for socio-economic reconstruction of the country. A cooperative bank may be defined as a business owned and controlled equally by the people who use its services. Co-operative banks were established with the motive of financial inclusion and upliftment of the rural economy. They play a significant role in the socio and economic development of India. Thus proper study of its performance has become a requisite. The study is based on secondary data and the data are collected from various reports, articles, newspapers, books, journals and internet sources. The statistical tools used for the data analysis are tabular representations, pie charts and bar graphs. For the purpose of the study, the financial performance of the Nagaland State Co-operative Bank Ltd. has been selected for the time period of 2015-2019. The study will help the policy makers to improve the working performance of co-operative banks. To evaluate the performance of co-operative bank, some variables have been studied like numbers of branches, total deposits, percentage of overdue to demand, NPA, profitability etc. The problems faced by co-operative banks are numerous but certain efforts should be taken by these banks like focus need to be given on recovery, training to staff to improve productivity. The results show that they are facing the problems of high overdue and more NPA. The government should extend its support since co-operative bank have potential to solve these problems. This paper focused on structure, growth and performance of co-operative banks, to identify the problems faced by them and to give recommendations to improve the financial position of co-operative banks. The objectives of the study are: A) To study the history, growth and development of Nagaland State Co-operative Bank Ltd. B) To analyse the financial performance of Nagaland State Co-operative Bank Ltd. C) To analyse the operational performance of the banks in certain ratios. The study helps to understand the working capital position, changes in profits, deposits and loans. The study found that immediate steps are needed to improve the capital base of the bank.*

**Keywords:** Growth, Performance, Financial Performance, Co-operative Banks.

## **1. INTRODUCTION**

The Nagaland State Co-operative Bank Ltd. (NStCB) is a government of Nagaland undertaking, integrated on 6<sup>th</sup> April 1967. It plays an exuberant role in meeting the demands of the economy of Nagaland. NStCB encourages and invites the participation of entrepreneurs and investors in various sectors such as development of a host of agro-based industries, fruits and vegetables processing, floriculture, horticulture, meat processing, tourism development, power, transport and communication, health care facilities, housing, sanitation, warehousing, information technology, infrastructure, etc. NStCB is instrumental in developing the infrastructure of the state by providing technical and commercial know-how to entrepreneurs' such as providing land on lease to start up enterprises. Thus, making it easier for the newly set up cottage, small and medium scale industries to expand and grow at minimum expenditures. The bank plays a vital role to improve the living standard of the people, generate more income and employment opportunities, and promote socio and economic life of the people.

## **2. REVIEW OF LITERATURE**

Sikandar Ali (2019) studied the opportunities and challenges of co-operative banks in India and said that co-operative banks contribute to the major part in the India's banking and financial system. He further mentioned that cooperative banks also contribute to the growth of the Indian Economy and betterment of farmers and middle-class families. His study found out that banks performed better on one parameter but weaken on other which led to dwindling situation.

Shanthi.R and M.Anandan (2017) studied that financial performance of co-operative banks in Tamil Nadu and analyzed whether the firm has sufficient liquid resources to meet its short-term obligations. The study found out that the liquidity ratios measure the ability of the bank to meet its current obligations.

Kotnal J.R, and Mulguand L.C (2017) studied the management of deposits of Shree Siddeshwar co-operative bank, Bijapur and analyzed the various types of deposits to fulfill the needs of the farmers depending upon the capacities of the customers. They mentioned that working capital is the life blood of business and nerve center for all business activities and if it becomes weak, the business can hardly prosper and survive.

Shanthi. R and M. Anandan (2017) reflects that the liquidity ratios measure the ability of the bank to meet its current obligations. They indicated whether the firm has sufficient liquid resources to meet its short-term obligations. A current ratio of 2:1 is considered ideal. That is for every one rupee of current liability there must be current assets of 2:1 if the ratio is less than two. It may be difficult for a bank to pay current liability.

Kale. B.S and Chobe. C.N (2016) studied the working capital management of Devgiri Urban Co-operative Bank Ltd. Aurangabad and focuses on the current scenario of urban cooperative banking system in India. The study examines the growth and success of the bank and found out that the overall performance of the DUCBs is satisfactory and employment generation of the bank is increasing year by year. The capital, reserves and borrowings increased almost double during the study period, with a nominal percentage of variation. The study suggested that government should formulate specific policies and they should be implemented for the upliftment of urban cooperative banks in Maharashtra. The bank should try to upgrade technology and should formulate customer friendly policies to face competition.

Singh. S.K.(2016) in his study problems and prospects of the cooperative movement in India under the globalization regime focuses on several pitfalls and shortcomings like: poor infrastructure, lack of quality management, over-dependence on government, dormant membership, non-conduct of elections, lack of strong human resources policy, absence of professionalism, etc. It suggests evolving strong communication and public relations strategies, which can promote the concept of cooperation among the masses. It should also push forward by developing effective strategies to overcome existing weaknesses and for continuing growth of the sector. The paper assessed the future prospects of the cooperative sector of India.

Kale. B.S (2014) studied and reviewed the performance evaluation of urban co-operative banks in Maharashtra. He studied the financial position, growth trend, and advancing patterns in the district urban co-operative banks and gave suggestions for improving the profitability of the bank.

Renuka. R and Elamathi. C (2013) attempted to review the development of cooperative banking in India and analyzed the performance of urban cooperative banks. The study has analyzed the functioning of the bank with regard to deposit mobilization, issue of loans and advances, recovery of loans, regarding the working performance of the Bank.

Deshmukh P.V. (2013) studied the performance of cooperative banking in India and mentioned that the Indian cooperative sector has the potential of offering new remedies for the problems created by Special Economic Zones, Mall, and Chain Marketing of multinational companies. His study focused on the performance of Indian cooperative banking sector on the basis of income, expenditure, NPA, borrowers etc.

Jyoti. G and Suman. J (2012) in their study on cooperative banks in India with special reference to Lending Practices measured and compared the efficiency of Cooperative Banks of India. They also studied the impact of size on the efficiency of the Cooperative Banks and suggested the appropriate measures to improve the efficiency of the Cooperative banks so as to know different type of loans preferred by different sets of customers and the satisfaction level of the customers from Bank's lending policies. The study found out that there is a very simple procedure followed by bank for loans. Easy repayment and fewer formalities are the main factors determining customer's selection of loans. The quality of services provided by the staff is satisfactory because bank is catering to a small segment only and the customers are properly dealt with and the customers are satisfied with the mode of repayment of installments.

Das. S.K (2012) studied the operational and overall financial performance analysis of Meghalaya apex co-operative bank. His study included the growth and status of State cooperative banks. He made assessment about the future projection of MCAB and also studied the extent of progress in owned funds of MCAB in terms of share capital and reserves during the study period. His study examined the growth of business of MACB and evaluated the recovery performance during the study period. Efforts are also taken to identify the prospects and constraints of state cooperative banks in the regions and forwarded suggestions in this regard.

Subrahmanya Bhat, K.M and Murthy, I.B (2012) attempted to study the financial performance of the Goa state cooperative bank ltd. in the areas of working capital, deposits, advances and profit or loss for 12 years from 1993-94 to 2010-11. They emphasized that adoption of technology is required for the banks to re-engineer processes, network branches and introduce alternate delivery channels such as internet banking, phone banking and mobile banking, data warehousing and data mining, customer relationship management, integrated treasury management, human resource management and the implementation of core banking solutions. The study suggested that the bank should take extraordinary care of such types of customers in order to make them permanent clients of the bank.

Emmanuel V Murray (2004) in his study Cooperative Credit Structure in India emphasized on the need for a vibrant and effective cooperative credit delivery mechanism. They mentioned that external support is required in terms of recapitalization and legislative reforms to address the issue of dual control. But even within the available situation, the opportunities that exist are limitless.

### **3. PROFILE OF NAGALAND STATE CO-OPERATIVE BANK LTD.**

The Nagaland State Co-operative Bank Ltd. is a two-tier co-operative credit structure inaugurated on 21<sup>st</sup> April, 1967. The bank has its structure as the State Co-operative Bank at the Apex level and Primary Agricultural Co-operative societies at the base level. The bank was established on the basis of co-operative principles with the objectives to provide financial assistance to needy farmers, artisans, and empower economically weaker sections of the society. The bank commenced its business with the aim to put in place a financial system that is cordial to the customs and traditions of the people. The bank also aims at mobilizing surplus liquidity from general public which in turn can be invested to increase the economy of the state. With this sole objective, the bank has opened its branches throughout Nagaland state.

At present, the bank is extending its services to the people of the state with affiliated co-operative societies having their presence in every village of Nagaland. These co-operative societies having its reach to every rural population and they are in a position to distribute the benefits services to the rural mass and thereby transforming the concept of financial inclusion to the masses. The bank is governed by its By-Laws approved and registered under the Co-operative Societies Act in force in the State and its functioning under the guidelines of RBI and NABARD. According to the By-Laws of the bank, the Board of Directors is the highest policy making body consisting of three government representatives namely Principal secretary and Finance Commissioner, Secretary Cooperation and Registrar of Co-operative Societies, one elected representative from each district, Representative of NABARD and Managing Director of the bank who is also acting as member secretary. The Vice-Chairman is elected by the board, who in the absence of the Chairman presides over the meetings.

The Registered Office of the Bank is situated at NSCB building, Circular Road, Kharmahal in Dimapur, Nagaland. It carries out its banking business through a network of 21 branches located throughout the state.

### **4. OBJECTIVES OF THE STUDY**

- (i) To study the various aspects of Nagaland State Co-operative Bank Ltd.
- (ii) To analyze the financial performance of Nagaland State Co-operative Bank Ltd.
- (iii) To examine the operational performance of the bank in certain ratios.

### **5. RESEARCH METHODOLOGY**

In order to conduct the research effectively, a substantial survey on literature was conducted to collect the data. The study is descriptive in Nature and the collected data are secondary in nature. The sources of data were collected from articles, government reports, books, journals, newspapers, project works, research papers, published and unpublished research works, and web sources.

### **6. RESULTS AND DISCUSSION**

The financial performance of the bank during financial year 2018-19 shows that the balance sheet size of the bank registered a growth of 12.53% as on 31<sup>st</sup> March, 2019. The growth of deposits in the banking sector remained strong during financial year of 2018-19. The deposits grew by 10.00% during FY 2017-18. Total deposits of the bank have increased to Rs.78446.80 lakh as on 31<sup>st</sup> March 2019. Loans and advances of the bank have increased to Rs. 50435.90 lakh as on 31<sup>st</sup> March 2019. The business of the bank has grown to Rs. 128882.70 lakh as on 31<sup>st</sup> March 2019. Business per employee improved to Rs.534.78 lakh as on 31<sup>st</sup> March 2019. The Capital



Adequacy to Risk Weighted Asset Ratio (CRAR) improved to 19.59 percent as on 31<sup>st</sup> March 2019. This is shown in table 1.1 inferred below.

**Table 1.1: Financial performance for the years 2015- 31<sup>st</sup> March, 2019. (Rs. in Lakhs)**

S. No.	Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
1.	Deposits	46803.71	49089.70	58602.57	68627.22	78446.80
2.	Loans Issued	11970.89	16645.72	12353.51	15433.02	17337.49
3.	Growth in Business	6973.95	10200.37	12561.15	16497.42	17726.78
4.	Per Employee Business.	312.60	347.87	392.77	444.62	534.78
5.	Non-Performing Assets	4061.93	4470.02	5588.89	6106.60	6584.44
6.	Non-Performing Assets to Loans (%)	16.19	13.54	15.50	14.36	13.06
7.	CRAR (%)	(+) 9.68	(+) 9.97	(+) 12.52	(+) 16.11	(+) 19.59

Source: Nagaland State Co-operative Bank Ltd.

It is inferred from table 1.2 that, with the intent to reach out to the rural masses and with a mission for financial inclusions, the bank has disbursed short, medium, schematic and other loans and advances. Total loans and advances had increased to Rs.50435.90 lakh as on 31<sup>st</sup> March, 2019 registering a growth rate of 18.60 % as against 17.95% of previous year.

**Table 1.2: Loans and Advances, Issue, Recovery and Outstanding as on 31<sup>st</sup> March,2019 (Rs. in Lakhs)**

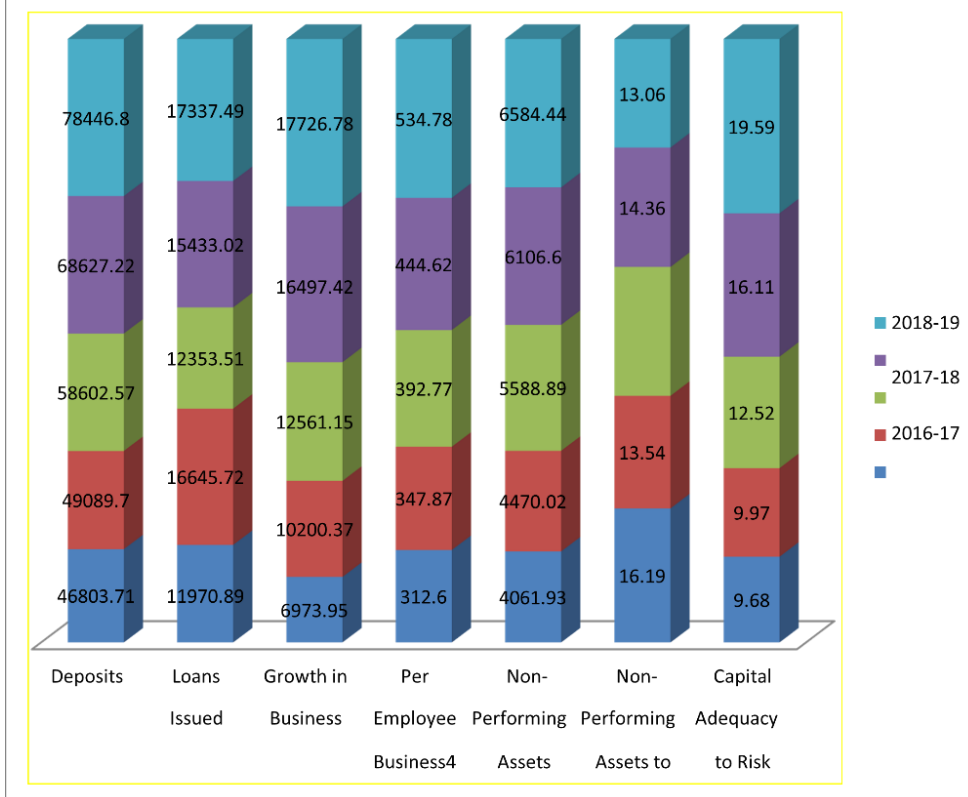
Sl. No.	Purpose	Outstanding31-03-2018	Disbursed	Recovered	Outstanding31-03-2019	% to GrandTotal
1	Short Term Loans	14274.63	7088.07	3936.65	20253.31	40.16
2	Medium Term Agricultural Loans	1802.23	582.67	115.25	2269.65	4.50
3	Schematic Loans	10866.98	4439.64	3464.14	11893.84	23.58
4	Bills Purchased and Discounted	40.67	-	-	40.67	0.08
5	Other Loans and Advances	15544.19	5227.11	4792.87	15978.43	31.68
Grand Total (A to E)		42528.70	17337.49	12308.91	50435.90	100.00

Source: Nagaland State Co-operative Bank Ltd.

### Data Analysis and Interpretation

Financial performance for the years 2015 to 31<sup>st</sup> March 2019 are compared and represented in the form of a Bar Statistic inferred in Fig. 1.1. The amounts displayed in the figure are Rs. in lakhs.

**Fig. 1.1: Financial performance for the years  
2015- 31<sup>st</sup> March, 2019.**



Source: Nagaland State Co-operative Bank Limited

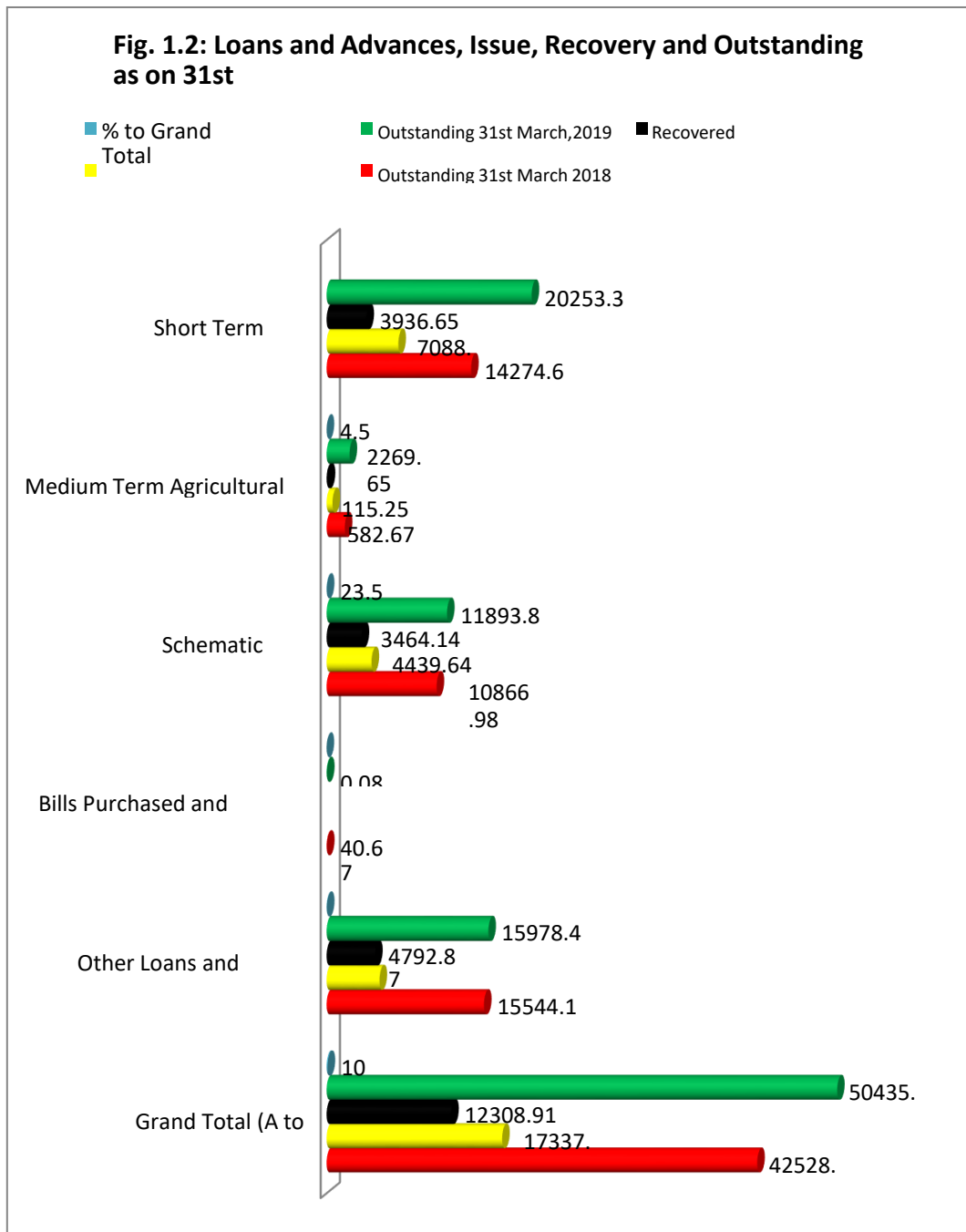
Loans and Advances, Issue, Recovery and Outstanding as on 31st March, 2019, are compared and represented in the form of a Bar Statistic inferred in Fig. 1.2. The amount shown are Rs. in Lakhs.

## 7. FINDINGS

1. The Nagaland State Co-operative Bank provides loans to increase income and employment opportunities and for the development of the state.
2. The bank provides loans and advances at a low rate of interest.
3. There is an increase in the growth rate and business activity of NSStCB over the years.

## 8. CONCLUSION

Cooperative banking is a key sector in the Indian banking scene. The study shows that there is an increase in the growth rate of the state co-operative bank. The financial position of the State Cooperative Bank Ltd. has a reasonable level of performance by providing assistance to rural people. The operational efficiency is characterized by an increase in profitability, ever growing non-performing assets (NPA) and relatively low capital base. The financial performance of the bank during financial year 2018-19 shows that there is a growth in the balance sheet, deposits, loans and advances, overall level of business activity, and Capital Adequacy to Risk Weighted Asset Ratio (CRAR). The state cooperative bank is also serving the growing credit requirements of the people and the newer demands for loans in the field of personal finance. In the interest of healthy competition, all branches of the state cooperative banks should be encouraged to grow.



Source: Nagaland State Co-operative Bank Limited

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## 33% Women Reservation in Nagaland Still an Uphill Task

Heli

Ph.D. Scholar, North-East Christian University, Nagaland

**Dr. Pfokrelo Kapesa**

Assistant professor, North-East Christian University, Nagaland

### Abstract

*Gender equality and women empowerment figured prominently in India's quest for development and its social policy. As part of its affirmative action the principle of reservation has been implemented to ensure equality and level the playing field for marginalised sections who due to socio-cultural circumstances are not otherwise able to compete with mainstream society. Accordingly, the Indian constitution grants reservation for SC, ST, OBC, religious, minorities, persons with disabilities, etc. both in education and employment. As part of this affirmative action policy Nagaland and its population are entitled to and have been exercising this provision as their constitutional right. In the light of this principle, reservation for women as a state policy empower and enable women in Nagaland to move forward. It will be the bridge for Naga women to participate in the governance, an area from where they have been kept out from a very long term. In 2006, the Nagaland Municipal Act of 2001 was amended to provide 33 per cent reservation for women in line with the 1992 Constitutional amendment. In the 2017 Urban Local Bodies (ULB) election, the Nagaland Government under a Supreme Court directive introduced the 33 % reservation. It was met with widespread protest and led to two deaths. The arguments were that the reservation policy is in contravention with the special provision for Nagaland under Article 371 (A) that protects Naga customary law and the constitution grants special status and protects its traditional way of life which includes exclusion of women from administrative position. Clearly, such arguments cannot be sustained when we inquire deeper into the issues of reservation in the local and urban bodies as well as Article 371(A). For instance, it is simply a matter of fact that the urban local bodies have never been a part of Naga culture and have nothing to do with Naga customary law and practice. Thus, the aim of this paper is to inquire into the possibilities as well as hurdles (such as Article 371-A) in the implementation of reservation for women in Nagaland.*

**Keywords:** Gender Equality, women empowerment, reservation policy

### 1. INTRODUCTION

The issue of gender equality had remained marginal for a longer period now across the global. We cannot deny the fact that almost all the Human Societies globally are male dominated societies. However, in today's 21<sup>st</sup> generation most women have attained higher education that they can take their own decision regarding their lives and well-being in the family and society. But despite being highly qualified women are still given less opportunity in the decision making. Reservation are introduced because it creates a balance in the society or to achieve a sense of equilibrium so that those who are less privileged section of the society are given an opportunity to better their condition be it social, economic, educational or political etc. The reservation policy in India and for that matter women reservation Bill specifically has been debated intensely every now and then. The reservation policy is adopted so as to promote positive equality in the society. It must be understood that reservation is a complimentary principle to the right to equality as there can be equality of treatment only among equals and not among unequal. Reservation is an internationally accepted measures adopted to uplift and improve the marginalized sections of the society. It is a form of affirmation action to level the playing field of those who, due to socio-cultural circumstances, are unable to compete with mainstream society. The implementation of women reservation may be regarded as a useful strategy for ensuring justice and equal opportunity to women. Women's representation in politics will be a first step towards women empowerment. The empowerment for women is initiated so as to make women powerful enough that they can take the decisions in the family as well as in the society.

Women need reservation not because they are weak but because women are given less opportunity for political participation. Our government is dominated by men but that does not mean women should be excluded from political participation. The need for reservation is not just to include but to ensure a broad representation of women in political arena. 33% reservation for women will not only increase the number of voices but also their views and contribution will be valued. Women deserve a real opportunity to contribute towards the development and the government of the country. The overwhelming number of women we find in election rallies and the turnout for voting does not transform into their attaining political office by participation in elections and there remains an inadequacy of women in the elected bodies. We need an effective and equal participation of women in leadership,

decision-making roles and an active interest in political and community affairs: a gender- balanced administration, for the full development and advancement of the country.

## 2. 33% RESERVATION FOR WOMEN IN NAGALAND

With the birth of women's organization in 20<sup>th</sup> C, the demand for the political rights of women began. Naga women did not take part in political activities as tradition did not encourage women's political participation. However, in present times though handful but women has started to participate in state level election. It is at local level i.e the village council body which is the traditional political and decision making bodies where women are debarred from taking part in its administration. Women till date are still not allowed to be the members of local village council. There had been numerous Nagas who had failed to understand Naga women as political actors. The attitude of Nagas towards women political participation is disgust and distrust as they believe that politics is not women's realm. Women are poorly represented in the formal decision making process in Nagaland including the village, regional and national levels. The Naga society has always been proud and took pride in its rich culture and traditional which has passed down from generation to generation. The Naga society also does not appreciate women's political participation because they give much importance and highest respect to the customary laws. The traditional institutions or customary law practices upheld by Nagas are inspired by the belief in male dominance and the bravery of men while women are often depicted a weak and needs to be protected by men.

Since childhood Naga women were taught to be disciplined and not to argue with men. They were taught that men have always been superior and that they can only be protected by men. Women are brought up in certain ways on how to talk, behave and conduct themselves. The powers for decision making were not given to women as they were considered weak and not capable of leading the public. Women were not and are still not included in the village panchayat. Naga women's role are strictly confined and defined by traditions. Through all instances, men have always been dominant towards women. Of course women were not looked down in Naga society but her role as a decision making was limited. It is often said that women are deprived from decision making because it is believed that including women creates unnecessary havoc and finding solutions takes time as men believes that women cannot come in terms with one another and the discussion becomes chaotic.

There had been a gender imbalance in the customary laws, where decision lies with men alone. Women are restricted from various type of the functioning of the customary laws. They do not have a say neither in a family nor in the village administration freely with open mind when it comes to decision making. Though they may give the most valuable ideas and knowledge about the concern subjects to their men yet they are no less given place and mentions anywhere in the traditional set ups for their contribution formally. And though constitutional laws are present, it is rarely used and instead restores to the customary justice mechanism available through customary courts. Also because customary laws are more emphasized so the political participation of women in Nagaland is utterly dismal.

There is no specific law which forbids Naga women from political participation. It is men that use the customary laws as a reference for excluding a restricting Naga women's participation in decision making process. The Naga society is a patriarchal society where women are subordinate to men. Nagas give much importance to Article 371(A) that gives special provision to the state of Nagaland where Nagas' customary laws including administration and justice (Village courts) have special sanctity. Besides the governmental subjects, most of the laws are carried out in accordance to the customary and traditional norms. So when such laws are carried out, women are often neglected and are deprived of their rights and are subjugated by men.

It has been usually argued that such reservation that allow women to participate in the urban and local municipal bodies to go against Naga culture. And since Naga customary law and practices are protected under Article 371(A) of the Indian Constitution, such the 33% reservation cannot be implemented. Clearly, such arguments cannot be sustained when we inquire deeper into the issues of reservation in the local and urban bodies as well as Article 371(A). For instance, it is simply a matter of fact that the urban local bodies have never been a part of Naga culture and have nothing to do with Naga customary law and practice

The monetary power plays a prominent role in the electoral activity and women are unable to afford the political cost. Monetary support from political parties does not reach women and thus leads to the failure of Naga women's political participation. Most men feel women in Naga society which is predominantly Christian, are already more empowered than their counterparts in other parts of India and they don't need reservation in elections. But in actual the impression about Naga women being empowered is largely a myth. Of course women had much progressed and empowered in the field of education and employment, especially in the urban areas but

empowerment in the real sense is debatable because women do not have much decision making powers be it within their home, community, over the land resources, over marriage, over productive health and so on.

The Naga tribal organizations are up in against 33% reservation for women in Nagaland because they advocate that the traditional Naga society preaches and preserves the ethos of an absolute egalitarian society. They are of the view that implementing 33% reservation for women in Nagaland would be in a way coming in direct with the Naga customary laws. Also the Naga tribal organizations opine that such reservation would defeat the underlying provisions of the Article 371(A) of Indian constitution which provides protection of religious and social practices, customary laws and procedures of the Nagas. Naga women have progressed and evolved in different fields but yet to progress in the political sphere. Though Naga women are treated equally and respected and crime against women is low but women are not encouraged for political participation and excluded from decision making body. Since the attainment of statehood, Nagaland has only seen one women member of parliament, Rano M Shaize who was elected to Lok Sabha in 1977. The Naga Mother's Association (NMA) being the apex body of all women in Nagaland has worked for the development of women both socially and politically. When Naga Mother's Association (NMA) initiated women's political participation, it met with fierce resistance from the state's powerful tribal organizations comprised wholly of men. In January 2016, violence erupted in Nagaland as the Naga tribal organizations protested the state government's decision to conduct urban local body (ULB) election and reserve 33% of seats for women. The protests in view of 33% reservation for women in Nagaland led to a political churn and T.R Zeliang stepped down as Chief Minister in February, 2016. The violent outburst claimed two lives and damaged government buildings.

The opposition to elections to urban local body (ULB) elections with 33% reservation for women in Nagaland has been existing since the beginning. The Indian constitution amendment in 1992 to provide 33% reservation for women in municipalities but Nagaland passed its municipal and town council Act in 2001, which did not include the provision and held its urban local body (ULB) polls in 2004 without providing the mandatory right to women. The Naga tribal organizations opine that women reservation in political participation is not applicable in the case of Nagaland as it would infringe upon Naga customary laws which is being protected under Article 371 (A).

### 3. CONCLUSION

Naga people (both men and women), scholars, activists, and practitioners across the fields (churches, education, government offices, cultural associations, and women bodies including youth clubs) need to recognise that a feminist tribal ideology can achieve a meaningful framework of gender justice and peace. Feminists in the women's movements across the region have shown us the courage and wisdom to create political alliances across class, ethnicity, race, caste, generation, gender stereotypes, and beyond territorial and nationalist boundaries to dream of a new just world based on equality and a habitable future. Such kind of seductions has devoured numerous Naga tribal councils, politicians, leaders, community activists including the church workers.

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## Efficient Encoding Models to Enhance the Security and Designing of S Boxes for Symmetric-Key Cryptosystems

Pooja N G

Department of Computer Science, New Horizon College, Bengaluru

### Abstract

*As the usage of internet is increasing exponentially day by day, the information transmitted through it must be protected. One way of achieving is using cryptography. It is commonly used to secure communication and data transmission over insecure networks through the use of cryptosystems. An S-box is the lone component in a cryptosystem that gives rise to a nonlinear mapping between inputs and outputs, thus providing confusion in data. It possesses high nonlinearity and low linear with differential probability. Therefore, building a strong S-box has become the major issue for the researcher. Designing of S-box is an important issue in DES and AES. As an alternative approach to handling ASCII characters in the cryptosystems, a magic square implementation is thought of in this work. It attempts to enhance the efficiency by providing add-on security to the cryptosystem. This approach will increase the security due to its complexity in encryption because it deals with the magic square formation with seed number, start number and sum that cannot be easily traced. Here, encryption / decryption is based on numerals generated by magic square rather than ASCII values. This proposed work provides another layer of security to any public key algorithms such as RSA, ElGamal etc., Since, this model is acting as a wrapper to a public key algorithm, it ensures that the security is enhanced.*

**Keywords:** Public Key Cryptosystem, RSA, Security.

### 1. INTRODUCTION

A type of encryption known as symmetric key cryptography employs the same key for both encrypting and decrypting messages. This method of encoding data has largely been used in recent decades to make it easier for governments and militaries to communicate secretly. The terms "shared-key," "secret-key," "one-key," and eventually "private-key" all refer to symmetric-key cryptography. With this type of cryptography, it is obvious that both the sender and the recipient should be aware of the shared key [6]. The distribution of the key adds complexity to this method. An S-box, or substitution-box, is a fundamental component of symmetric key algorithmic substitution in cryptography. In order to guarantee Shannon's property of confusion, block ciphers are typically used to obscure the relationship between the key and the cipher text. An S-box is a vectorial Boolean function in mathematics. In general, an S-box transforms some number of input bits ( $m$ ) into some number of output bits ( $n$ ), where  $n$  is not always equal to  $m$ . The substitution boxes of known modern block ciphers are compared to the cryptographic characteristics. In addition, linear and differential cryptanalysis were used to investigate the resulting S-box. The proposed S-box will eventually be utilized in the newly developed encryption algorithm for confidential information pre-encryption.

### 2. HOW ENCODING MODELS ENHANCE THE SECURITY

Step-by-step, the proposed add-on security model's working methodology is discussed. Build as many distinct doubly even magic squares of order 16 as you can, with each magic square representing one ASCII set. Use the character's ASCII value to determine the magic square number based on its position to encrypt the character. Let NP and NC represent, respectively, the numbers in the cipher text and the plaintext. All characters in plaintext and ciphertext are encrypted and decrypted using the RSA algorithm based on NP and NC values, respectively [3].

### 3. DESIGNING OF S BOXES FOR SYMMETRIC-KEY CRYPTOSYSTEMS

The best method for protecting data from both passive and active fraud is cryptography, which plays an important role in data transmission security. The rising number of people using communication has led to a growing demand for security measures to safeguard data sent over open channels. Because S-boxes add diffusion and confusion properties to a block cipher, which are associated with the security of cryptographic algorithms, they are the most significant and only nonlinear component of a block cipher. Therefore, bijective Sboxes are crucial to the creation of symmetric ciphers. Pseudorandom generation, finite field inversion, power mapping, and heuristic methods have all been used to construct S-boxes to date. When these methods are used to build an S-box, linear approximation and difference distribution tables with nearly uniform entries are produced by using finite field operation. As a result, differential and linear attacks are protected by this.



Symmetric-key cryptography is called a shared-key, secret-key, single-key, one-key and eventually private-key cryptography [4]. With this form of cryptography, it is clear that the key should be known to both the sender and the receiver that the shared. The complexity with this approach is the distribution of the key.

Symmetric key cryptography schemes are usually categorized such as stream ciphers or block ciphers. Stream ciphers work on a single bit (byte or computer word) at a time and execute some form of feedback structure so that the key is repeatedly changing Rijndael S-boxes invertible, and can be constructed by composing two transformations, the algorithm of S-box shown in the following steps:

1. Inputs look up table S-box (16 × 16) bytes.
2. Compute the multiplicative inverse for each byte in the finite field GF (28); the multiplicative inverse for byte {00} is itself.
3. The output produce by applying the following affine transformation over GF (2):  $B'1 = b1 \oplus b(1+4) \text{ mod } B \oplus b(1+5) \text{ mod } B \oplus b(1+6) \text{ mod } 8 \oplus c_i$ .

Where  $b_i, 0 \leq i < 8$ , is the  $i$ th bit of a byte  $b$ , and  $c_i$  is the  $i$ th bit of a byte  $c$  with the value {63} or {01100011}. A prime on a variable (e.g.,  $b$ ) gives an indication that the variable, everywhere, requires updating with the value on the right 2. The affine transformation byte of the S-box can be represented in matrix form as

$$\begin{matrix}
 b'_0 \\
 b'_1 \\
 b'_2 \\
 b'_3 \\
 b'_4 \\
 b'_5 \\
 b'_6 \\
 b'_7
 \end{matrix}
 \begin{bmatrix}
 1 & 0 & 0 & 0 & 1 & 1 & 1 & 1 \\
 1 & 1 & 0 & 0 & 0 & 1 & 1 & 1 \\
 1 & 1 & 1 & 0 & 0 & 0 & 1 & 1 \\
 1 & 1 & 1 & 1 & 0 & 0 & 0 & 1 \\
 1 & 1 & 1 & 1 & 1 & 0 & 0 & 0 \\
 0 & 1 & 1 & 1 & 1 & 1 & 0 & 0 \\
 0 & 0 & 1 & 1 & 1 & 1 & 1 & 0 \\
 0 & 0 & 0 & 1 & 1 & 1 & 1 & 1
 \end{bmatrix}
 \begin{matrix}
 b_0 \\
 b_1 \\
 b_2 \\
 b_3 \\
 b_4 \\
 b_5 \\
 b_6 \\
 b_7
 \end{matrix}
 +
 \begin{matrix}
 1 \\
 1 \\
 0 \\
 0 \\
 0 \\
 1 \\
 1 \\
 0
 \end{matrix}$$

The Rijndael S-boxes shown in Table

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xa	xb	xc	xd	xe	xf
0x	63	7c	77	7b	f2	6b	6f	c5	30	01	67	2b	fe	d7	ab	76
1x	ca	82	c9	7d	fa	59	47	f0	ad	d4	a2	af	9c	a4	72	c0
2x	b7	fd	93	26	36	3f	f7	cc	34	a5	e5	f1	71	d8	31	15
3x	04	c7	23	c3	18	96	05	9a	07	12	80	e2	eb	27	b2	75
4x	09	83	2c	1a	1b	6e	5a	a0	52	3b	d6	b3	29	e3	2f	84
5x	53	d1	00	ed	20	fc	b1	5b	6a	cb	be	39	4a	4c	58	cf
6x	d0	ef	aa	fb	43	4d	33	85	45	f9	02	7f	50	3c	9f	a8
7x	51	a3	40	8f	92	9d	38	f5	bc	b6	da	21	10	ff	f3	d2
8x	cd	0c	13	ec	5f	97	44	17	c4	a7	7e	3d	64	5d	19	73
9x	60	81	4f	dc	22	2a	90	88	46	ee	b8	14	de	5e	0b	db
ax	e0	32	3a	0a	49	06	24	5c	c2	d3	ac	62	91	95	e4	79
bx	e7	c8	37	6d	8d	d5	4e	a9	6c	56	f4	ea	65	7a	ae	08
cx	ba	78	25	2e	1c	a6	b4	c6	e8	dd	74	1f	4b	bd	8b	8a
dx	70	3e	b5	66	48	03	f6	0e	61	35	57	b9	86	c1	1d	9e
ex	e1	f8	98	11	69	d9	8e	94	9b	1e	87	e9	ce	55	28	df
fx	8c	a1	89	0d	bf	e6	42	68	41	99	2d	0f	b0	54	bb	16

#### 4. SIGNIFICANT PROPERTIES OF PROPOSED S-BOX

1. The utilization of S-box dependent on secret key ensured great difficulties relative to attackers. Because the S-box was unrecognizable for the attacker, the number of probabilities faces the attacker would increase.
2. A strong diffusion can be produced from the selection of the S-box because there is a dependency between the output bit and the input bit of the S-box.
3. Unique S-box (weak collision resistant): no two different keys have the same S-box elements. In the mathematical step, the function makes a unique value for each input block. This means that the new S-box resistant against differential cryptanalysis, which require that the S-boxes be known.
4. Efficiency: calculating S-box table is easy to used and simple implementation according to comparing results of different algorithms.

4. Strict Avalanche Criterion (SAC): when change one bit/byte of input, the S-box value should be change more than half bits/bytes [14]. In mathematical step of S-box, the previous byte of new block will be changing all the next bytes.
5. Pseudo randomness: in the proposed S-box, the keys are difficult to cryptanalysis attacks (randomness) according to:
  - a) Key values generated from strong PRNG and used only once (as one-time pad).
  - b) S-box table has the same frequency for each key.
6. Key size: the size of the key block has a great effect on the algorithm, the key size should be minimal size with maximum period, the block size of the propose algorithm is 128-bits [5].

## 5. RESULTS AND DISCUSSIONS

There are three main aspects of results to introduce the efficiency and robust of the propose S-box. These aspects are fast, complexity and secure.

1. Fast: the execution time of proposed S-box is a criterion to check the S-box efficiency. The execution time computed by calculating the arrange time of multi execution time for the similar S-boxes. The execution time is based on the complexity of algorithm and size of dataset. Table (1) shows the compression between the execution time for a propose S-box and some identical algorithm.

**Table 1 - the execution time for construction S-box [15]**

Algorithm	Mean execution time (MS)	Standard Deviation (MS)
SHA-128	15.1	11.27
DES	10.3	0.64
AES	25.8	32.77
DES	20.3	10.75
PROPOSE	8.9	1.3

Comparing the propose S-box based on fastens aspect shows without any doubt that, the execution time results for the propose S-box is faster than identical algorithms.

1. Less Complexity: the less complexity of the propose S-box come from:
  - a) Generate S-box based on secure key
  - b) Substitution step of the propose S-box is based on mathematical function.
2. Secure: the security result is one of the important matric that should be providing in the design of any S-box. There are many parameters used to demonstrate the security of the propose S-box:
  - a) Construction S-box based on secure key. The Sbox table is comparing with security parameters such as balanced output, SAC and hamming distance.
  - b) Generate secure and robust sub-key for S-box depend on a strong and efficient PRNG, moreover, the output of PRNG pass statistical tests for randomness.
  - c) As a results, the proposed S-box resistant against some security attacks such as frequency analysis, known plaintext attack, linear, differential and statistical attacks.

## 6. CONCLUSION

A new S-box depends on mathematical approach was suggested to increase resistant against security analysis such as linear and differential attack, where new S-box was unknown, does not depended on exclusive-or operation and multiplicative inverse. Further efficiency of cryptographic operation depends on performing them in parallel. Simulation using different number of processors for encryption /decryption has shown that the time taken for decryption is approximately 1.2 times larger than the corresponding time for encryption.

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## **An Innovative Stratagem for Waste Prediction and Management using Machine Learning Algorithm**

**Loganayagi S**

Ph.D. Research Scholar, Department of Computer Science, Mother Teresa Women's University, Kodaikanal

**Dr. D. Usha**

Assistant Professor, Department of Computer Science, Mother Teresa Women's University, Kodaikanal

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### **Abstract**

*Managing Solid waste has become a big task in developing cities. Everyday a huge quantity of waste substances of different types is generated and they need to be treated accordingly. The waste contains different types of substances and they must be treated carefully. The waste management includes separation of wastes. Separating wastes manually seems to be harmful. Hence the new method has been proposed which seems to be an efficient and effective automated waste separation model. The model is implemented using a Machine Learning Algorithm i.e Convolutional Neural Network. The main aim of the proposed system is to capture images of the waste material and identify and classify it into organic, recyclable, and non-recyclable waste. With the help of Raspberry Pi, the waste is dumped into bins. Hence this method proves to be very effective in managing waste and the speed can also be further improved.*

**Keywords:** Waste Management, Machine learning, Convolutional Neural Network.

### **1.INTRODUCTION**

The trash and reutilizing industries are being over-whelmed by the increasing volume of universal refuse. So, the need for clever resolutions for ecological monitoring and reusing method enhancement is stronger than ever [1]. The various biotic components are affected by the disposal of waste either in one way or the other. The ill effects of wastes can be reduced with the development of waste managing system [2]. At present, there exist two ways in which waste can be classified and segregated they are manual and automated. The traditional manual methods are very hectic, tedious and time consuming where humans must do the classification whereas in automated search can do the classification much better using one of the several techniques [3].

Recycling is of great significance of a maintainable society. But the recycling involves veiled cost, it's because of the materials used in recycling and the methods involved in assortment, classifying and processing. Even though garbage classification is done, the problem lies in disposing several categories of waste items. Development and usage of automated approach can be used to protect the environment and economic benefits [4]. Discarding the wastes in the barren lands creates pollution and causes air pollution and in the release of harmful gases like methane. Being greenhouse gas, it is harmful and has dangerous effects and toxic to creatures. The organic waste must be treated properly else it can spoil the water resources and becomes hazardous also to aquatic organisms. The wastes are not classified at the source and results in dumping of wastes. Henceforth there is a need for distinguishing the various recyclable materials. Using Artificial Intelligence, we can identify, remove, and segregate the items. Convolutional Neural Networks features are used by various object detection networks. A complete automated approach method helps us to reduces the dumping of large quantity of wastes. In this paper, we build a model for image classification and detection and compare it with other models such as ResNet-34 and VGG16. The classification of biodegradable and biological materials is a tough matter that requires the use of progressive methods. A global stratagem for industrial claims is required, in count to dataset gathering. We offer a more exact and finest waste categorization approach in this study.

### **2. LITERATURE SURVEY**

In paper [5], the OpenCV computer vision library is used to department data upgrading and image training on the waste pictures met. A VGG16 convolutional neural network is created using TensorFlow as the perfect working out backdrop, with the RELU activation function and the inclusion of a BN layer to improve the percentage of convergence of model and recognition accuracy rate. The exact rate of the scheme is 75.6 per cent after testing on the test set. The scheme described in this paper can efficiently classify local compost into contaminated trash, kitchen waste, other garbage, and recyclable waste, meeting the needs of practical applications.

In paper [6], a comparison is made between a proposed model that is WasteNet and other models like VGG, AlexNet, ResNet, DenseNet and SqueezeNet on four various system of measurement. The waste is categorised

into six different categories. It was found that the developed model works good on all metrics with an accuracy of 97%. Hence, it was then used to make a smart dustbin that classifies the waste that comes into the dustbin. The paper [7] proposes a neural network for waste classification into three categories: recyclable, non-recyclable, and organic waste, with an accuracy of 81.22%. The paper also compares other models like VGG16, Inception-Net, DenseNet and Mobile-Net. Out of all these transfer learning models, Mobile-Net gave the accurateness of 92.65%. Paper [8] suggests using a CNN and a SVM algorithm for better waste classification. They have used ResNet-50 as the transfer learning model as the dataset was small. They isolate waste into four categories: glass, paper, plastic and paper. By this method, they have achieved an accuracy of 87% on epoch number 12.

Trash net datasets was used to conduct this [9] study. The act of the SVM classification using the SIFT feature is associated to the act of the same kind of system using the SIFT-PCA mutual feature. The results of the tests indicate that labelling using SIFT feature abstraction achieves a 62% accuracy. The authors of [10] look at a variety of tactics and give a full charge. Support vector machines using HOG features, basic convolutional neural networks (CNN), and CNN with residual blocks were among the models we used. The authors concluded that basic CNN networks with or without residual blocks perform well, based on the results of the study. The grave component of the system mentioned in [11] is a junk container that will automatically sort waste using the IoT and ML technologies. The bin is linked to the cloud, which helps in the waste collection by recording and uploading numerous data points for each bin. This study describes two types of the system, the first of which achieves a 75 per cent accuracy in categorising garbage as wet or dry, and the second of which achieves a 90 per cent accuracy in sorting waste into six unique categories.

In paper [12], the performance of four CNN-based Waste Classifiers, namely ResNet-50, VGG16, MobileNet V2 and DenseNet-121. The waste was categorized into four categories like hazardous waste, general waste, environmental waste and compostable waste. The highest accuracy of 94.8 per cent was obtained for ResNet-50. Using a deep learning technique, the paper [13] examines a unique approach for waste sorting for successful recycling and disposal. The YOLOv3 method was used to train a self-made dataset in the Darknet framework. The network has been taught to recognise six different categories of objects. The detection test was also done using YOLOv3-tiny for comparative assessment to evaluate the competency of the YOLOv3 algorithm. The authors in paper [14] have classified the waste into four classes like cardboard, paper, metal and plastic. The developed CNN attained the highest testing accuracy of 76 per cent for 100 epochs for 50x50 size images.

### 3. DATASET

The dataset is gained from Kaggle for the transfer learning model and the proposed CNN model. It is waste classification data, which comprises approximately 25,077 waste images split into two categories: organic and recyclable. Table I indicates the number of images in each class, whereas Fig. 1 depicts the same in a pie chart. Fig. 2 shows some sample images in the input dataset.

**TABLE I**  
**NUMBER OF WASTE IMAGES IN THE DATASET.**

	Organic	Recyclable
Training data	12565	9999
Testing data	1401	1112
Total	13966	11111

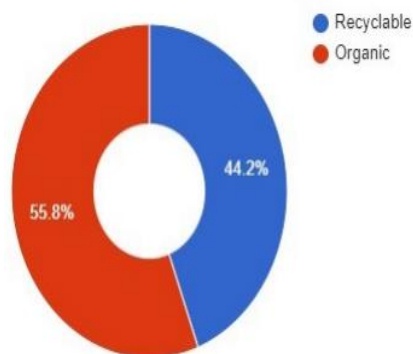


Fig. 1. Distribution of waste images in dataset.

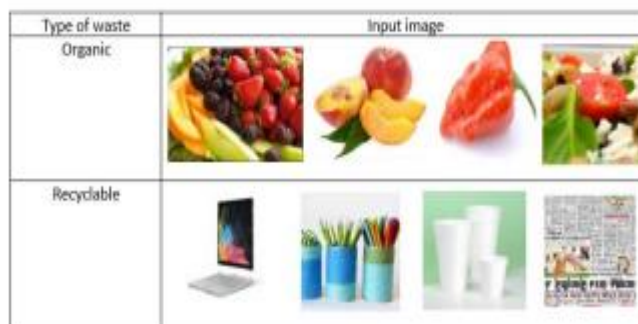


Fig. 2. Types of waste images in dataset.

#### 4. METHODOLOGY

##### VGG16

In 2014, Zisserman and Simonyan proposed the VGG16 network structure as one of the VGG NET networks [15]. It is a more progressive version of the AlexNet network. When finding and categorising pictures, it can more correctly convey the features of the data collection. Large-scale data sets and complicated backdrop recognition tasks benefit from it. Thirteen convolutional layers, three fully connected layers, and five pool layers make up the network structure. The convolution kernel used in the 13 convolutional layers contained in VGG16 is a medium-sized 3 x 3 matrix with a moving step of 1 compared to other networks. The number of convolution kernels steadily grew from 64 in the first layer to 128 in the second, 256 in the third, and finally 512 in the final layer. The pooling layer's convolutional kernel is 2 x 2 in size, and the step size is 2. It performs better on the retrieved features than other networks with a convolution kernel size of 5 x 5. VGG model offers superior processing capabilities for training data sets with tiny amounts of data, and it is easier to deploy and has higher recognition accuracy than other deep convolutional neural networks [16].

The VGG16 network model, on the other hand, offers both advantages and downsides in terms of precise identification. The number of model parameters and the complexity of computations during training has risen as the network structure has been deepened, resulting in a long training period and low training efficiency. The following approaches are utilised to enhance the VGG16 model in this work in order to maintain the key features of the perfect mining without reducing the accurateness of gratitude while also improving the pace of model training and reducing the time it takes to train the model. The Relu function is used to activate the VGG 16 network in the VGG network, and the formula is

$$f(x) = \begin{cases} x & \text{if } x \geq 0 \\ 0 & \text{if } x < 0 \end{cases} \quad (1)$$

Where:  $x$  is the input of the Relu function;  $f(x)$  is the function's output. The loss function is used to measure the alteration between the projected and concrete values throughout the model training process. In the VGG 16 network, use the Cross Entropy loss function, which has the following formula:

$$E(t, y) = - \sum_j t_j \log y_j \quad (2)$$

Among them:  $t$  and  $y$  represent the target label and output of the neural network, respectively, and represents the SoftMax loss function:

$$y_j = e^{z_j} / \sum_k e^{z_k} \quad (3)$$

##### ResNet - 34 (FastAI)

It is an image classification model with 34 layers of CNN. This is a model that has been pre-trained on the ImageNet dataset, which has 100,000+ pictures divided into 200 categories [17]. It differs from traditional neural networks in the sense that it uses the residuals from each layer in the subsequent connected layers.

ResNet-34 network is the residual building component, and it makes up most of the network. The residual building block used a shortcut connection to skip the convolutional layers, effectively alleviating the problem of gradient disappearance or explosion characterized by increasing depth in neural networks and allowing us to build CNN structures more freely and improve the rate of recognition [18].

ResNet has one convolution and pooling step, the four layers of identical behaviour. Each layer follows a similar pattern. They execute 3x3 convolution with a fixed feature map dimension (F) of [64, 128, 256, 512] and skip the input after every two convolutions. Furthermore, the width (W) and height (H) of the layer stay consistent throughout. [19]

##### Proposed Model

1) Convolutional Layer: The input image is first passed via a convolutional layer of the CNN. The convolutional layers use convolution to extract high-level characteristics from an input image. A convolution involves the input is multiplied by a set of filters. The CNN learns about the filters from the training dataset. The former convolutional layers usually seizure the lower-level features, greater the number of convolutional layers the greater is the ability to encode higher level features. [20]

2) Pooling Layer: To extract the salient characteristics in the feature maps, the pooling layer uses a max-pooling method. The maximum pooling layer's output is more rotational and translational invariant. Max pooling can also be used to filter out noisy and minor activations, lowering the number of computing resources required.

3) Fully Connected Layer: After passing through the previous layers the features are flattened and sent into the fully connected layer. The fully connected layer receives the features from the previous layers and uses the backpropagation technique to learn the non-linear functions of the features. The last fully-connected layer uses a softmax function to calculate each class's probability.

4) Activation Layer: The output from the convolution layer is activated by a ReLU activation function only after passing through the previous layer. The ReLU function has the advantage of just activating non-negative neurons, making it more computationally efficient compared to sigmoid and tanh functions.

Here the chosen form of input images is 224x224 with an RGB colour scheme. The CNN used contains six Conv2D layers, three MaxPool2D layers and 3 fully connected Dense layers. ReLU acts as the activation function in the fully connected layers. The productivity layer contains only a single neuron which will contain values as 0 or 1, where 0 stands for class ('Organic') and 1 for class ('Recycled').



Fig. 3. Architecture of proposed CNN model.

## 5. RESULTS

ResNet-34 gave an accuracy of 91.8% with 7 epochs, whereas VGG16 was able to produce an accuracy of 93.37% with 5 epochs. The suggested model with the group size of 64 and epochs 10. The method never improved beyond 7 epochs, hence applied early stopping method and obtained an accuracy of 94.96%.

## 6. CONCLUSION

Seclusion and managing of waste have been an issue that has impacted a huge part of the environment. It is now easy to handle waste using today's technology if they are applied properly. As we can see from the findings of this study, the problem of waste image categorization can be tackled with machine learning algorithms with a high degree of accuracy. It can thus be seen from the comparison of accuracies of the three models that the proposed has the highest accuracy of 94%. Even though other models gave the accuracy very less compared to proposed model, still the other models can be measured for added enhancement since the precision of the models also found to be good.

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## Digital Literacy among Primary School Student of Government and Private Schools: A Review Study

Shilpi Prajapati

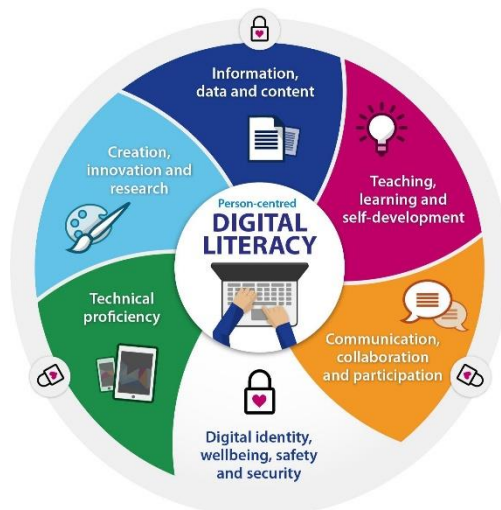
M.Ed-1<sup>st</sup> Year, Department of Education, Integral University, Lucknow

### Abstract

Once upon a time internet was a luxury everything you need it you could find in the real world in 2023 everything is online. Technology help at schools for finding information, discovering new opportunities, going to online classes. you can become an expert at something without even leaving your house. digital literacy helps in the world of work to, from zoom meeting to sharing your work digital literacy makes you highly productive. In covid-19 accelerated the need for Digital literacy, it's expose the digital literacy gap in the world applications like zoom Google Drive and Google doc that were nearly used had to be used everyday for work and for schools and this is the challenge period to this time we don't use these apps so we don't know how to use them effectively and that's why digital literacy is more important things in present era.

### 1. INTRODUCTION

Much like “literacy” is the ability to read and write, digital literacy is the ability to navigate, evaluate, and communicate information online or in a digital format. Digital literacy is the ability to use technology to find information, evaluate sources, create content, and communicate with others effectively. It's a skill set used to navigate the new technological paradigm in which society operates. To be an effective learner in an online environment, it's extremely beneficial to be digitally literate. The digital literacy landscape comprises many skills and tools. The ability to use computers and mobile devices, access information online, and communicate with others online through social media are all essential building blocks to a strong technological skill set. Digital literacy is an ever more important factor in education from a young age. Digital literacy in education, students must develop specific digital literacy skills when reading and interacting with online content that may contain



embedded resources such as hyperlinks, audio clips, graphs, or charts that require students to make choices. Students today are also being asked to go one step further to create, collaborate, and share digital content and to do so responsibly. For these reasons teachers need to understand the importance of digital literacy skills for students and teaching digital literacy in the classroom.

Mahadev, Ashwini (2020)

They worked on the topic "*digital literacy among users in Law Institute libraries*" in this research paper focused on the different heads of the literacy along with digital literacy to understand the nature and extent of literacy and its need in the information society and his paper is based on a literature survey and author research.

LIZ Kuriakase (2020)

He worked on the topic "*Digital literacy and moral sensitivity among Higher Secondary*" Its expected that this study will provide insights into weather New frameworks of ethics or else the revision of traditional psychological

theories of moral development are required in the light of digital participation by youth to address the opportunities and risk of our digital lives.

*David Bawden (2008)*

In this Article David has Worked on the topic "*Origins and concept of digital literacy*" the purpose of this paper is to describe the emergence and development of the idea of digital literacy and to show how its relates to the various other literacy of information

*Aelan Martin, Jan Grudziecki (2006)*

"*Concept and tools of digital literacy development*" In this reset paper main focus on a suit of online tools is being development to enable digital literacy progress to be cracked by teachers and learners and evaluation of these tools will continue beyond the life of the project.

*Yoram Eshet (2004)*

Yoram Eshet (2004) has worked on "*digital at Asia conceptual Framework for survival skills in the digital era*. He describes, the Holistic refined conceptual Framework for Digital literacy which includes photo visual literacy reproduction literacy branching literacy information literacy and socio emotional literacy.

*Yoram Eshet (2012)*

Eshet has worked on "*thinking in the digital are revised model for Digital literacy*" this paper present on updated version of the skills base theoretical framework and discussing the model in light of the recent literature on digital literacy.

*Sandhya Tiwari (2020)*

The author has worked on the topic "*role of digital literacy on communication and efficiency of facilities in B school* " They discussing about the explosion of digitalization in our society has significant impact are communication applying digital techniques in teaching methodology.

*Cristina Sánchez-Cruzado, Raúl Santiago Campión, M<sup>a</sup> Teresa Sánchez-Compañá Donna L. Russell (2005)*  
*They worked on "Teacher digital literacy: The indisputable challenge after COVID-19"*

They presented The COVID-19 outbreak opened a new scenario where teachers must have adequate digital literacy to teach online and to implement a current and innovative educational model. This paper provides the most relevant results obtained from a quantitative study in which 4883 Spanish teachers of all education levels participated to measure their digital skills, during the last school years. It also proposes a digital skills teacher training plan, taking the joint framework of digital skills of INTEF (Spanish acronym for National Institute of Educational Technologies and Teacher Training) as its reference point. The tool ACDC (Analysis of Common Digital Competences) was used for data collection. The results of descriptive analysis show, overall, the low self-perception that teachers have of their digital skills.

*Jackie Marsh (2005)*

He has worked on the "*Popular culture, new media and digital literacy in early childhood*". This paper offers a range of perspectives on children's multimodal experiences, providing a ground-breaking account of the ways in which children engage with popular culture, media and digital literacy practices from their earliest years. Many young children have extensive experience of film, television, printed media, computer games, mobile phones and the Internet from birth, yet their reaction to media texts is rarely acknowledged in the national curricula of any country. This seminal text focuses on children from birth to eight years, addressing issues such as: media and identity construction, media literacy practices in the home, the changing nature of literacy in technologically advanced societies. The place of popular and media texts in children's lives and the use of such texts in the curriculum.

*Jeffrey Alan Greene, B Yu Seung, Dana Z Copeland (2014)*

They worked on the topic " *Measuring critical components of digital literacy and their relationships with learning*". He has presented that The growing prominence of the Internet, and other digital environments, as educational tools requires research regarding learners' digital literacy. We argue that two critical aspects of digital literacy are the ability to effectively plan and monitor the efficacy of strategies used to search and manage the wealth of information available online, and the knowledge to appropriately vet and integrate those information sources. Therefore, digital literacy requires effective self-regulated learning (SRL) skills, and availing epistemic cognition (EC).

*Prema P Nedungadi, Rajani Menon, Georg Gutjahr, Lynnea Erickson, Raghu Raman (2018)*

The author (2018) has worked on "*Towards an inclusive digital literacy framework for digital India*". He has presented The purpose of this paper is to illustrate an Inclusive Digital Literacy Framework for vulnerable populations in rural areas under the Digital India program. Key challenges include addressing multiple literacies such as health literacy, financial literacy and eSafety for low-literate learners in low-resource settings with low internet bandwidth, lack of ICT facilities and intermittent electricity. This research implemented an educational model based on the proposed framework to train over 1,000 indigenous people using an integrated curriculum for digital literacies at remote settlements. The model uses mobile technology adapted for remote areas, context enabled curriculum, along with flexible learning schedules.

*Yoram Eshet-Alkalai, Eran Chajut (2009)*

The author (2009) has worked on "*Changes over time in digital literacy*". This study explores changes through time in digital literacy among the same participants 5 years later, and their performance is compared to new matched control groups. Results indicate an improvement over time among all age groups, but especially for the adults, in the tasks that require proficiency and technical control in using technology (e.g., photovisual and branching literacy skills)

*Alicia Peñalva Vélez, Juan José Leiva Olivencia, Itziar Irazabal Zuazua (2017)*

The author (2017) has worked on "*The role of adults in children digital literacy*". The objective of this study is to identify the level of digital literacy on a sample of teachers and families. It can be observed a lower competence when managing their own identity on the Internet, and in general, lower competences when it comes to take part in conflict situations on the Internet, as well as the ones related to management of digital identity. In terms of children's digital literacy, adults play a very significant role in three main aspects: (1) As direct responsible of their digital literacy. (2) As enablers of behaviour models which promote a positive conviviality and cyber conviviality. (3) As adult referents which children can ask for help.

*Banny SK Chan, Daniel Churchill, Thomas KF Chiu (2017)*

The authors (2017) has worked on "*Digital literacy learning in higher education through digital storytelling approach*". They discussed about the Digital storytelling, one of the possible classroom activities, is an approach which may help engage and motivate students to learn digital literacy skills. To investigate this approach, the present small-scale study employs the methods including interviewing and analysing the artefacts of three students selected from a purposive sample on a multimedia course. The findings indicate that the three students have improved in terms of three aspects of digital literacy skills, namely, digital competence, digital usage and digital transformation regardless of their prior knowledge and levels of digital literacy.

*Sarah Soyeon Oh, Kyoung-A Kim, Minsu Kim, Jaeuk Oh, Sang Hui Chu, JiYeon Choi (2021)*

The authors (2021) has worked on "*Measurement of digital literacy among older adults: systematic review*". Numerous instruments are designed to measure digital literacy among the general population. This systematic review aims to identify and critically appraise studies assessing digital literacy among older adults and to evaluate how digital literacy instruments used in existing studies address the elements of age-appropriate digital literacy using the European Commission's Digital Competence (Dig Comp) Framework. Electronic databases were searched for studies using validated instruments to assess digital literacy among older adults.

*Hiler A spires, Paul (2019)*

The author has worked on "*digital literacy for 21st century*" the purpose of this research is to define digital literacy and its changing nature and its changing implications of digital literacy on contemporary schooling.

*Mathur, Roopam (2019)*

The author has work on the topic "*Emergent literacy among Anganwadi children and impact of intervention program*" It discuss about the level of emergent literacy among young children of Anganwadi and to evaluate the relationship of environment factor with emergent literacy of young children. it's provide various opportunity to develop knowledge capacity and potentially for work among young children.

*Thakur, Ravindra kumar (2019)*

The author has worked on the topic "*Development of a module to enhance the digital literacy skill among the secondary school student*". The author discusses about the level of digital literacy among Secondary Schools and the descriptive survey method employed for the present study the sample of the study was drawn random sampling method at the end of the research paper discussed about the there is a no significant different in the level of literacy between boys and girls is studying at secondary schools.

*Michael J Berson (2003)*

The author has worked on the topic "*digital literacy for effective citizenship, advanced technology*" in this research paper the author discussed and focused of creating a Framework for internet safety has emphasize the role of the schools where instructions on internet safety and responsibility is needed to accompany the Rapid is saturation of schools by technology and internet access.

*Dutta Sayaneka (2020)*

The author has worked on "*digital media literacy among adult users in Assam*". in this TCS describe about the concept of digital media literacy and skills does it intail and the practices of adult user engage in the digital media environment vis-a-vis the concept of digital media.

*Ellina Anisimova (2020)*

The author has worked on "*Digital literacy of future preschool teachers*" The proposed program can be considered as a universal tool for the formation of digital literacy of future teachers by adding or removing some modules. The prospect of this study is the possibility of organizing relationships with preschool institutions so that students not only create software applications but also learn how to put them into practice when working with children. Under the proposed program, it is also possible to organize advanced training courses for already employed teachers. In the modern world, information technologies penetrate all spheres of human life: industry, agriculture, medicine, management, art, science, and education. Today, it is difficult to imagine human life and activity without information technologies. People get knowledge of them in early childhood. Such acquaintance depends primarily on the environment of a child: his/her parents and teachers. It is necessary to form in a child the culture of interaction with information technologies, starting from early childhood.

## 2. CONCLUSION

Based on the study of above research reviews it can be concluded that today the Digital literacy is very beneficial to implement for the whole system of education. Therefore, Digital literacy through modern methods are proving very beneficial for the learners as well as it helps for the development of the society and country.

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## The Problems Faced by Small Farmers in Nagaland: An Exploratory Study

**Dr. Akha Khou Stephen**

Assistant Professor, Department of Management, St. Joseph University, Nagaland

**Atoholi Chishi**

Assistant Professor, Department of Management, St. Joseph University, Nagaland

### Abstract

*There are countless concerns facing farmers, and the Covid-19 pandemic has escalated and worsens the situation. The common issues faced by farmers include lack of financial support, which makes them dependent on money lenders, inability to sell their produce, small landholding, inability to obtain fertilizers on time due to lockdown, bands, and blockages, high labours costs, insufficient rainfall, poor road connectivity in rural areas, lack of cold storage facilities, absence of marketing and price fixation guidelines, etc. This study aims to investigate the actual issues that farmers in Nagaland are facing in light of the COVID-19 outbreak. During the month of December 2021, the researchers used convenient sample method on 97 farmers to get the information. The unique issue facing farmers in Nagaland during these years is that the farmers were not able to sell their paddy they have produced during the month of December 2021 since there is abundance of rice provided to the public as part of free rations. Vegetable marketing was incredibly challenging, which led to rotting of produce in the field and farm. In order to prevent the farmers', produce from being wasted in the field, the government of Nagaland together with and other organizations should work to assist them. **Methodology:** Exploratory research design is used for the study. The data was collected from a sample of 97 farmers in Dimapur Area of Nagaland using convenient sampling methods. **Key finding:** The farmers are not able to get the price of the produce due to high input cost and low price of the produce especially paddy due to excess rice flooded in the market. Pricing of produces by intermediaries and the middlemen are found to be unfair. The fruits are also rotten in the field in spite of help given by state government for market linkage.*

**Keyword:** Small Farmers, Agriculture, Nagaland, Covid-19

### 1. INTRODUCTION

It is bounded by Assam in the West, Myanmar (Burma) on the east, Arunachal Pradesh and part of Assam on the North and Manipur in the South. Major working population of the state is engaged in agricultural operation. The state is a land of magnificent hills beauty and thrilling flora and fauna. Abundant rainfall, dense forest, fertile and organic land etc. are some unique features of the state. Poverty, low per capita income, high unemployment, low agricultural production, and weak marketing facilities are all contributing to food insecurity in many regions of the region (Patel, 2016; World Bank, 2012). People's strengths and opportunities are not being utilized for their benefit. Until now, the hidden treasures have remained hidden treasures. The region's assets and prospects in fruit production, plantation horticulture and floriculture, medicinal and aromatic plant cultivation, forest-based products, and other areas must be fully exploited without having a negative impact on the environment, which regrettably is not the case (Government of Manipur, 2012).

In the agricultural industry, India is known around the world as the "Home of Spices," a country that produces a wide variety of spices and has earned a large sum over the years. Despite the fact that India is the world's greatest producer and consumer, the sector is lagging behind the desired level of growth due to challenges with marketing, supply chain, infrastructure, and other factors (Hosamani & Tyagaraja, 2017; Government of India, 2021; Dev, 2012). Ateke, (2015), in his paper "Challenges of production and marketing of agricultural produce in Oyigbo Local Government Area of Rivers State", found the farmers in the Oyigbo Local Government Area face a variety of issues, including a lack of government attention on farmers, low farmer literacy, a lack of sorting, grading, and pricing system facilities, poor infrastructure, and inaccessible inputs such as fertilizers and pesticides. Major marketing problems are also identified in the study.

Similar problems were also observed in India. Farmers and businessmen encounter a lack of essential supplies, according to Yadav (2016). Farmers in the country have faced a variety of challenges, including a lack of storage facilities and warehouses, inefficient transportation facilities for moving agricultural produce from farm, a lack of credit facilities for farmers, a lack of market information, too many middlemen, a lack of farmer's associations, and a lack of market research initiatives. On the current problems, government initiatives are expected. Barah (2006) identifies specific agricultural issues in the Northeast region, including traditional/conventional agricultural practices, a lack of exploration and experience with modern crop varieties, small and scattered land

holdings, vulnerability to natural disasters, low fertilizer use, a lack of credit facilities, and poor production and marketing infrastructure. Farmers mostly receive market information through middlemen (Patel, 2012; Ramakrishna, 2020; Tongia, 2019; Singh, 2012), where the presence of too many middlemen, combined with other constraints in rural areas, forces farmers to sell their produce to middlemen at the point of origin, resulting in low bargaining power because they are not directly connected to consumers (Pokherel & Thapa, 2007). This is when middlemen take advantage of farmers' produce prices (Yadav, 2016).

In order to expand the agricultural sector in the region, high-value agriculture, productivity and infrastructural improvements, public-private partnerships, and technology for post-harvest management are all sectors that need to be addressed. A lack of agricultural inputs, fertilizers, and energy, as well as poor soil quality, heavy rainfall, and less sunlight in some parts of the country, are all issues in the region. In steep areas, shifting cultivation is extensively used (Borah, 2006). The contrasts in social and economic characteristics, culture, environment, and activities, among other things, distinguish life in the hills and mountains from life elsewhere. Inaccessibility, hilly land, natural calamities, lack of infrastructure amenities, and other factors all have a role in deciding the economy of people living in the hills, which is often a struggle in India's north and east (Singh & Bera, 2017). The mentioned facts indicate and imply that agriculture in the hills and mountains requires unique care and treatment in comparison to agriculture in the plain (Barah, 2010; Singh & Bera, 2017). The northeast region has agricultural potential, with substantial untapped natural resources, ideal climatic conditions for agriculture, minimal usage of chemical fertilizers, prospects for organic farming, and a high potential to boost production, among other things (Barah, 2016; Singh & Bera, 2017).

## 2. PURPOSE OF THE STUDY

The goal of the study is to identify the obstacles faced in the production and marketing of agricultural goods in the state of Nagaland, India, given the state's enormous natural resources and the fact that agriculture employs the majority of the population. Also, to make recommendations on how farmers, traders, the government, and non-governmental organizations (NGOs) may collaborate to strengthen the region's agriculture and agribusiness sectors.

## 3. OBJECTIVES

1. To identify the problems faced by the farmers of Nagaland in agricultural productions.

## 4. METHODOLOGY

*Research Design:* An Exploratory research technique was chosen to develop the understanding of the research topic and to obtain knowledge about the general and specific data about the research objective. The research aim at identifying the general and specific problems faced by the farmers of Manipur in agricultural production.

*Sampling Method:* The respondents for the study was chosen base on the convenient of the researcher due to Covid-19 restriction. The respondents were broadly divided into hill and valley with the purpose to include all the 16 districts of Nagaland. So, the sampling method adopted is non-probability method in general and convenient method to be specific.

*Data collection method:* The data was collected from a sample of 97 farmers in Nagaland using convenient sampling methods. Farmers were contacted in using a standard questionnaire and detailed interview were also done to know in-depth about the problems.

## 5. FINDINGS

**Table 1 - Demographic**

Variables		Number	Percentage
Gender	Male	65	67
	Female	32	33
Location	Valley	69	71.1
	Hills	28	28.9
Landholding	Less than acre	65	67
	Between 1-2 acres	30	30
	More than 3 acres	2	2.1
	Up to class 12	56	57.7

	Bachelors	29	40.2
	Master and others	2	2
Rice(crop pattern)	Yes	65	67
	No	32	33
Vegetables(crop pattern)	Yes	91	93.8
	No	6	6.2
Fruit(crop pattern)	Yes	22	22.7
	No	75	77.3

#### *Agricultural scenario in Nagaland:*

Agriculture in Nagaland is largely depends on monsoon. As a result, production of food-grains fluctuates year after year. A year of abundant output of cereals is often followed by a year of acute shortage. This year scanty rainfall is experience by the farmers of Nagaland. The crops that are grown in Nagaland are divided into two broad categories: food crops and non-food crops. While in food rice is the main crops and in non –food crops vegetables and fruits are the main crops. Due to the growth of population and break-down of the joint family system, there has occurred continuous sub-division of agricultural land into smaller and smaller plots. Majority of the farmers in Nagaland are marginal meaning landholding less than 1 acres of land. Although the ownership of agricultural land in Nagaland is a cause of concern as farmers are not the owners of the land rather they are mostly tenants. It is believed that large parcels of land in Nagaland are owned by rich farmers, bureaucrats, politicians and money-lenders, while the vast majority of farmers own very little amount of land, or no land at all.

#### *Agricultural Production problems*

The agricultural production constraints are carried out using ranking mean analysis presented in Table 2.

**Table 2 – Agricultural Production Constraints**

<b>Factors</b>	<b>Mean</b>	<b>Rank</b>
Insufficient infrastructure (road connectivity, transportation, storage, etc.)	4.56	1
Production affected by climatic conditions	4.16	2
Lack of finance	3.95	3
Lack of mechanization	3.89	4
Production affected by natural disasters	3.86	5
Lack of extension contact	3.84	6
Lack of irrigation	3.83	7
Problems of insects, pests, and diseases.	3.82	8
The high cost of inputs (seeds, fertilizers, pesticides, and fungicides)	3.80	9
Poor access to inputs (seeds, fertilizers, pesticides, and fungicides)	3.79	10
Lack of suitable subsidies	3.79	11
Lack of farmer's commitment	3.63	12
Lack of technical know-how (improved technologies)	3.55	13
Poor farming skills/Shortage of skilled labor	3.43	14

The table portrays the ranking mean of constraints faced by farmers in agricultural production. Insufficient infrastructure (road connectivity, transportation facilities, storage facilities, processing units, etc.), production affected by climatic conditions (heavy rainfall, flood, etc.), lack of finance, and lack of mechanization are revealed as significant problems faced by the farmers with the highest mean scores of 4.56, 4.16, 3.95, and 3.89 respectively. The reasons such as production affected by natural disasters, lack of extension contact, lack of irrigation, and problems of insects, pests, and diseases are ranked as the following major influencing factors in production problems farmer faced with the mean scores of 3.86, 3.84, 3.83, and 3.82 respectively. The reason such as the high cost of inputs (seeds, fertilizers, pesticides, and fungicides), poor access to information (seeds, pesticides, and fungicides), lack of suitable subsidies, lack of farmer's commitment, lack of technical know-how (improved technology) and poor farming skills or shortage of skilled labor are considered as lesser problems with lowest mean scores of 3.80, 3.79, 3.79, 3.63, 3.55, and 3.43 respectively.

## **6. CONCLUSION**

Unless the government, NGOs, the public, and other agencies work together earnestly, the challenges in the state production will take time to fix. Despite the fact that the government allocates a large amount of money to



agriculture in the region each year, farmers continue to face issues that have existed for decades. Increased productivity of high-value commodities can help to boost agriculture and livelihood in the region. Nagaland state offers a climate that is conducive to the development of new high-value crops that can boost the region's economy. Organic farming can help farmers in the region better their financial situation because the region is noted for using less chemical fertiliser in farming. Through participatory talks among regional stakeholders in a synergistic way, well-developed infrastructure for transportation, storage, market, and other facilities will be developed. The author went on to recommend that government agencies promote NGO's working for the growth of the agriculture sectors, educate farmers with modern farming, and finance farmers and traders due to a lack of market information system, inconsistent power supply for produce preservation, unaffordable marketing function costs, poor transportation facilities, and price fluctuation, where the author went on to recommend that government agencies promote NGO's working for the growth of the agriculture sectors, educate farmers with modern farming, and finance farmers and traders.

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## A Study on the Impact of Cryptocurrency on Indian Economy

**Diana Erudiyathan**

Assistant Professor, Department of Management, Kristu Jayanti College (Autonomous), Bengaluru

### Abstract

*With Real-paper cash, it is the government of any country, which chooses when to print and how much cash to be circulated in the market. Cryptographic forms of money, i.e., Cryptocurrencies don't have any involvement of centralized governments. In case of Cryptocurrency, miners or the developers utilize exceptional mathematical programming and figuring energy to take care of technical issues in blockchain. They are in exchange for this task issued a specific number of coins in return. It is only the miners who can confirm any transaction. This gives a keen method to release the cash and furthermore makes a motivating force for more individuals to mine and add to the system. Blockchain technology is the decentralized network of the peers who work on the entries in a common database. These peers are called the miners who try to create the coins by confirming and solving certain transactions. We can say that this blockchain technology is somehow not anything new; rather it always existed in the world. Blockchain technology is a combination of three ideas: first of the protocol which governs the incentives, secondly the web, and lastly the private key cryptography. The current research paper is to study about the impact of cryptocurrency on Indian economy and also few insights about the legalisation of crypto currency.*

**Key words:** *Cryptocurrency, Blockchain, Effectiveness.*

### 1. INTRODUCTION

Cryptocurrencies are a medium of exchange, originating from the first recorded cryptocurrency known as Bitcoin in 2008. Bitcoins and other cryptocurrencies are intended to provide anonymous, yet transparent online transactions. Furthermore, all major cryptocurrencies can be directly exchanged for any major world currencies and vice versa. Bitcoins, like most cryptocurrencies, have no intrinsic value but instead earn their worth from their subjective value given by users and through a process called mining. Moreover, they are decentralised and are not regulated like existing fiat monetary systems. Considering these components of Bitcoins, as well as the seemingly esoteric nature of cryptocurrencies, one wouldn't be unwise to expect little growth in their popularity and usage. With Real-paper cash, it is the government of any country, which chooses when to print and how much cash to be circulated in the market. Cryptographic forms of money, i.e., Cryptocurrencies don't have any involvement of centralized governments. In case of Cryptocurrency, miners or the developers utilize exceptional mathematical programming and figuring energy to take care of technical issues. They are in exchange for this task issued a specific number of coins in return. It's only the miners who can confirm any transaction. This gives a keen method to release the cash and furthermore makes a motivating force for more individuals to mine and add to the system.

Cryptocurrencies are in essence like any other currency. It has a value similar to other currencies and often fluctuates in value. Bitcoin was the first cryptocurrency that came into existence. After which numerous other digital currencies became popular and cryptocurrency became a global phenomenon like Litecoin, Ethereum, Ripple, NEO, Stratis and many more. These currencies initially were valued in a few pennies, which are now in several thousand dollars. With the emergence of Bitcoin and all other cryptocurrencies, financial transactions are being digitalised on a massive scale. This changes the dynamics of international trade, foreign relations, diplomacy, and the impact of economic sanctions. Blockchain technology is the decentralized network of the peers who work on the entries in a common database. These peers are called the miners who try to create the coins by confirming and solving certain transactions. We can say that this blockchain technology is somehow not anything new; rather it always existed in the world. Blockchain technology is a combination of three ideas: first of the protocol which governs the incentives, secondly the web, and lastly the private key cryptography.

### 2. REVIEW OF LITERATURE

*Jamie Bartlett, Carl Miller, James Smith (2013):* The future may not be Bitcoin. Peercoin, Anoncoin, Zerocoin, Litecoin all bring different strengths and benefits, from privacy and anonymity to the efficiency of the transaction. In truth, no-one can be sure what will happen. The task now is to ensure that if cryptocurrencies creep into our lives, they make them better; that they encourage innovation, business freedom, consumer choice, without undermining the key functions of the state; to promote basic social goods without washing this promising and fragile new asset away in a sea of regulation.

*Adrian Ross Miles (2014)*: It was found the primary advantages of Bitcoin over fiat monetary systems include reduced transaction and running costs, reduced/removed mismanaged monetary policies that affect the currency, improved anonymity, improved security and a strong community with easy access. It was noted that much literature is dedicated to addressing the volatile nature of Bitcoin and even attempting to find solutions for it. Whether or not it is just the volatile nature of Bitcoin inhibiting its growth requires further research, as social issues haven't been rigorously covered in literature. Bitcoin and cryptocurrencies in the media have received much interest, with some countries already attempting to regulate Bitcoin.

*Alexander D'alfonso, Peter Langer, Zintis Vandelis (2016)*: In this paper, the authors used a combination of qualitative research to analyse whether cryptocurrency is an ideal investment. It concluded that Bitcoin is likely to experience more growth in the five-year time horizon. Ethereum will have a lower growth, due to wide range of outcomes both positive and negative, indicated that it should be included in investment portfolio.

*Usman W Chohan, UNSW Business School; Critical Blockchain Research Initiative (CBRI); Centre for Aerospace & Security Studies (CASS), August 4, 2017*: Cryptocurrencies are an area of heightened pecuniary, numismatic, technological, and investment interest, and yet a comprehensive understanding of their theories and foundations is still left wanting among many practitioners and stakeholders.

### **3. RESEARCH DESIGN**

The research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data.

### **4. STATEMENT OF PROBLEM**

Cryptocurrencies are the digital currencies, which has created a revolution in the economy. As like in case of fiat currencies, these does not need any centralised system of authority to have the monopoly over the currencies. They are decentralised in nature. The different governments across the globe are not ready to implement cryptocurrency because of the fear of losing monopoly over their currency. Imbibing cryptocurrency is quite risky but it contributes a major part for the Economic growth and development. This study throws light on the impact of cryptocurrencies on economy and measures to overcome that.

### **5. OBJECTIVES**

- To study the effectiveness and impact of cryptocurrency
- To study about the interest of people towards cryptocurrency as a decentralised currency system
- To study about the legalisation of cryptocurrency.

### **6. RESEARCH METHODOLOGY**

The primary data was collected through questionnaires, which were distributed to the students and working-class segment including people having knowledge about cryptocurrency. The secondary data was collected from other external sources.

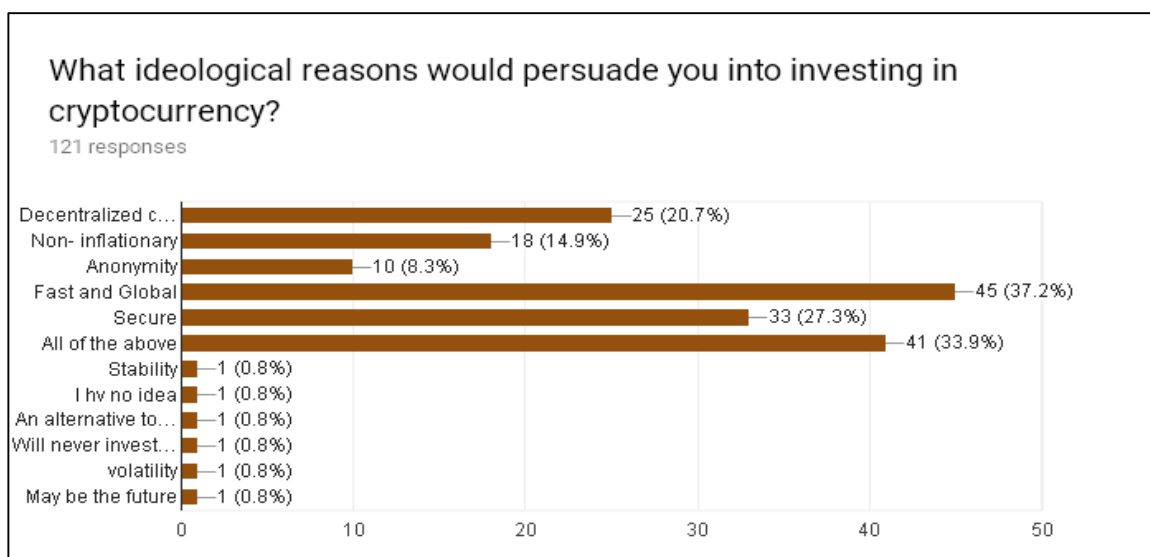
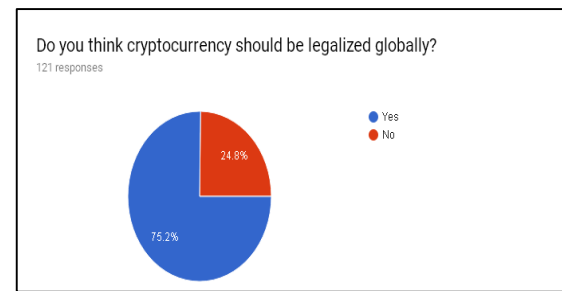
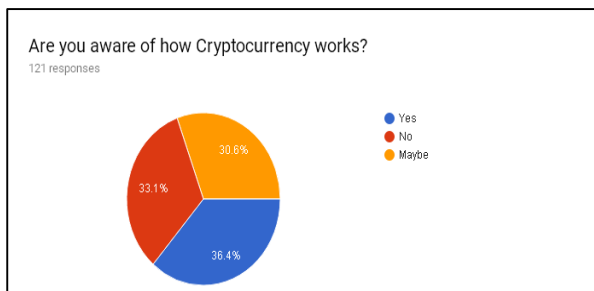
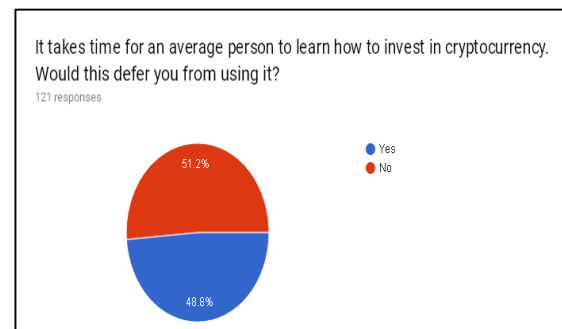
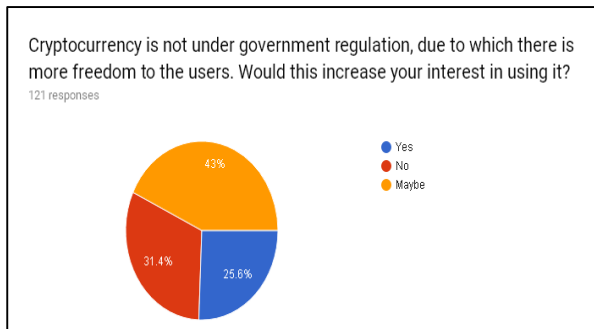
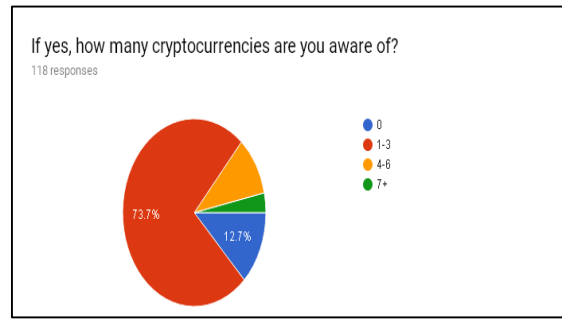
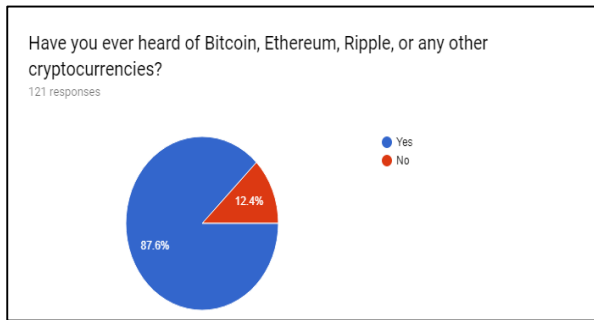
### **7. LIMITATIONS**

- Although the study focused on Cryptocurrency's impact, it was limited to Bitcoins because of Bitcoin's popularity and not much growth in other types of cryptocurrency.
- The survey was limited to the area of Bengaluru, Karnataka.
- Time constraints

### **8. HYPOTHESIS**

- Ho: There is no relationship between age and their interest in using the decentralised currency.
- H1: There is relationship between age and their interest in using the decentralised currency.
- Ho: There is no relationship between gender and their opinion on the legalisation of cryptocurrency.
- H1: There is relationship between gender and their opinion on the legalisation of cryptocurrency.

### 9. DATA ANALYSIS AND INTERPRETATION



**Hypothesis 1:**

- Ho: There is no relationship between age and their interest in using the decentralised currency.

- H1: There is relationship between age and their interest in using the decentralised currency.

Interest in using currency/ Age	Yes	No	May be	Total
18-24	16	19	25	60
25-32	10	07	14	31
33-40	03	08	10	21
40+	02	04	03	09
<b>Total</b>	<b>31</b>	<b>38</b>	<b>52</b>	<b>121</b>

Chi Square Test	Calculated Value:3.6223	Table Value at 5% LOS (Degree of freedom 6) 12.592	CV < TV Therefore, Ho is accepted

This has proved that irrespective of their age people show their interest in using the decentralised currency as it has more freedom to use.

### Hypothesis 2:

- Ho: There is no relationship between gender and their opinion on the legalisation of cryptocurrency.
- H1: There is relationship between gender and their opinion on the legalisation of cryptocurrency.

Opinion on Legalisation/ Gender	Yes	No	Total
Male	43	16	59
Female	48	14	62
<b>Total</b>	<b>91</b>	<b>30</b>	<b>121</b>

Chi Square Test	Calculated Value: 0.335	Table Value at 5% LOS (Degree of freedom 1) 3.841	CV < TV Therefore, Ho is accepted

This has proved that irrespective of gender there is no difference in their opinion on the legalisation of cryptocurrency.

## 10. FINDINGS

- 1) From among 121 respondents, about 106 people have heard about different types of cryptocurrency which is 87.6% and only about 15 people i.e. 12.4% are not aware about the currency. It shows that people are more exposed towards the concept of cryptocurrency.
- 2) 12.7% are unaware about the different types of cryptocurrencies, 73.7% knows around 1-3 different types of cryptocurrencies, 12 of them i.e. 10.1% knows around 4-6 types and only 4 of them i.e. around 3.3% of them knows around 7 plus cryptocurrencies
- 3) 44 of them i.e. 36.4% knows how the cryptocurrency works, 40 of them i.e. 33.1% does not know how it works and 37 of them i.e. 30.6% are in a dilemma.
- 4) 62 of them i.e. 51.2% time taken to learn will not matter but for 59 of them i.e. 48.8% it matters.
- 5) 25.6% i.e. 31 of them have an opinion that decentralized currency system will increase their interest in usage, 31.4% of them have negative opinion and 43% of them could not come to any conclusion.
- 6) For 52.1% of them the intangibility of currency does not affect the value that they perceive about the currency, 19% of them it matters and 28.9% are with mixed opinion.
- 7) For 66.1% i.e. 80 among the total population are hesitant to invest in cryptocurrency due to its anonymity and irreversible nature of the currency. But 33.9% i.e. 41 among the total population think positively in this regard.
- 8) about 70.2% i.e. 85 from among the total population think that cryptocurrency is safe form of investment. But the rest 29.8% of them think it is not safe.

- 9) About 58.7% i.e. 71 of the total population opines that less operating fee of cryptocurrency is motivating them to use the currency. But 41.3% i.e. 50 of them does not think so.
- 10) About 72.7% i.e. 88 among them opine that the fluctuation that happens in the value of cryptocurrency will affect their decision in using the currency. While for 27.3% it does not affect.
- 11) 75.2% of the total population opine that cryptocurrency should be legalised due to its decentralised nature. But 24.8% opine that it should not be legalised as they still feel it is not safe without centralised authority.
- 12) It can be regularized globally because of the quickness in transactions, secure nature, decentralized form and non- inflationary form.
- 13) Cryptocurrencies do not have any involvement of centralized governments
- 14) It contributes a major part for the Economic growth and development.
- 15) With the rise of Bitcoin and the various cryptocurrency, money related exchanges are being decentralized on a gigantic scale

## 11. SUGGESTIONS

- 1) The main reason that many of us does not know about cryptocurrency is because of less exposure and awareness about them. Necessary steps must be taken so that everyone should get know about the working of cryptocurrency.
- 2) For a layman, it takes time to learn and understand about the working of cryptocurrency. It should be made simple and easy to understand so that everyone will know about the working and usage of cryptocurrency.
- 3) Decentralisation of these currencies will avoid corruption and other frauds happening. So, take a major step to legalise them as there are still some restrictions on its usage.
- 4) Compared to real paper cash transaction, cryptocurrency transaction is safe as there is no authority to control it.
- 5) As there are various evidences stating that the implementation and legalisation of cryptocurrencies will contribute much towards the growth and development of the economy, the governments across the globe should take this issue seriously and should work towards the legalisation of cryptocurrencies, which would make the world's economy better.

## 12. CONCLUSION

Bitcoin, Ethereum, Ripples, Litecoin and numerous different cryptographic forms of money keep experiencing gigantic development in value, advertise capitalization, and standard appropriation. But still these currencies face lots of obstacles which should be overcome first before they completely replace the current currency system. The most common opposition is through the financial institutions which can easily discourage the growth of cryptocurrency. Cryptocurrencies are basically transparent and automatically detects frauds and it is also cost effective which encourages savings on a large scale and contributes towards the economic growth and development. So, there is no chance of corruption as there will be no centralised monopoly power over the currency.

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## Questionnaire:

1. Name \_\_\_\_\_
2. Age  
18 – 24  
25 – 32  
35 – 40  
40+
3. Gender  
Male

Female

4. Have you ever heard of Bitcoin, Ethereum, Ripple, or any other cryptocurrencies?  
Yes  
No
5. If yes, how many cryptocurrencies are you aware of?  
1 – 3  
4 – 6  
7+
6. Are you aware of how Cryptocurrency works?  
Yes  
No  
May be
7. It takes time for an average person to learn how to invest in cryptocurrency. Would this defer you from using it?  
Yes  
No
8. Cryptocurrency is not under government regulation, due to which there is more freedom to the users. Would this increase your interest in using it?  
Yes  
No  
May be
9. Cryptocurrency is intangible. Does this diminish the value that you perceive about the currency?  
Yes  
No  
May be
10. Does the anonymity of cryptocurrency and its irreversible nature make you hesitant to invest in it?  
Yes  
No
11. Do you think it is a safe form of investment?  
Yes  
No
12. Cryptocurrency requires comparatively less fees to operate. Would this increase your interest in using it?  
Yes  
No
13. Cryptocurrency may undergo many changes in the near future, which makes it volatile. Will this affect your decision to use cryptocurrency?  
Yes  
No
14. Do you think cryptocurrency should be legalized globally?  
Yes  
No
15. What ideological reasons would persuade you into investing in cryptocurrency?  
Decentralised Currency  
Non-inflationary  
Anonymity  
Fast and Global  
Secure  
All of the above

## Social and Emotional Learning in Childhood Stage: A Review Study

Rushda Mirza

M.Ed. 1<sup>st</sup> Year, Department of Education, Integral University, Lucknow

### Abstract

*Social and Emotional Learning have been used in education for a long time. In the early 20<sup>th</sup> century. Jhon Dewey promoted a student-centered approach to schooling that focused on the development of the whole child. Social emotional learning helps children development a more positive attitude towards themselves and the people around them. This includes having empathy, confidence and persistence. Beginning early in life, social and emotional learning (SEL) is highly important for helping preschool children to understand and manage their emotions, feel and show empathy for others, establish healthy relationships, set positive attitude and make responsible decisions and avoid negative behavior. We learn to recognize and manage emotions care about others.*

### 1. INTRODUCTION

For the complete development of children, attention should be paid to their social and emotional aspects since childhood, for success in school, work and life, social and emotional aspects should be taken care of. learns to manage. Through social and emotional development, the student can easily solve the problems that come in life without panic. Such students take any decision very responsibly. Through this, students understand the feelings of others. Develops students both academically or on non-academically by social and emotional aspects. Students whose cognitive and emotional side is taken care of since childhood, they easily solve the difficulties of relationships. Such a student is social. He understands his feelings as well as the feelings of others. That's why from childhood, treat children in such a way that their social and emotional aspects be developed.

*Karen L Bierman (2015)*

Karen says that the early educational experiences that children have play an important role in their lives. If the emphasis is laid on the social and emotional level of the students right from their childhood, then they will be able to maintain firmness on these aspects in future.

*Mojdeh Motamedi (2015)*

All round development of the students. For that social and emotional education should be included in the curriculum of the students. This affects the student with his school as well as his life. This develops various skills in the child.

*Daniela Maree Ashdown, Michael E Bernard (2012)*

The early childhood curriculum for social and emotional learning skills should be designed in such a way that the child develops self-confidence, assertiveness, organizational and emotional resilience from a very young age, so that the child can effectively solve life's problems and Can face any critical problems.

*Marc A Brackett, Susan E Rivers (2014)*

When there is interaction between teacher and students, emotions develop between them and these things greatly affect the education of the students, so when the student interacts with his teacher and friends, then his social and emotional development takes place. By programs of social and emotional by the schools, such an environment is created by which the student changes his personality from that environment.

*Jonathan Cohen (2001)*

Through this research, we come to know that parents and teachers should pay attention to the social and emotional aspects of children, because social and emotional literacy reduces violence. At the same time, it enhances adaptive capacity and provides new opportunities for learning and development of a good health. This development makes students effective citizens.

*John Payton, Roger P Weissberg, Joseph A Durlak, Allison B Dymnicki, Rebecca D Taylor, Kriston B Schellinger, Molly Pachan (2008)*



Through social and emotional programs, students develop social and emotional skills as well as attitudes about themselves and others. This acquires knowledge about all the relations of the school and through social and emotional positive social behavior is generated in the students and academic promotes improvement in performance. Through this the character of the students is also developed.

*Eva Oberle, Kimberly A Schonert-Reichl (2017)*

Schools should promote more for the development of social and emotional aspects of the students so that the student can be successful in his life and can be mentally healthy. Teachers should have a thorough knowledge of social and emotional so that they can include social and emotional activities in the curriculum and day to day activities of the students.

*Ana M Cristóvão, Adelinda A Candeias, José Verdasca(2017)*

Social and emotional learning is making strides in the field of education at a very rapid pace. Through this knowledge, the student solves all the problems of his life effectively and builds a positive relationship with other people. This type of education affects the health and development of the students. It makes the students a good citizen.

*Roger P Weissberg, Joseph A Durlak, Celene E Domitrovich Thomas P Gullotta (2015)*

Through this research, we come to know that the personality of students is developed through social and emotional development. Along with this, the cognitive ability of the students also increases.

*Maja Ljubetic, Toni Maglica (2020)*

For the positive development of the students, emphasis should be laid on the social and emotional aspects in the schools so that the child can adjust in the society and the personality of the student can be developed and he can move towards success.

*Sara E Rimm-Kaufman, Chris S Hulleman (2015)*

Social and emotional education is more useful to make life effective. With this type of knowledge, the personality of the children is developed. He recognizes his feelings. Builds positive relationships. Morality develops in him and he takes right and high decisions in his life. That's why students should emphasize on social and emotional education from childhood.

*Joseph E Zins (2004)*

By paying attention to the social and emotional aspects, we can make the educational mission effective, because if the social and emotional side of the children is developed, then their non-academic process is also effective and affected, and along with this, by social and emotional development, we can improve the educational situation. Improvements can also be made.

*Roger P Weissberg, Jason cascarino phi Delta kappan (2013)*

Social and emotional learning helps to make the school more attractive and successful and the student is always ready for any kind of challenges in the world.

*Maurice J Elias (2004)*

The curriculum should be designed in such a way that along with the academic aspects of the child, his non-academic side also develops. The curriculum should be such that if any problem comes in front of the students, they can solve it.

*Stephanie M Jones (2017)*

Jones has said that social and emotional learning gives very good results in life. Through social and emotional education, he can live his life successfully and happily.

*Emily J Doolittle (2017)*

Doolittle has said that social and emotional learning should be given importance in schools so that the thinking, feelings and behavior of the students can be developed in such a way that it can lead to positive results in their lives.

*J.David Hawkins,Brain H Smith, Richard F catalano (2004)*

By paying attention to the social and emotional aspects of the students, the family develops strong bonds to the school and community. Students should also participate in social activities. Whenever the child participates in social activities, he should be rewarded so that his activities can be seen to be effective and the students can be motivated.

*Susanne A Denham (2003)*

Emotional education is as important as any other kind of education. Social development is important in children's ability to communicate and form relationships with others. If the student understands the emotional expression of his life, experiences himself and the feelings of others, then his emotional development can take place. Children become more and more emotionally capable over time.

*Lorea Martinez (2016)*

By catering to the social and emotional aspects, student performance is greatly improved. There is a positive impact on their attitudes about school and the relationships they have in the educational system.

*Chavaunghn Brown (2010)*

The school is being further developed through social and emotional development. The teaching process is being made more effective through social and emotional development. Because through this education process, the student easily moves towards success in his life because his social and emotional side is strongly developed. It says that all teachers should have social and emotional skills so that they can create a social and emotional environment in their classroom.

## 2. CONCLUSION

Right from the childhood of children, attention should be paid to their social and emotional aspects so that the child can face all the problems of his life and solve them effectively. Apart from this, morality and sociality also develop in children. The child understands his own feelings as well as the feelings of others. The feeling of love develops in him. Both academic and non-academic aspects of the students develop. Through social and emotional development, the student can move towards positive outcomes in life. Through social and emotional development, the student is able to take the right decisions in his life. Students should interact with their teachers and friends so that their social and emotional development can take place. The character of the students is also developed through social and emotional development. Emphasis should be laid on the social and emotional level of the students right from their childhood so that they can keep firm on this aspect of themselves in future.

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## Realtime Task Selection Through Machine Learning

**Mirza Ghazanfar Baig**

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh

**Sandeep Kumar Nayak**

Department of Computer Application, Integral University, Lucknow, Uttar Pradesh

### Abstract

*Task selection becomes prominent, especially when there are many factors and aspects to consider in real time. It will eliminate insignificant variables and increase classification accuracy and performance. Approximating mathematical functions (equations) describing real-world circumstances is the goal of Machine Learning. The mathematical functions are often known as "mathematical models" or simply models. The ability to choose weapon with a high level of damage capacity, are important attributes that are currently being used to choose and strike targets. In essence, greedy search in artificial intelligence selects the regionally best answer in the hopes that it will lead to the global optimal solution. As a result, it moves on based on the pick after determining the best value from its neighbors. The best solution is occasionally found by a greedy algorithm, but this is not always the case. The greedy search algorithm has applications in video games only. There are currently no self-driving weapon systems that have been calibrated and programmed correctly to make their own decisions, take complex actions, and adapt to their environment using machine learning. In order to assault and inflict harm, the offence in this issue has access to a huge but limited selection of weaponry. It's partly because of how significant they are that the study of military issues has attracted so much interest in recent years. The defender employs a mitigation technique to stop potential attacks, and the attacker replies by coming up with a perfect attack strategy to get through the mitigations already in place. In the Greedy Algorithm Selecting & Attacking Perspective, present a general formulation for deterministic plan interdiction as a mixed-integer issue, and then apply constraint generation to calculate the best answers.*

**Keywords:** Machine Learning, Weapon Selection, Task Selection, Attacking Perspective, Greedy Algorithm.

### 1. INTRODUCTION

Learning an ideal policy is the goal of a machine learning task. Policy is the plan an agent uses to act in accordance with how it is acting and its surroundings. The best policy is the one that maximizes the overall expected return. In model-free machine learning, the model of the environment is unknown. Machine Learning approaches or algorithms have significant potential for process optimization using task selection in terms of quality and accuracy in all domains as a result of increased digitalization. In this research, show how machine learning methods may be used to anticipate the choice of amination [1].

The selection of ML algorithms constituted a bottleneck in the project presented. As a result, present a viable method for picking machine learning algorithms for specific problems using a decision-making tool. Given that it is typically framed as an integer programming issue or a set optimization problem, the task assignment problem is typically difficult to solve [2]. This suggests that the need of maintaining human control over target selection and assault is identified, while the concept of meaningful human control is less obvious. Autonomous weapon selection systems under human supervision are expected to become more frequently deployed as the military need systematic control over the use of force. It is feasible to locate the problem with a wide definition. Selecting weapons may be thought of as a set of characteristics with a variety of influencing kinds and harm capability; as a result, weapons can be considered advertising [3]. Interdiction appears to be a hostile act by its very nature, carried out by "Weapon Autonomy." A strong weapon selection, for example, might be used to interdict on an ammo grid, yielding the ratios in which each ammunition should be taken to maximum damage. The objective is to assign weapons to team so as to minimize the total expected capacity of the surviving damage. This is an integer optimization problem in that fractional weapon assignments are not allowed [1]. In the setting presented here, a group's strategic 'weapon of choice' will be determined by balancing damage capacity and the advantages of most effectively achieving the political goal [4].

The findings of observations made during one of the work selections indicate that there is an unclear route that is causing a delay in delivery and stacking of production goods, resulting in a large loss. Now a day, practically every activity involves in weapon selection in the distribution of weapon via less-than-straight and irregular paths. This is what piques researchers' interest in using the greedy algorithm to solve weapon selection task problems, allowing them to reduce distribution costs by looking for the closest distance first, then the longest

distance. A sort of strategy known as an epsilon greedy strategy is used in machine learning to address the question of how an agent decides to either explore the environment or exploit it in order to determine its actions. The agent decides what actions to conduct by employing this method. Using an illustration from the weapon selection game this time, we'll also demonstrate how precisely the Q-value is mathematically computed and updated in the Q-table.

## 2. SELECTION MINIMIZATION

Many scholars have focused on task importance analysis and task selection, but there are still some outstanding questions that need to be addressed. Using a greedy approach from algorithm design and analysis, the job sequencing with deadline problem. The results of the task selection research revealed that completely autonomous weapon selection systems, which by definition operate without human supervision, might be beneficial in very tight settings in high-intensity confrontations. The purpose is to allocate weapons among teams in a way that minimizes the overall projected capacity of the surviving damage. This is an integer optimization problem since fractional weapon assignments are not allowed [1]. The "epsilon greedy exploration" method of choosing an action and also know that if GLIE—Greedy in the Limit with Infinite Exploration—is chosen as the action, we are essentially decaying our epsilon for epsilon greedy. Greedy approaches are occasionally used to get an approximation for hard optimization problems. An NP-Hard problem is the Traveling Salesman Problem, for example. Choosing the next unvisited city from the current city is a selfish approach to this problem at each level. This is an illustration of the exploration exploitation conundrum. Furthermore, despite the fact that the two words curiously have the same first five letters, like improbable letters, exploration and exploitation are extremely significant. In addition, since it is a strike, it is speaking directly about this problem. Using what you know is what exploiting is all about. And gathering the information necessary to understand is what exploration is all about. It turns out that there are many other methods to do this trade-off as well, and the fact that there is only one of you makes it a trade-off. There is only one agent acting in the world and it has these two actually somewhat conflicting objectives. One is to take actions that it doesn't know so much about, so it can learn about them and the other one take, takes actions that it knows are good. So that it can get high reward.

The exploration exploitation lemma is a concept in machine learning theory. The exploration exploitation lemma refers to activities that are either exploratory or exploitative. But in reality, teach the agent something every time you act, whether it is through exploration or exploitation, or both. Exploration is called exploitation in this case, or explore, exploit, explain. It turns out that there are several other methods for exploration and exploitation. Additionally, several of them were used in model-based settings. Because you can actually keep track of what you've learned from your environment and what you haven't, the algorithm can actually know what it knows and can use that information to explore areas it is unfamiliar with and to take advantage of areas it is familiar with. As a result, you can do a lot more and more powerful things with it. That difference is not actually present in Q learning. It's a lot more difficult to do. Apart from the fact that we have a remarkable propensity for getting tangled up in letters and spelling coincidences, the primary thing I took up from this is that the exploration-exploitation conundrum is, in fact, a dilemma. Similar to the basic trade-off in machine learning. A number of greedy approaches have been developed for combinatorial optimization problems, and some of these greedy techniques have led to beautiful worst-case analysis results. Greedy methods often require little design or coding effort, and they execute quickly. Alternatively, greedy algorithms typically have low precision. Exact solution procedures are often not viable when the number of instances is big [5]. A straightforward design strategy that may be applied in a variety of circumstances is the greedy approach. In order to find a comprehensive solution to the problem, the greedy technique suggests developing a solution in a number of phases, each of which builds on the knowledge learned from the previous phase. You must choose the following at each stage.

- Feasible: It must be feasible in order to meet the restrictions of the problem.
- Locally Optimal: It must be the best local option available among all possible options on that stage.
- Irrevocable: Once produced, it cannot be modified throughout the algorithm's succeeding phases.
- On the whole, greedy algorithms are appealing and simple. When faced with an optimization problem, determining how to proceed greedily is usually straightforward, especially after looking at a few small instances. Proving that a greedy algorithm produces an optimum result is frequently more challenging (when it does).

If greedy meets the following requirements, it can be utilized to solve an optimization problem. It will arrive at the best solution for the entire problem by selecting the option that appears to be the greatest at the time in each phase. Greedy algorithms are more efficient than other approaches like Dynamic Programming, thus using one

to solve a problem is typically the best option. On the other hand, greedy algorithms aren't always beneficial. Greedy, for example, can solve the Fractional Knapsack problem but not the 0-1 Knapsack. In general, greedy algorithms include five components. It alludes to the challenge of packing the most important or helpful goods without overburdening the suitcase.

- A candidate set from which a solution is built.
- A selection mechanism for selecting the best candidate for inclusion in the solution.
- A feasibility function that determines whether or not a candidate can contribute to a solution.
- A solution function, which will show when it has identified a complete solution.
- An objective function, which provides a value to a solution or partial solution.

It come across a variety of computational issues, each of which necessitates a distinct approach to tackling. The optimization problem is a problem that demands a maximum or minimum outcome. There are three general approaches to solving optimization problems:

- The Greedy Approach.
- Dynamic Programming (Dynamic Programming).
- The Branch and Bound Method

Consider model learning and planning as the two components of machine learning. Model learning has been extensively explored in the machine learning community, and planning has been extensively examined in the planning and scheduling community, thus this is nothing new. In order to comprehend how these two processes, interact and are dependent upon one another, information must be sent back and forth between them. This is precisely the exploration and exploitation conundrum.

### 3. METHODOLOGY

It is important to keep in mind that while robots are currently very good at quantitative analysis, repetitive tasks, and data sorting, humans still perform better than machines when it comes to qualitative judgement and reasoning, even though opinions on whether future technology will achieve such high levels of autonomy vary. You are in charge of a skilled task force tasked with defending the boundaries of your nation. You may form your own team and equip each member with a different weapon. Each weapon uses a distinct type of ammo and may inflict varying degrees of damage. These guns' ammo is sold in 100-unit packets with certain weights. The squad as a whole may carry a total weight of  $x$  kgs. It is your obligation as the task force commander to determine the ratios of ammunition (full packs or partial packs) carried by the squad in order to optimize damage capabilities. Greedy is an algorithmic paradigm that pieces together a solution piece by piece, always selecting the component that provides the most evident and immediate advantage. To solve optimization difficulties, greedy methods are used.

#### *Planning*

These methods may not always produce the best results, but they can help you get close. Improved approximations for a variety of applications are made possible by fast computing of better fractional solutions. For monotone submodular goal functions, a simple and straightforward solution known as "continuous greedy" satisfactorily addresses the problem; however, for general non-monotone submodular objectives, only far more complicated tools are known to work [6]. As our example of greedy algorithms, consider the Activity Selection issue. The problem is described as follows: You're given a list of  $n$  activities, each of which has a start and stop time. Determine the maximum number of activities that a single person may conduct, given that each person can only work on one activity at a time. To get the damage maximum total value, put the weights and values of  $n$  objects in a knapsack with a capacity of  $W$ . To put it another way, you're given two integer arrays,  $V[1..n-1]$  and  $W[0..n-1]$ , which respectively represent the values and weights of  $n$  items. Given an integer  $W$  that signifies knapsack capacity, find the biggest value subset of  $V[]$  that has a total of weights that is less than or equal to  $W$ . You can't break an object; you have to choose whether to keep it intact or leave it alone (1-6 property). Greedy techniques are a basic heuristic solution to the set-covering issue that may be applied to a wide range of problems. The cover develops in stages, with each stage taking into consideration the outcomes of the preceding one.

#### *Implementation*

In general, applying machine learning to solve problems involves doing a methodical search through the available data to get the needed answer. The greedy approach may therefore be effectively used in machine learning procedures to reduce processing time, especially when the studied data sets are rather big, as can be

inferred from the description of the technique provided above. The optimality of the solution discovered may not necessarily be ensured by the use of a greedy algorithm. So, an efficient algorithm using Greedy Method to determine which ammunition to carry in what ratio to maximize damage capability. Analyse the time complexity of your algorithm. Places no restriction on the number of copies of each kind of item. Besides, here it assumes that. It elucidates how changes in values effect Smoothed Greedy outputs when used for sensitivity analysis. Our greedy-based approach may be a straightforward and efficient substitute for a recently proposed continuous relaxation method, according to experiments using decision-focused learning This article explains how to use it for decision-focused learning and sensitivity analysis. Moreover, demonstrate a different application for this information [7].

**Step-1**

```

START
READ Number of Weapons AS INPUT & Store in Variable N
READ Maximum Weight AS INPUT & Store in Variable Capacity
READ Weight of Weapons AS INPUT & Store in List Value
START LOOP
    For W in Value
READ Damage Capacity of Weapons AS INPUT & Store in List Weight
START LOOP
    For W in Weight

```

**Step-2**

```

DECLARE
CREATE: Variable Max_Value and Fraction
CALL: Greedy Method and pass arguments
    Max_Value, Fraction = Greedy(Value, Weight, Capacity)

```

**Step-3**

```

DEFINE
    CREATE: Method for Greedy with three parameters Value, Weight and Capacity
READ: Value Parameter List in Index Variable up to Length
    Index = list(range(len(Value)))
READ: Contain Ratio of Value to Weight
    Ratio = [V/W for V, W in zip(Value, Weight)]
READ: Index is sorted according to value of the weight ratio in decreasing order
    Index.sort(key=lambda i: ration[i], reverse=True)
SET: Max Value to 0
    Max_Value = 0
SET: Create Fraction List and set length of Value with product of 0 Index
    Fractions = [0] * len(Value)
START LOOP:
    For I in Index:
IF Weight[i] <= Capacity:
    Fractions[i] = 1
    Max_Value += Value[i]
    Capacity -= Weight[i]
ELSE:
    Fractions[i] = Capacity / Weight[i]
    Max_Value += Value[i]* Capacity / Weight[i]
    BREAK
RETURN: Max_Value and Fractions
END

```

**Step-4**

```

OUTPUT
PRINT: Total Damage from Max_Value
START LOOP:
    I = 1
For I in Fractions:
PRINT: Ammunition Packs Selection Ratio
    A[I] > {ITEM}
    I += 1

```

The activities that are accessible in every state, the reward function, and the transition probability function. It gains more and more knowledge about these damages as they are assigned to the various weapons as it learns about all the harm that is done. The maximum harm and resulting states for a selection that are available in a particular state are unknown early in the selection process. That is because of have imperfect understanding of the surroundings. A dynamic programming solution to the issue runs in pseudo-polynomial time and is likely the most straightforward way to address many of these problems in a programming competition. Python 3 should be used to solve the problem stated above.

#### 4. COMPUTATIONAL RESULTS

In order for machine learning to mimic complex psychological features or functions like decision-making, reasoning, and conclusions, models must be trained to behave like people. Machine learning is needed for navigation, recognition, classification, prediction, and description, among other tasks. Realtime weapon selection are an excellent use case for machine learning that we have to deal with on a daily basis. [8]. Machine learning-based classification models for real-world applications perform classification tasks on real-world datasets. When the dataset is uneven in nature, classification models face class imbalance difficulties. Due to concerns with class imbalance, classification models reveal biases in favor of the majority class while conducting the classification [9]. Consider if there are 6 different team members carrying 6 weapons with a total ammunition carrying capacity of 118 kgs. Find the ratios in which each ammunition should be taken such as to maximize damage. Input should be taken in through a file called "input.txt" which has the fixed format mentioned below using the "/" as a field separator:

Ex: Weapons: 6, Maximum Weight: 118

**Table 1 - Ammunition, Weight & Damage**

Ammunition (A)	A1	A2	A3	A4	A5	A6
Weight (W)	10	30	18	60	10	20
Damage (D)	20	40	38	80	15	22

Calculate the number of each item in a collection from a set of things, each with a Weight and a Damage, such that the total weight is as low as possible and the total value is as high as is practical.

**Table 2 - Ammunition, Weight, Damage & Damage by Weight Computation**

Ammunition	Weight	Damage	Damage / Weight
A1	10	20	20/10 = 2.0
A2	30	40	40/30 = 1.3
A3	18	38	38/18 = 2.1
A4	60	80	80/60 = 1.3
A5	10	15	15/10 = 1.5
A6	20	22	20/22 = 1.1

In many circumstances, however, Greedy behavior does not yield the best results. In the animation below, the greedy algorithm looks for the path with the largest sum. At each phase, the most accessible number is chosen. Instead of considering the bigger picture, the greedy algorithm makes decisions based solely on the information at hand, which prevents it from determining the highest total. Given a set of items, each having a Weight and a Damage, decide how many to include in the collection so that the overall weight is below or equal to a specific threshold and the total value is as high as is possible [10]. Keep in mind that the input data displayed here is merely for understanding and testing; a different file will be used for evaluation.

Sample Output:

```
Total Damage: 171.0
Ammunition Packs Selection Ratio:
A1 > 1
A2 > 1
A3 > 1
A4 > 1
A5 > 1
A6 > 0.5
```

The output data displayed here is merely for comprehension and testing purposes; a different file will be used for evaluation. The result does not have to coincide with the example input given before.



## 5. DISCUSSION

In order to answer the question of how an agent chooses to either explore the environment or exploit it in order to determine its actions and selection, machine learning employs a type of strategy known as a "epsilon greedy strategy." Using this technique, the agent chooses the appropriate course of action. By using this example from the weapon selection game, we can show how accurately the weight is calculated mathematically and updated in the table. A sort of strategy known as an epsilon greedy strategy is used in machine learning to address the question of how an agent decides to either explore the environment or exploit it in order to determine its actions. The purpose of this system is to create a 2D arcade-style game in Python from the ground up, with the goal of keeping the project as light as possible in terms of open-source resources. "PyGame", a suite of Python modules developed for game development, lies at the heart of the game, and it was used to do things like built pictures on the screen and move them about. The final product is a two-level game in which the player's aim is to destroy all of the enemy space ships while collecting buffs and de buffs along the way and confronting intelligent foes in the game's latter stages. The leader of an elite task force that is commissioned to guard the borders of your country. You are allowed to build a team of your choice and each member can be equipped with one unique weapon. Each weapon fires a different type of ammunition and has a different capability of damage. The ammunition for these weapons come in packs of 100 units and have specific weights. Collectively, the team can carry a total weight of  $x$  kgs. As the leader of the task force, it is your responsibility to decide the ratios of ammunition (full packs or partial packs) the team carries in order to maximize damage capability. The accompanying report will provide you a thorough explanation of the project's technical aspects as well as why this game was created in the first place. The report begins by setting the stage for this project and then takes the reader on a trip through its implementation. The reader will be familiarized with the game's development, as well as the alternatives that could have been used and the approaches taken during development, in the second part of the report, while the evaluation made during and after implementation will be presented in the third part of the report. Finally, the report finishes with a reflection on the project's outcome and the previous few months of work [11].

## 6. CONCLUSION

This study looked at current spam from a historical viewpoint to see how much effect and damage capacity weapons were portrayed in order to better understand how these weapons were used. The leader of an elite task force that is commissioned to guard the borders of your country. You are allowed to build a team of your choice and each member can be equipped with one unique weapon. Each weapon fires a different type of ammunition and has a different capability of damage. The ammunition for these weapons come in packs of 100 units and have specific weights. Collectively, the team can carry a total weight of  $x$  kgs. As the leader of the task force, it is your responsibility to decide the ratios of ammunition (full packs or partial packs) the team carries in order to maximize damage capability. In this section, discuss related work on analysis and on damage capacity [12]. It is exceedingly difficult to mathematically demonstrate the validity of a greedy algorithm to handle the given problem at hand, despite the fact that it is quite intuitive. A greedy approach to optimization issues may not always be the best one, and it may even provide the worst outcome. If they are used correctly, greedy algorithms locate the best answer considerably more quickly and effectively than alternatives like dynamic programming. The premise underpinning the majority of legal, moral, and other norms is that when life or other important consequences are at risk, decision-making authority should be exercised by humans. Morally, the capacity to continuously behave in a positive manner is important in determining the degree of achievement. Whether on a human or computer level, the ultimate moral standard is to be the "Perspective" it arrives in. Weapon autonomy or selecting targets with a high degree of autonomy are key elements that are being used. These days, the jobs that these weapons do are usually well controlled (e.g., self-protective rather than attacking operations) [13]. Recursively creating a set of things from their fewest feasible components is how greedy algorithms operate. A technique to problem solving known as recursion relies on solutions to smaller instances of the same problem in order to reach a final result. A greedy algorithm has the benefit of allowing for simple, understandable solutions to smaller instances of the issue. The drawback is that it's always conceivable that even the best short-term fixes might result in the worst-case scenario for long-term results. The so-called decision-making support is one of the most essential and promising domains of today's demands that artificial intelligence can help. Making decisions involves choosing a course of action from a range of options. This idea is frequently employed in modern management, financial transactions, commerce, and other activities. One of the difficult situations where decision-making is required is in the selection of a weapon from a very large feature set. Therefore, it is quite beneficial to have an artificial online agent that can suggest products to customers that exactly match their search and preferences based on their prior experience. The use of artificial intelligence in the process of choosing weaponry has received widespread acceptance, and these initiatives have made their AI-based decision-support systems accessible. Despite the abundance of references that are already available in this

subject, there are still numerous areas and components of artificial intelligence-based decision support that can be enhanced.

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## **Inculcating Brain Breaks Methodology in Higher Education through Entertainment: A Review Study**

**Neeta Bawankule**

M.Ed. 1<sup>st</sup> Year, Department of Education, Integral University, Lucknow

### **1. INTRODUCTION**

Students or Teenagers are more inclined towards Entertainment. When they go for Higher Education they have to attend classes with lecture method and not able to concentrate for long time. To make them involved in long time lecture classes it is better to use Brain Break Activities in the form of entertainment. Entertainment boosts the level of activeness in students. It motivates them to work hard and dedicate themselves to the learning process. Entertainment provides the students with a fresh mind to accommodate new ideas through the learning process. This will help them to involve in class and focus on the topic of lecture.

#### *Operational Definition of Variables*

*Brain Breaks (BB):* It is a kind of short rest from whatever children are working on or a short mental break that is taken during regular intervals in classes. Brain breaks are usually limited to 5-10 minutes' activities. It can help to split up longer lessons, boosting both attention and interest in the topic going on in the class.

*Higher Education:* It is a third level education after leaving School. It takes place at Universities and in Colleges and normally includes undergraduate and post graduate study. Higher education is also called Post Secondary Education or Tertiary Education.

*Entertainment:* Entertainment is a form of activity that holds the attention and interest of an audience or gives pleasure and delight. It can be an idea or a task but it is more likely to be one of the activities or events that have developed over thousands of years specifically for the purpose of keeping an audience's attention. We can say it is a pleasant experience that helps a person to cope with daily boring and burdening necessary works.

### **2. REVIEW STUDY**

Michelle E. Ferrer and David D. Laughlin worked on "Increasing College Students' Engagement and Physical Activity with Classroom Brain Breaks" (2017), provided practical advice for implementing brain breaks within the College classroom. The article highlights student reactions to the use of brain brakes and provides recommendations for implementing them in the university setting.

Lauren A. J. Kirby, Paul T. Kurnman IV, Jennifer L. Robinson explained "Outcomes of Brain Breaks: Short consistent meditation and silent sessions in the college classroom are associated with subtitle benefits" (2021), they tested the Mindfulness Meditation (MM) or Control (C) on undergraduate students in psychology courses. Students who were involved in MM and C observed increase in patience, greater reduction in heart rates(HR) and greater mindfulness compared to non-participated classmates.

Kimberly E. Fieler worked on "Brain Breaks go to College"(2018), they suggested to add physical activities as brain breaks in American students who are considered to be sedentary for long time in higher education. By adding brain brakes (2-5 minute) movement based activities will change students habit of sitting and just listening the lectures of teachers.

Alyssa Weslake and Braverly Christian examined "Brain Breaks: Help or Hindrance?" (2015), they observed and mapped three different types of brain breaks like 1) Relaxation and Breathing, 2) Physical Activities, 3) Related to mathematics in class 3 for subject mathematics against student enjoyment/ engagement and then the time taken by students to re focus on subject matters or lesson. They provided some future research directions and recommendations for practice and concluded that subject content related brain brakes are the best option for both student engagement and time taken to re-focus the class.

Isabel Celeste Valdez presented thesis on the topic of "Breaking the Brain barrier: The effect of Brain Breaks on Fidgeting Behaviours in a Lecture based College classroom" (2018) observed that it is difficult to concentrate for longer class, lecture style,crowded classrooms in colleges. So author suggested to increase learning environment, Professors or teachers should incorporate brain break activities into the College classroom. Incorporation of engaging, non obstructive breaks into lecturer style of teaching.

Maddox, Kristine worked on "The Effects of Brain Breaks in classroom" (2019) studied that whether students test scores will improve by using brain breaks or not. Article concludes that teacher should understand that what type of brain breaks should be used in classroom to improve students test scores.

Biljana Popeska suggested "Implementation of Brain Breaks in the classroom and its effect on Attitudes towards Physical Activity in the Chinese School Setting" (2021), author examined brain breaks physical activity on primary school children and concluded to support positive effect of brain breaks on children's attitude. They enjoy and try to do best in physical activities. At the same time, they revealed that the teacher's role is very important in brain break activities.

Simantha Mc Farland explained "Brain Breaks in relation to modality of learning" (2021), studied the correlation between participation in brain breaks and their performance on academic assessments for the students having fully distance learning and then shifted to hybrid learning.

Joe'l Vador Waal worked on "Brain Breaks and engagement" (2020), describe the positive perception of students towards brain break which was of 3 minute in which 2 minutes was given for physical activity and one minute for breathing and relaxation and this lead to a good decision of teacher to continue using Brain Breaks in class.

Ellie Donner researched on "Determining effectiveness of Brain Breaks on student performance"(2013), studied the effect of using brain breaks like short breaks on students of 16 to 18 years' age of high school chemistry students but their study does not support an increase in assessment scores even after using brain breaks, though the research support to take short breaks to increase test scores of students.

Alexander Anthony research on "Exploring classroom breaks in high school chemistry class"(2021), tried to understand the influence of various types of breaks on high school chemistry class, two major observations 1) all type of breaks show positive influence on student's feelings and emotions. 2) different types of breaks have different influence on students focus and emotions. Author suggested better to use guided breaks rather than free breaks.

Jill turner cocking worked on "Building Movement and Brain Breaks into the primary classroom to maximize learning" (2015), he advised to apply the use of brain breaks and movements in classrooms which help students to learn and recall information because of increase in blood flow and the connections of neutral transmitters. He advised teachers handbook which includes brain breaks strategies.

Jacqueline stone examined "Effectiveness of Brain Breaks on Concentration and Ability to Answer Higher order questions in a 7th grade language Art class" (2015), he studied effects of brain breaks on student's concentration and higher order thinking skills in a 7th grade language art class of 50-minute duration for alternate days with and without brain breaks to compare the results and gave the conclusion that Brain Breaks support student's concentration as well as their cognitive abilities.

Meghan M Barkar gave us an idea of "Brain Breaks Improve Student Behaviour and Focus" (2021), he studied the impact of brain breaks or physical activity breaks when implemented in the preschool classroom. They suggested that brain breaks should become a normal part or routine for the students and they are more engaged in on - task behaviour and less engaged in off - task behaviour.

Garry Kuan, Hussein Rizal, Mawar Siti Hajar, Ayu suzailiana Muhamad, Yee Cheng Kueh all worked on the "Effect of Brain Breaks on Physical Activity Behaviour among Primary School children: A Transtheoretical Perspective" (2019), authors purpose of study was to measure the effect of BBPAS (BRAIN BREAKS - PHYSICAL ACTIVITY SOLUTIONS) on the stages of change, decisional balance, process of change, self - efficacy and leisure time exercise among primary school children in Malaysia. They concluded that BBPAS was almost successful and thus recommended to be used in schools throughout Malaysia.

Neall Kelly studied the " Brain Breaks impacting student achievement"(2019), he examined the impact of brain breaks on student's achievement and collected data for first grade class for 6 weeks and got a conclusion that brain breaks had a positive effect on the achievements of students.

Taylor Ashley Autrey worked on " Minds in Movement: A study of the benefits of Brain Breaks for students with Sensory Processing Disorder" (2020), explained about Sensory Processing Disorder (SPD) --> A

neurological disorder in which children with SPD are either over responsive or under responsive. Teachers were asked to identify these children in class and examine the impact of brain breaks on behaviour of students with SPD. Teacher concluded that " Brain Breaks is so effective that it gives opportunity to energize and restart." A Handbook was created to help teachers to understand SPD, identifying those children and engaging them with brain breaks.

Lori Desautels presented work on " Energy and Calm: Brain Breaks and Focused Attention Practices" (2015), it shows the positive impact of Brain Breaks and Focused Attention Practices in emotional states and learning. , Concludes that it refocus our neural circuitry which increases activity in the prefrontal cortex were problem solving and emotional regulation occurs.

Taylor Quiring worked on " Classroom Physical Activity Breaks" (2021), studied the impact of physical activity breaks (as Brain Breaks) focusing on off task behaviour students to engage them in class. The study concludes that physical activity break shows a positive effect on decreasing students off task behaviours.

Ayatullah Mohammad Resza worked on "Impact of Brain Breaks to supporting the physical activity during the Covid-19 Pandemic in elementary school" (2021), did survey on Students' perceptions on the use of Brain Breaks programs, where student did a Brain Breaks for a week and then filled the questionnaire to measure their opinions and attitudes towards Brain Break programs. The result shows that the Brain Break programs were excellent and beneficial from the aspects of physical activity especially during Covid19. He suggested that more research should be done on Brain Break programs, especially in Indonesia to improve the quality of education.

### 3. CONCLUSION

Sometime lecture methods go very long so Student start feeling bore and their focus lost from the topic. In higher education most of the teachers go with lecture method so it is teachers' responsibility to make their student more receptive and not just making student sit in the class for attendance. Students' focus will improve if teacher will make their class Entertaining. Research says that Brain Breaks (BB) in most of the form are very useful and if it will be implemented in Higher Education classroom in the form of entertainment it will again give a fruitful result. Using Brain Breaks in Higher Education in the form of Entertainment will definitely improve:

- \* Students refocus on the lecture topic.
- \* It will increase test scores.
- \* It engages student more in on task behaviour and less in off task behaviour.
- \* It increases student's energy.
- \* It develops student's creativity and social skills.
- \* Most necessarily it can strengthen Teacher Student relationship.

I conclude that from Students' response, teacher should be able to select best type of BB so as to make student remain involved in class. BB are refreshing for both students and teachers.

Keep in Mind:

- \* Free breaks should not be considered in Brain Breaks.
- \* Social media doesn't work well as a purposeful break.

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## **Health Hazards of Using Mobile Phones Among the Students During Pandemic**

**Dr. S. Joyce**

Associate Professor, School of Management studies, Sathyabama Institute of Science and Technology,  
Chennai

**Dr. S. Umamaheswari**

Associate Professor, School of Management studies, Sathyabama Institute of Science and Technology,  
Chennai

**Dr. S. Catherine**

Associate Professor, DOMS, SRM Institute of Science and Technology, Vadapalani

### **Abstract**

*As a result of the COVID-19 pandemic's massive global health crisis and rapid spread of lockdown, students are not able to attend classes. Schools and universities are using mobile phones or laptops for online education. For this study, direct observations were used to collect data regarding the perils of mobile phones among the Chennai population. Interviews and questionnaires based on information provided by the college students. This study would examine the health risks while we use the mobile phones for longer period and examines the health hazards associated with usage, identifies the health effects, students' knowledge, attitude, and awareness about using mobile phones.*

### **1. INTRODUCTION**

During the epidemic, mobile phone use for social networking, internet gaming, and education significantly rose. Health hazards have been associated with prolonged cell phone use. Cell phones put children at a greater risk of getting brain cancer than do adults. Due to their use and effects, mobile phones are harming students physically and psychologically. Particularly in pandemic situations, student use of mobile phones has increased. It is important to take into account how much time students spend using their phones and for how long. In Chennai, a study has been done to determine the health risks associated with students using cell phones during the epidemic. The risks to human health posed by radio frequency and mobile phones have been the focus of several research around the globe. The study will pay particular attention to the health hazards connected to smartphone usage. The study's findings will shed light on Chennai students' cell phone usage patterns and awareness of the negative repercussions of mobile phone use.

### **2. REVIEW OF LITERATURE**

The whole current teaching and learning methodology from primary schools to universities was questioned after the COVID-19 eruption. The government's devised and implemented strategies to stop and restrict the spread of the virus and its effects are fully responsible for controlling the COVID-19 pandemic. As a result, the majority of the governments in the globe have imposed social isolation and urged people to carry out all activities at home (apart from those that are deemed important). All industries are affected by this, but the education sector is particularly affected. The epidemic has completely changed the educational scene, with an enormous movement toward online learning happening virtually all over the world. People are compelled to rely on M-learning to carry out the tasks of teaching and learning. A large number of students and educators entered the virtual room as a result of stay-at-home directives and closures in the office and in the classroom. Thus, e-learning makes it simple for people to transition into cutting-edge educational results like MOOC courses and online degrees from reputable universities.

Government laws dictate the conversion of traditional classroom teaching and learning activities to online learning. This is done to allow for the continuation of educational activities despite the epidemic. While using the internet network, the online learning system allows for face-to-face interaction between professors and pupils. Learning may take place whenever, whenever, and without needing to meet in person. (Albitar.2020). Moreover, online learning activities may be conducted effectively with the use of technology that is supported by the internet. Activities at home, at school, and in the community are made possible by the fast development of information technology and the usage of internet facilities. (Paul et.al 2022). Many research result shows that use of social media is an excellent educational tool for students, it welcomed the provision of additional information related to their curriculum. It explains the privacy related issues which also affect student's

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behaviour. There is a negative side of student attitude toward social media which in-turn affects the academic performance due to distraction of mind towards social media.

Health Hazards linked to Mobile Phones, (Abdul Raouf Khan, Saira Muzaffar and Noor Zaman, March 2009) As well as WHO, IEEE's Committee on Man and Radiation (COMAR) has serious concerns about the public being exposed to radio frequency (RF) and microwave fields from handheld, portable, and mobile phones. since cell phones emit microwave-frequency electromagnetic radiation. RF radiation from mobile devices is harmful to human health and the mind. Dixit S, Shukla H, Bagwat A, Bindal A, Goyal A, Zaidi A, Shrivastava (2010) 200 students from a medical institution participated in a cross-sectional sample using a pre-designed questionnaire to examine their use of mobile devices. Through the use of systematic random sampling, the samples were chosen. In current contemporary period, it is advised to just use a cell phone sometimes. Numerous studies looked at the connection between student mental health condition and the level and kind of mobile phone addiction. It is crucial that the extracurricular activities offered to pupils preserve their mental health and lessen their addiction.

In this competitive world, network companies have started to develop their innovative technology of apps which is more user-friendly and makes the smart work for the interest of students (Harris, B., (2020). Mobile phones are both a blessing and a curse for the younger generation since, when used for amusement and education, they foster a number of undesirable behaviours in them, such as pornographic watching, blackmailing others for their own gain, a surge in cybercrime, etc. Mobile phones may play an astonishingly good function in the hands of the younger generation with the support of expanding social impact and the new ideas that develop daily in their heads. A mobile phone may be a useful tool for launching a new internet company. Additionally, the ease with which students can access mobile devices has resulted in an exponential rise in the number of eLearning businesses. With the help of websites, people can connect who run similar businesses or are looking for jobs to get started on a career path.

### 3. OBJECTIVE OF THE STUDY

*Primary Objective:* To study on health hazards of using mobile phones in pandemic among the Chennai students.

*Secondary Objective:* To analyze the hours of usage of mobile phones among the students. To identify health symptoms associated with long time usage of mobile phones. To examine the attitude and awareness of students on using mobile phone.

### 4. METHODOLOGY

*Research Design:* The purpose of descriptive research is to portray the participants accurately. Simply put, descriptive research involves describing the subjects of the study.

*Sampling Technique:* Convenience samples are made up of students who can easily be reached.

*Sources of Data:* The process of preparing and gathering data is referred to as data collection. 100 people completed a questionnaire for primary data. Online publications and websites serve as secondary data. Published reports and literature reviews based on published papers.

*Structure of Questionnaire:* Questionnaire was given to know the general information about the students in pandemic period.

*Sample Size:* The sample size of the study is 100.

*Pattern of Study:* The research period lasts for 4 weeks, from September 2021 to October 2021.

### 5. ANALYTICAL TOOLS

*Percentage analysis:* Descriptive statistics are always used to answer research questions: Usually, the percentage or the mean. When it is necessary to know how many people responded to a certain question, the percentage is appropriate. In general, the percentage is reported when there are discrete categories of responses.

*Restrictions to the Study:* The study is only focused on the Chennai district. The study is focused on the health risks associated with mobile use by students during a pandemic. All of the main data provided by the respondents was used to compile the study data. Personal prejudice is a possibility. Therefore, the accuracy is untrue.

### 6. DATA ANALYSIS

**Table 1 - Age of the respondents**

S.NO	AGE	NO. OF RESPONDENT	PERCENTAGE
1.	18-20	16	16.0%
2.	21-23	437	27.8%



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<b>3.</b>	23-25	27	27.0%
<b>4.</b>	26 or above	30	30.0%
<b>TOTAL</b>		100	100%

**Table 2 - Education Status**

S.NO	STANDARD	NO. OF RESPONDENTS	PERCENTAGE
1.	1-3STD	12	12.0%
2.	4-6 STD	21	21.0%
3.	7-9 STD	18	18.0%
4.	10-12 STD	20	20.0%
5.	UNIVERSITY	29	29.0%
<b>TOTAL</b>		<b>100</b>	<b>100%</b>

**Table 3 - Most common reason to use mobile phone**

REASONS	NO. OF RESPONDENTS	PERCENTAGE
CALL	9	9.0%
SOCIAL NETWORKING	23	23.0%
GAMING	22	22.0%
ONLINE CLASS	31	31.0
BROWSING	15	15.0%
TOTAL	100	100%

Table 1 represents age of respondents regarding this majority of users above 18 years as usage of mobile phones are high preferred than the people of low age. Table 2 depicts the university education having majority. Table 3 gives the reason for use of mobile phone mostly those who have need of on line class using mobile majority.

*Statistical Analysis - Chi Square*

Hypothesis 1: There is association between age of the respondents and the symptoms associate with exposure to mobile phone.

	Value	df	Sig
Pearson Chi- Square	20.112a	12	<b>.065</b>
Likelihood Ratio	22.822	12	.029
Line by Line Association	1.938	1	.164
N of Valid Cases	100		

Inference: Considering that p value (0.065) is higher than 0.05. The null hypothesis is accepted, and we reject the alternative. As a result, there is no discernible relationship between respondents' ages and the symptoms linked to cell phone use. Our minds and eyes will begin to deteriorate after extended use.

*One Way Anova Test*

Hypothesis 2: The respondents' ages and their use of mobile devices are significantly correlated.

Age	N	Mean	SD	Std. Error	95% Confidence Interval of Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
7-10 years	16	2.75	1.125	.281	2.15	3.35	1	5
11-13 years	27	2.15	1.199	.231	1.67	2.62	1	5
14-17 years	27	1.85	.907	.175	1.49	2.21	1	4
18 or above	30	2.07	1.112	.203	1.65	2.48	1	4
<b>TOTAL</b>	100	2.14	1.110	.111	1.92	2.36	1	5

	Sum of Squares	df	Mean Square	F	Sig.
<b>Between</b>	8.359	3	2.786	2.353	0.077
<b>Within Groups</b>	113.681	96	1.184		
<b>Total</b>	122.040	99			

Interpretation: Since p value (0.77) is greater than 0.05. we accept the null hypothesis and reject the alternative hypothesis. Hence there is no association between age of the respondents and their addiction on mobile phone. All category of age is willing and no other option is in their hands to avoid the use of mobile phones.

## 7. FINDINGS OF THE STUDY

From the analysis, the discussion about the representation of samples are (30%) of the respondents are age between 18 or above years. (70%) of the sample are Male. (29%) of the samples are University students. (52%) are Habitual and Regular users of mobile phone. (54%) are using mobile phones for more than a year. (43%) strongly agreed that their mobile phone usage increased during pandemic. (31%) most commonly use their mobile phones for Online class. (32%) uses their mobile phones between 5-8 hours per day. (38%) mobile phone screen brightness level is between 90-100% level. (29%) are Partially aware of the health hazards caused by mobile phone radiation. (58%) uses Wireless (Wi-Fi) for their internet connectivity. (44%) of the respondents are not aware of radiation caused by Wi-Fi waves. (47%) of the respondents use their mobile phone at day time. (37%) spends between 3-5 hours for their distance education per day. (35%) are strongly agrees that their addicted to mobile phone. More than 50 percent agree that the symptoms of health hazards are directly associated with exposure to mobile phone. (42%) of the respondents strongly agrees that they will reduce usage after hearing the ill effects of mobile phones to health.

## 8. SUGGESTIONS

The digital world cannot be denied, but we have to prevent before we cure them. This overall study shows that many mobile phone users are habitual and regular users and are addicted to their mobile devices. They should follow time schedules to limit and prevent uninvited usages like gaming and social media. They should instead turn their attention to other useful and healthy activities, like yoga, exercise, and taking rest. Parents should monitor and control them from long-term use.

## 9. CONCLUSION

The study conveys that most of the students are hardly addicted to their mobile phones especially in the pandemic because they have no other option to go out and play or spend their time in other activities so many of them are using the mobile phones for Online classes , Gaming's , Call duration, Browsing Social networking are increased for long time, most of the students have agreed that they are facing health hazards symptoms witnessed of using mobile phones for long-time and their awareness to the health hazards of using mobile phones are very less. So, that their parents should keep track of their children's mobile usage time and set time limits for them. Mobile devices should not be kept too close to the body, instead use hand-free options. Use loud speaker mode. Switch off the mobile phone when not in use. Tune off the internet or Wi-Fi connectivity when not in use. The students should give proper awareness about the exposure to blue light to hours to their body associated with it.

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**Intelligence of Student to Achievement in Mathematics:  
A Review Study**

**Pranshu Singh**

M.Ed Student, Faculty of Education, Integral University, Lucknow

**Abstract**

*In two research, we examined whether student-reported mathematical attitudes, conceived with the idea of planned behaviour, gradually contributed to students' mathematics grades in addition to cognitive capacity and the Big Five personality factors. Participating were college students from Belarus (202) and Germany (179). The results underlined the significance of attitudes for mathematics accomplishment, with attitudes towards mathematics accounting roughly 25% (in Germany) and 7% (in Belarus) of the variance in mathematics grades, in addition to students' cognitive capacity and Big Five personality traits. The overall model that comprised the three construct domains explained 27% (Belarus) and 45% (Germany) of the variation in math grade levels. These findings are especially significant in the context, we contend, because attitudes may be more flexible than broad personality and cognitive ability traits.*

**1. INTRODUCTION**

It further defined intelligence as "a bio-psychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture." Intelligence is a biological factor that depends on the environment, the culture, the community around, and with whom he/she interacts.

*Operational Definition of Variables*

A very broad mental ability that includes, among other things, the capacity for thought, planning, problem-solving, abstract thought, understanding of difficult concepts, fast learning, and experience-based learning. It goes beyond rote memorization, a certain academic competency, or test-taking savvy. Instead, it demonstrates a deeper and broader capacity for "catching on," "making sense" of things, or "figuring out" what to do.

**2. REVIEW OF LITERATURE**

JJB Oluwatimilbin (2012) Academic values clarification as a group counseling technique with law academic and achievement level student. Concluded clarification as a group counseling technique in enhancing achievement.

Choudhary Ranjan and Das Kumar (2012) Study the Arithmetical ability and study habits on the achievements in Mathematics at Secondary stage concluded the Arithmetical achievement in the students.

Nowreen G & Sheikh (2016) Study the students of mathematical problem solving proficient in relation to gender concluded the rural areas mathematical problem.

Lee, C & Kung H (2018) A study of self concept & Mathematics achievement in relation among junior High School Students in Taiwan concluded the ability Level of Self confidence among junior High School students.

Lamar R (2014) A study habit of higher secondary students in shilling in Mathematics conducted the level of Higher secondary students.

Madan Singh Deupa (2018) A study of achievement and Intelligence level of students in Secondary Education in Nepal with regard to education stream He concluded the difference in intelligence level of students of science, management and education stream is also seen by converting test scores.

Uzoamaka chinenye akubuilo (2019) Academic performance and intelligence quotient of primary school children in English concluded the socio-economic statuses of families are needed environmental measures to improve intelligence and academic performance.

Shifeng (2020) Relationship between SES and Academic Achievement of Junior High School Students concluded the study have important implications for possible interventions to improve academic school achievement.

M Usha Rani (2019) A study on intelligence of High School students concluded the careers according to differences in their potential and provide remedial for children who require them.

P.S. Balaxubra(2011) study of correlates of achievement concluded the studies relating to achievement in general and with reference to special subjects.

Kaia Laidra (2010) Personality and Intelligence as predictors of academic achievement conclude the Gross sectional study from Elementary to secondary school.

H. Rindermann et. Al (2012) The influence of personality of there aspects of cognitive performance processing speed intelligence and school performance conducted the personality individual difference and intelligence level.

Gulsen Topal Ozgan (2019) The effect of intelligence and academic success on self perceptions of primary school students of Turkish and Mathematics wore positively associated with the information.

Harris cooper (2011) The effects of summer vacation on achievement test scores & concluded conceptualization interpretations and synthesis of literature and scholarly work in filed.

Noorto majis antonus H.N. Cillesseary Renster spickermen (2010) Social intelligence and academic popularity concluded their way in the peer group is an important development task for adolscents.

Diseth, Thoreso (2010) A mediation analysis of achievement motives gaals learning strategies and academic achievement concluded the effects of different types of motives and learning strategies as predictors of academic achievements.

Armstrong.T. (2012) Multiple intelligence in the classroom, Association for supervision and curriculum development concluded students providing skills.

Hassein (2011) The role of invitational Education and intelligence beliefs in academic performance. Concluded strength they need to focus on to select an appropriate career.

Lawrence A (2013) Intelligence and Academic achievement of High school students. Concluded that all children have should have the opportunity to succeed regardless of gender, social background.

Zehendani Z,Z, Rezaee (2015) The influence of presenting style on academic achievement and carrer path concluded to investigate the determinants of academic performance with emphasis on the role of parental styles.

### 3. CONCLUSION

Despite the fact that more than 80% of students exhibit positive attitude towards mathematics, the majority are failing their mathematics examinations. From our work, we understood that the problem is not only on the students' attitude toward the subject but there are other factors affecting their grades. In regards to our findings these factors include didactic strategies used by mathematics teachers to deliver instructions and institutional resources. Moreover, it was found that students do enjoy mathematics, but they have failed their examinations likely due to poor learning and examination strategies and the lack of understanding the language of instruction due to English language deficiencies.

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8. <sup>^</sup> [Gottfredson & 1997777](#), pp. 17-20

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## An Empirical Study of Cyber Security Challenges and Opportunities

Uma P

New Horizon College, Bengaluru

### Abstract

*Personal information and computer networks must be protected using tools like firewalls, virus protection, and other software, but this is insufficient. Cybersecurity must be considered by information technology (IT) and Internet service providers (ISPs) to Strengthen cyber security and key information. The goal of cyber security is to protect data and information systems (such as networking, computing systems, and cloud services, as well as software). Governments and businesses are trying to take a number of steps to automatically think of the growing issue of online crime. The prevalence of smartphone and private computing device-based cybercrime emphasizes the importance of staying current on global cybercrime developments. Many people are still concerned about cyber security, despite multiple safeguards. The paper focuses on the most recent developments in cyber security tactics and trends.*

**Keywords:** Cyber Security, information technology, Internet service providers.

### 1. INTRODUCTION

Today, man can send and receive any type of data, such as an e-mail or an audio or video file, with the click of a button, consider how securely his data is being transmitted or sent to the other person without any information leakage. The solution is found in cyber security. The Internet is now the fastest growing infrastructure in daily life. Many new technologies are changing the face of humanity in today's technological environment. However, because of these emerging technologies, we are unable to effectively protect our private information, and as a result, cybercrime is on the rise. Even the most cutting-edge technologies, such as cloud computing, mobile computing, net banking, and e-commerce, require a high level of security. Since these technologies include some crucial information about a person, their security has turned into a top priority. Any country's security and economic well-being depend on enhancing cyber security and safeguarding vital information infrastructure. Keeping the Internet safer (and safeguarding users of the Internet) has become crucial to the creation of new technologies.

*Cyber Security:* Cybersecurity is the process of guarding against digital threats and preventing unwanted access to networks, devices, and data. IT (Information Technology) security, which is intended to stop threats against network systems, apps, and other platforms, is another name for cybersecurity. It prevents or protects information, data, and other things, to put it simply.

*Cyber Security Techniques:* Cybersecurity is becoming more important due to an increase in unwanted intrusions into private data with the express purpose of stealing it to threaten or blackmail individuals for their personal information. The methods and instruments used to address cyber security issues are

*Authentication:* This essential cyber security method aims to confirm the user's identity using the credentials saved in the system's security domain. Although password technology is the most popular form of governance, there are many different implementations available, such as the SIM card found in every person's cell phone. SIM cards come with distinctive ID numbers that are used to identify a specific cell phone via a secure communication channel. Stopping unauthorized parties from listening in on the authenticating message presents the biggest problem in the authentication process. It is possible for dishonest persons to intercept a password sent through an unsecured medium and use it to pretend to be the intended user. The solution to this issue is encryption.

*Encryption:* Encryption makes data unreadable unless an appropriate key is used to unlock it. It would take an enormous amount of time and computing power to solve difficult mathematical problems, such as factoring huge primes, in order to break an encryption. Symmetric encryption uses the same key for message encoding and decoding, and the key's security level is comparable. There could be security hazards associated with the dissemination of the key. With asymmetric encryption, the communication is encrypted with a public key and decrypted with a private key. Asymmetric encryption is used by the vast majority of modern security systems to distribute keys.

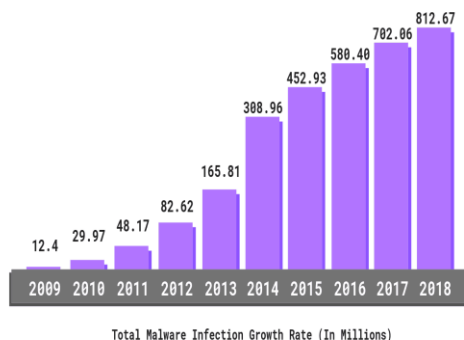
*Digital signatures:* Digital signatures can be created using the same mathematical procedures that are used in asymmetric encryption. A user is free to encrypt some data using a private key to verify that he has it. By

possessing the public key that will validate the person's credentials, anyone can decode the same data. In essence, this procedure is the exact opposite of public key encryption and operates under the similar presumption that the authorized user only has access to the private key.

*Anti-virus:* The threat of computer viruses or unwanted small programmer that execute undesired commands without the user's explicit authorization has grown to monster proportions. Anti-virus software performs two tasks: it searches the systems for viruses that are already there and stops viruses from being installed in a system. Because Windows is the most popular computing platform among the general public, the majority of viruses have been developed to target it. Users of Apple and Linux operating systems may also be targeted by viruses created specifically for those platforms.

*Firewall:* When a computer is connected to the internet directly or through other network connections, firewalls successfully thwart any attempt by hackers to gain unauthorized access to the machine. Most operating systems include a firewall and have it switched on by default. If the default firewall's security level is insufficient or it is interfering with lawful network activity, it may be necessary to use a commercial firewall.

*Malware Scanners:* A computer programmer that occasionally checks all files and documents on the system for viruses or malicious code. In this sector, samples of dangerous software systems are typically sorted and labelled as malware by Trojan horses, worms, and viruses.



## 2. RECENT SURVEY ISSUES ON CYBER SECURITY TRENDS

Malware is often regarded as the primary means by which malevolent forces might evade internet security measures. The most common type of attack that is placed onto a device without the owner's consent is called malware. Like worms, Trojan horses, and viruses, Malware, such as spyware and bot executables, can infect computers in a number of methods, such as by spreading from infected devices, tricking users into opening suspicious files, or luring users to malicious websites. In more tangible instances of malware infection, malware may install itself into a USB drive entered into a compromised computer and then infect any system into which the compromised computer was subsequently inserted. The computational logic and embedded systems of equipment and gadgets can transmit malware. The computational logic and embedded systems of gadgets and equipment can transmit malware. At any point in a device's life cycle, malware can be introduced. Malware can affect end users, servers, network devices (such as routers, switches, etc.), and even process control systems like SCADA. There is currently a lot of anxiety online about the complexity and growth of malware.

## 3. PREVENTIVE MEASURES TO AVOID CYBERCRIMES

*E-identity protection:* When disclosing private information online, such as your name, address, phone number, or financial information, exercise caution. While accessing or utilizing social networking sites, for example, check that the website is secure and that privacy settings are enabled.

*Social Media Networking:* Personal cyber dangers will increase as social media use increases. Both the use of social media by corporations and the potential of assault are rapidly increasing. Organizations can anticipate a rise in the usage of social media profiles as a distribution channel for social engineering techniques in 2012. Companies will need to move beyond the fundamentals of policy and process development to more cutting-edge technology like data leakage prevention, improved network monitoring, and log file analysis to battle the threats. Protect your Wi-Fi network: If Wi-Fi (wireless) networks are not properly secured, they are open to intrusion. Examine and change the default settings. Public Wi-Fi, popularly known as "Hot Spots," is also prone to attack. Avoid using these networks for business or financial operations.

*Block spyware attacks:* Installing and maintaining anti-spyware software will stop spyware from getting on your computer.

*Protect your Data:* For your most sensitive documents, such as tax returns or financial records, use encryption. Make regular backups of all of your crucial data, and store it somewhere else. The safety of the future Cybercrime cannot be detected in digital environments without the use of technological tools; legislative actions, organizational changes, and capacity building were also necessary.

#### 4. CONCLUSION

Due to the massive growth in Internet access and the development of Internet-capable gadgets, as well as the growing population and widespread Internet use, extremely sensitive personal data is regularly shown online with little awareness of the consequences of information leaking. We predict that as the amount of information available on the internet grows in the future, worries about end user confidentiality will increase along with it. Moreover, usability issues are becoming more and more important as a way to understand and utilize end-user-focused security measures without complicating. Because the original Internet was created in a somewhat different context from how it is utilized today, some people think this innovative technique has failed and won't be able to meet future needs. It is proposed to take a "thinking beyond" strategy to better utilize the escalating demands of the future rather than making reference to the current computing system or the future but rather to start over.

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## Importance of Teaching Sustainable Development at Middle School

**Kiran Tiwari**

M.Ed. 1<sup>st</sup> Year Student, Department of Education, Integral University, Lucknow

### 1. INTRODUCTION

Education is an essential tool for achieving sustainability. People around the world recognize that current economic development trends are not sustainable and that public awareness, education, and training are key to moving society toward sustainability. Beyond that, there is little agreement. People argue about the meaning of sustainable development and whether or not it is attainable. They have different visions of what sustainable societies will look like and how they will function. These same people wonder why educators have not moved more quickly to develop education for sustainability (EfS) programs. The lack of agreement and definition have stymied efforts to move education for sustainable development (ESD) forward.

An important distinction is the difference between education about sustainable development and education for sustainable development. The first is an awareness lesson or theoretical discussion. The second is the use of education as a tool to achieve sustainability. In our opinion, more than a theoretical discussion is needed at this critical juncture in time. While some people argue that “for” indicates indoctrination, we think “for” indicates a purpose. All education serves a purpose or society would not invest in it. Driver education, for example, seeks to make our roads safer for travellers. Fire-safety education seeks to prevent fires and tragic loss of lives and property. ESD promises to make the world more livable for this and future generations. Of course, a few will abuse or distort ESD and turn it into indoctrination. This would be antithetical to the nature of ESD, which, in fact, calls for giving people knowledge and skills for lifelong learning to help them find new solutions to their environmental, economic, and social issues

### 2. LITERATURE REVIEW

*Angela W Little and Andy Green*

She worked on the topic Education of sustainable development where she examines the role of education in ‘successful globalisation’ and how this links with agendas for sustainable development. In the first part ‘successful globalisation’ is defined as economic growth combined with equality and social peace. Japan and the East Asian tiger economies – particularly South Korea and Taiwan – have been uniquely successful in the last half century in achieving both rapid economic growth over long periods and relative income equality and social cohesion. A host of factors have been responsible for this, including fortuitous geo-political circumstances and good timing.

*DonjieNiu, JiangFengting Li*

This is a review of policy and practice to examine developments, challenges, and prospects for education for sustainable development (ESD) in higher education in China. Selected educational and operational activities in different universities are presented for analysis and contextualized in relation to the aims of Agenda 21 in China and the broader ESD movement. Key barriers for the balance and promotion of ESD in higher education are identified, with particular focus on regional differences in this vast developing nation, and the need for broader educational approaches across academic disciplines. Teaching about SD has been integrated into technical fields, especially at universities in major cities, and research has been undertaken to develop economically effective and environmentally friendly innovations.

*Eva Waltner, ChristianHorsch and Katja Scharenberg*

They had presented the examined Education for Sustainable Development implementation at the local (teachers’) level, assessing what teachers think and know about Education for Sustainable Development and how they implement it in secondary school classes in Baden-Wuerttemberg, Germany. By providing novel data from a teacher survey in 2019, this study revealed that Education for Sustainable Development in some aspects still lacks concrete structural implementation in educational contexts. Using a longitudinal approach, we additionally compared data from an earlier representative assessment in 2007 to the data from 2019. In reference to the preceding evaluation report, the present study showed, for example, that teachers’ attitudes towards Sustainable Development Goals were significantly higher in 2019 compared to 2007.

*Robert Laurie and Charles Hopkins*

The results of this international research project provide abundant qualitative evidence that ESD contributes in many ways to a quality education. When the curriculum includes sustainability content—delivered in terms of local, social, economic and environmental contexts—teaching and learning transforms primary and secondary education in all contexts. Research also provides evidence that ESD pedagogies facilitate the learning of knowledge, and promote the learning of skills, perspectives and values necessary to foster and maintain sustainable societies. Nevertheless, the authors recognize the need for more research which clearly demonstrates the contributions to quality education and the extent of those contributions.

*Thi Phuoc Lai Nguyen and ThiHuy Nguyen*

This study provides meaningful insights into how pedagogical approaches in STEM education can be deployed to teach science in the context of sustainable development. Interviewed teachers were interested in using STEM teaching to address the real-world development issues, such as pollution, sustainable consumption and production, and energy and water conservation. Most STEM teaching projects developed by the teachers integrated from three to four S-T-E-M subjects and applied contemporary constructivist pedagogical methods, such as problem-based learning, design-based learning and cooperative-based learning, which emphasise a student-centered teaching approach.

*Mogensen, Finn; Breiting, Søren; Mayer, Michela*

This study has identified a number of common processes and learning approaches associated with ESD across a range of global settings and quite diverse initiatives. This understanding of existing trends within ESD will guide the analysis of data collected during the Phase II monitoring and evaluation process. The findings also suggest that any reviews of practice should not be limited only to those programmes and initiatives named as 'ESD'. Often ESD can occur in contexts or initiatives not labelled as education or perceived as learning processes, and the effects of projects that share these common aims and approaches are often more far-reaching than those traditionally understood as the 'target audiences' for educational interventions.

*Colin Banguy*

This paper explores the potential contribution of education to sustainable development. Drawing on recent evidence it argues that education could play a stronger role – a position reinforced by the new sustainable development goals (SDGs). However, securing this contribution will have to be achieved in an era where educational delivery will be increasingly impacted by climate/environment change. The paper explores the relationship between education and sustainable development through an Indian case study. It covers why education is important; impediments that reduce educational impact, and an innovative programme of environmental education that offers insight on ways forward.

*Michael Littledyke*

She summarizes some considerations about the development of indicators for education for sustainable development (ESD). It reflects the present state of discussion, especially from a German perspective, and includes present developments in the area of quality criteria and standards for ESD. These discussion threads only denote the beginning of a discourse that will eventually lead to a practicable instrument for estimating the progress of ESD. This article shall give suggestions for the systematic development of an indicator system for ESD linking three dimensions: levels of educational systems, key functions of indicators, and key aspects of indicator development.

*Mwendwa Assistant Lecturer*

She studied the assesses the extent to which curriculum of secondary schools in Tanzania addresses sustainable education through integration of environmental education. Specifically, it evaluates the subjects used to deliver environmental education in secondary school. Also the study found out perceptions, challenges, and recommendations for implementing environmental education. Students and teachers were fairly knowledgeable and had understanding of basic environmental issues. Main challenges facing implementation of environmental education included an integrated learning approach, inadequate knowledge on environmental education, lack of support from each other and from school administration, and cultural myths and beliefs.

*Leire Agirreazkuenaga*

In his study he showed that key factors for successfully implementing education for sustainability programs are the involvement of the teaching staff, personal motivation and the leadership of the coordinator, although the support of the school authorities is also needed (complementary focuses). Moreover, the stability of the teaching personnel and their identification with the project are essential. Differences can be established in this respect between public schools and private schools that condition the difficulties of the teaching staff to a certain degree.

*John Wiley & Sons*

Based on an exhaustive content analysis of 37 global reports, this paper examines how well links between education and other Sustainable Development Goals (SDGs) are represented in flagship publications of the United Nations system. Taken together, the reports identify links between education and all the SDGs, with the notable exception of SDG 14 on oceans. However, some goal areas have received much more attention than others. While some causal links are identified and highlighted as important, relevant constraints are sometimes not extensively discussed, and few concrete policy options to act on these links are provided.

*Zimbabwe Case Study*

He had done the study sought to investigate curriculum issues, teaching and learning for sustainable development in secondary schools in Zimbabwe. Education for sustainable development (ESD) aims at changing the approach to education by integrating principles, values, practices and needs in all forms of learning. Literature has documented the importance of problem solving, ecologically relevant education, project based and interactive education as the basis for sustainable development. The methodology employed included literature search, documentary analysis, questionnaires, interviews and observation. The study was based on two urban and two rural secondary schools. The study concluded that an integrated curriculum and education was more beneficial for sustainable development and entrepreneurship. Further research is required on the curriculum and strategies for education/industry integration for sustainable development and challenges schools face in trying to implement ESD.

*Heli Vellianen*

Sustainable development includes controversial values and complex issues such as energy consumption contra natural resources. This paper discusses a school project involving teachers from pre-schools to upper secondary schools in Sweden. The project aimed to support the teaching of energy issues and more generally sustainable development. The research question is as follows: How do teachers constitute meaning in an ESD project? Through focus group interviews, I found three themes that illuminate the meaning of the project: awareness, confirmation, and collaboration. This study opened up two horizons: the meaning of ESD and the meaning of prerequisites for successful teaching. According to the results of this study, the relationship between social and ecological issues needs local relevance and people need an opportunity to debate the controversial issues.

*Christine Winter*

In his research he found that the teaching about sustainable development involves complex and contested ethical and political issues. This case study research investigates how four student teachers taking part in a one-year teacher education programme in a university in England (Post Graduate Certificate in Education or PGCE) translate their knowledge, experiences and beliefs about ESD into classroom practice in the context of the Geography National Curriculum and ESD policies in secondary schools. The researchers critically analyse curriculum materials used by three student teachers to explore the potential for ethical and political engagement with ESD knowledge.

*Alexandar Ramadoss Gopalsamy Poyyamoli*

Promoting student's commitment to protect local biodiversity is an important goal of Education for Sustainable Development (ESD) in India. The main focus of this Biodiversity education was to expose the complexity of ecosystems and interrelationships between organisms and their environment at local level. Student's needs to understand and develop skills related to solve various biodiversity problems with reference to local context. In order to develop the Biodiversity consciousness, developing attitudes, values and skills, and promoting

participation among students about their local Biodiversity activity based environmental education methods such as field trips, hands-on-activities, experiential education, debates, autobiography, games, practical and field visits is vital to achieve sustainable biodiversity at local level in future.

*Paul Vare and William Scott*

Paul Vare and William Scott use the distinction they have made between ESD 1, learning for sustainable development, and ESD 2, learning as sustainable development, in order to comment on the issue of Fairtrade and the different approaches that might be taken, ie, seeing this as something to promote as a 'good thing', and something to critically explore as a complex and contentious sustainable development issue. They consider the relationship between these approaches and the importance of critical literacy.

*Per Sundand Niklas Gericke*

This study aligns with other studies of cross-curricular settings in the sense that a number of trade-offs need to be considered at the school level (Applebee, Adler, and Flihan 2007). Science offers a scientific grounding of facts, and social science is important for repoliticising a policy level ESD used in curricula (Sund and Öhman 2018). In working with communicative democratic skills to develop an ESD action competence, students' self-esteem and self-confidence should not be neglected or forgotten (Jensen 2002). In the process of cross-curricular ESD teaching, students' individual identity-making is important and can help to make ESD knowledge relevant in students' everyday use of and contributions to a more sustainable future. This could be language teachers' important contribution to a cross-curricular collaborative work on ESD.

*Mike Summers, Graham Corney and Ann Chids*

They had done the qualitative study of the issues which arise for teachers when planning and teaching sustainable development in primary school classrooms. Nine primary teachers participated in a programme of professional development concerned with education for sustainable development, and subsequently planned and taught a topic with a sustainable development focus. Seven key issues are identified and discussed in depth, namely: sustainable development and the National Curriculum; choosing a topic; making it sustainable development; 'learned helplessness' and empowerment; personal understanding of sustainable development; the teaching of controversial topics; and teacher time.

*John Siraj-Blatchford & Ingrid Pramling-Samuelsson*

They had done research Early Childhood Care and Education (ECCE) in Education for Sustainable Development (ESD) is made on both moral and on practical grounds, but a definition of 'Education for Sustainable Development in Early Childhood Care and Education (ESDECCE)' is offered that emphasises the importance of looking beyond the issue of preschool education alone, to consider in a more integrated manner the health, care and survival of children from birth to school age. Priority is given to global risk reduction and the importance of developing resilience through intergenerational projects such as those concerned with Water, Sanitation and Hygiene (WASH).

*Jelle Boeve-de Pauw, Nikas, Denniel and Teresa*

They researched about also revealed that the connection between the holistic approach of ESD in dealing with content matter and the pluralistic approach of ESD to teaching are in practice not as correlated as the UNESCO definition and research [21, 29] proposes them to be. Future research efforts could focus on the effectiveness of ESD in approaches where the correlation between holism and pluralism are a dependent variable. A hypothesis in this context could be that in classrooms where holism and pluralism are connected more strongly and teaching and learning thus is more in line with the UNESCO definition of ESD, it is also more effective in terms of promoting students' sustainability consciousness

### 3. CONCLUSION

To conclude, it can be said that sustainable development brings out stability in the requirements of the environment. It makes the resources available for use for the future generations. Sustainable development is an amazing way to conserve the resources provided by nature. This can be achieved by using eco- friendly resources and technologies that will have no serious impact on the environment. The resources that are available to us shall be used in a sustainable manner so that they do not become extinct for the usage of future

generations. Education for Sustainable Development is not only about being environmentally-friendly; it also involves developing life-skills including leadership, communication and management; all of which are extremely important for personal development. By equipping young people with these relevant capabilities in addition to their environmental knowledge, they can excel at living lives which not only further humanity, but that care for and respect our planet's resources too.

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## Teaching Learning Through Gamification Tools: Sociological Effects On Student a Review Study

Beenu Prajapati

M.Ed-1<sup>st</sup> Year, Department of Education, Integral University, Lucknow

### Abstract

*Gamification is the use of game machines and experience design to digitally engage and motivate they also tend to react to real life situations as they would to a play or games situation these propensities are leveraged with the help or gamification methods. Gamification is a relatively new concept in education, but it is quickly gaining traction gamification the process of using game - like element in educational contexts, to engage learners. Best practice for gamification it is important to ensure the gamification is age - appropriate and relevant to the subject matter. Set clear goals and objectives for gamification, and provide feedback to students to ensure that they understand the purpose of the activities. Teachers may need to invest time and effort into learning how to use the various tools and technologies available for gamification.*

### 1. INTRODUCTION

Simply put, the definition of gamification is the use of game-design elements and game principals in non-game contexts. For example, in-game principals and themes such as acquiring virtual 'points' or other currency, and completing series of tasks or activities to advance to the next level, may be used contexts other than gaming to provide fun and stimulation for the learner. Gamification can also be defined as a set of activities and processes to solve problems by using the characteristics of game elements. Whilst typical game elements are by no means new, they have indeed become increasingly common in non-game contexts such as websites, digital marketing, enterprise applications and even virtual to-do lists and productivity tools. One huge area where gamification is highly prevalent, however, is in education.

Mitesh M. Jayswal (2018) has worked on the topic " A study on contribution of gamification Initiatives on brand equity specifically focused on consumers of Ahmedabad City. The main objective of the proposed study is to know that whether there is a significant relation between brand equity on contribution of gamification Initiatives in context of the average. Researchers believe that there is the impact of brand loyalty, brand attitude, brand awareness, brand association and brand engagement on brand equity in context of averaging in Ahmedabad City, Gujarat.

P Hagglund (2012) has worked on the topic "taking gamification of the next level " main focus of this research papers are this thesis aims to increase general knowledge of gamification by explaining how and why it works. In order of doing this, this report explores gamification in detail and explain not only how gamification concept are used, but also motivates the effectiveness of these concepts on a scientific basis.

E Wiklund, V Wakerius (2016) has worked on the topic " the gamification process: A framework on gamification" main focus of this research papers are the purpose of this thesis is to develop gamified framework based on exiting theory on gamification and then verify its practical relevance viva field experts on gamification. thesis a gamification framework was built based upon the existing body of literature on gamification to more easily describe the processes in how a gamified experience is developed.

S. Gryaznova (2019) has worked on the topic " Gamification in employee engagement " the thesis work focuses on the principles of gamification applied to human resources activities in particular in personal engagement. the ultimate purpose of the thesis work is to develop the set of recommendations for the introduction of gamification principles in the system of engaging and retaining employees in a modern Finnish company.

Pratap Pawar (2021) has worked on " personality traits kinesics and gamification antecedents of employer satisfaction during the recruitment of fresh engineering graduate" main focus of this research papers is gamification involves the use of various gamed for the puyof selection of a candidate. this subject the potential candidate to simulated but realistic situation and gauges their responses. the current study aims to find out the impact of personality traits, kinesics and gamification on employer's satisfaction during the recruitment of fresh IT graduates.

Nivedhitha KS (2022) has worked on the topic " gamification model investigating potential traditional game dynamics and creative ideation at work place" main focus of this research papers are the current research also aim

to determine whether the mediational mechanism is contingent upon the individuals with different range of sensation seeking trait. The results render a deeper understanding of how different user experiences help specific game dynamics in different ways while influencing creative ideation.

P. Herzing (2014) has worked on "gamification as a service" there is only little research regarding the implementation of gamification in a formation system. In particular, a generic gamification design in a flexible way. Therefore, the overall research objective of this thesis is to investigate methods and motivation and to reduce the associated efforts and costs. G. Christians (2018) has worked on the topic "the origins and future of gamification" the idea behind gamification is to take what makes fun for the players and apply that to other areas as a means of motivating people. It has proven to be an effective way to engage users in areas where traditional methods cannot, making things more fun, unique, competitive, and interesting.

BM Ceska (2016) has worked on the topic "gamification in the SCRUM software development framework" this thesis focuses on motivating an increase of team members using the SCRUM framework during product development. Since SCRUM is a quite complex framework and its main principles include keeping on framework rules, it is important for this framework efficiency to keep all team members motivated enough to behave as intended. Gamification is a tool for driving desired behaviour, so it is an ideal candidate to be used for SCRUM users' motivation increase.

Zachary Feitz-Walter (2015) has worked on the topic "Achievement unlocked investigating the design of effective gamification experiences for mobile applications and devices." Based on findings a gamification design framework was proposed. This framework was then used to develop a gamified application that aimed to engage new University students in their first week at University. A field study was undertaken to evaluate the effect of this gamification design.

Krishna, Kriti (2020) has worked on the topic "essays on gamification and consumer mindsets from an e-commerce perspective" these smart designs provide interactive and entertaining interfaces to enhance users' emotional engagement, thereby motivating them to further interact with the platform. One such way of practicing smart design is by incorporating gamification techniques. Especially the online e-commerce players have also begun to endorse gamification as a panacea to engage consumers with their platforms.

L. Szanto-Spring (2016) has worked on the topic "gamification in education" the main goal of this thesis was the various technologies/ websites which deal with gamification and which provide IT interaction between students and teachers are presented and examined. The system has been tested for functionality as well as usability and proved a success. According to feedbacks from teachers' extra functionality of students. Being able to post feedback to teachers during lectures was added.

Saraff, Sweta (2021) has worked on the topic "gamification as pedagogical intervention for performance mindset and metacognition student" gamification provides an interactive learning ground by making education dynamic and immersive. The game design using elements is at the core of this pedagogy. It motivates learners to put more effort without being stressed. The change in the growth mindset was highest as observed in comparison to academic performance and metacognition.

A. Abdi (2016) has worked on the topic "process of gamification gamifying a tourism concept" gamification is bringing game design features and rules into a non-game context usually in an effort to enhance user engagement. The purpose of this thesis is to examine the core and drive of gamification in depth and explore gamification thinking, tools, psychology and elements.

K. Seaborn, DI Fels (2015) have worked on the topic "gamification in theory and action: a survey" gamification has drawn the attention of academics, practitioners and business professionals in domains as diverse as education, information studies, human-computer interaction. We outline current theoretical understandings of gamification and draw conclusions of related approaches, including alternate reality games (ARGs), games with a purpose (GWAPs), and gameful design.

PJ Blok (2022) have worked on the topic "gamification of virtual ray tracer" the application aims to help (computer graphic) students understand ray tracing better by exactly showing how a ray is being traced from the camera towards the light source (S). In this thesis we set out to make the application more fun and entertaining while still keeping it educational by expanding the application with gaming features, which is also called gamification.

A Yaldaie (2018) has worked on the topic "continuous assessment through gamification in the field of education" this thesis investigates the impact of gamification can affect people's behaviour in different domain including the higher education. the use of game design techniques in education offers the potential to make learning more motivating and enjoyable for the students. AA Small (2017) has worked on the topic "gamification as a means of improving performance in human operator process" The Amazon fulfillment center network is the backbone of amazon 's e- commerce business. to achieve higher efficiency a lower cast amazon invests heavily in robotic technology. This has greatly increased throughput in buildings with the technology, while adding new constraint can be relieved by increasing average operator rate.

T. Nummelin (2015) has worked on the topic "Gamification: an overview of mechanics and application " gamification focuses on the well - being of people to create more content and value in their lives and in their work. in the hectic to idea of gamification to ease the burden of repetitive or hard - to comprehend tasks at the workplace or school. the study is of inductive nature and qualitative methods are used to gather information from various sources.

M Airaksinen (2018) has worked on the topic "Gaming for peace: exploring the gamification to soft skill training. This thesis was created for the gaming for peace - project. The project has been deemed to be necessary due to gaps in the personal ' s skills and knowledge. The objective of this thesis was to research soft skill training methods in game environments. The thesis was connected heuristically using multiple research methods that are both qualitative. The thesis recommends gamit for peace to implement multiplayer features into the learning game.

## 2. CONCLUSION

Based on the study of above research reviews it can be concluded that today the gamification improve attitude toward learning - making mistake is a huge part of learning. In a learning environment embracing gamification fear becomes just a first attempt in learning. When they are no longer afraid of making mistakes, kids just og ahead and try any idea in their learning journey.

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## Advances in Physiotherapy Treatment

Aneus Ansari

Ph.D. Research Scholar, Saveetha Business School, Chennai

### 1. INTRODUCTION

#### *Healthcare*

India has a mixed health-care system, inclusive of public and private health-care service providers. It is struggling hard to meet the healthcare needs of its vast population and the major cause is shortage of human resources at all levels of healthcare system. To meet this demand, Government of India is planning to integrate allied healthcare professionals into main stream of Indian healthcare delivery system. Allied Health Profession (AHP) is an integral part of healthcare team in India which provides a range of patient care services like curative, preventive, diagnostic, rehabilitative, monitoring & therapeutic services and also includes research and development. India is struggling hard to meet the healthcare needs of its vast population and the major cause is shortage of human resources at all levels of healthcare system. To meet this demand, Government of India is planning to integrate allied healthcare professionals into main stream of Indian healthcare delivery system.

#### *Physiotherapy*

Physical therapy (PT) one among the allied health professions also termed as physiotherapy. Physical therapy aims to promote, maintains, or restore health. Health care professionals in India are aware of the Physical therapists practicing basic intervention such as

- Individualized Exercise Instruction
- Joint Mobilization Techniques
- Massage Techniques
- Functional Training
- Muscle Energy Techniques

And their applied interventions such as

- Lymphatic Drainage
- Functional Stabilization Training
- Cranio-sacral Therapy

Apart from the above basic and applied interventions physical therapy field has also evolved advanced techniques for better health care delivery. Objective of this paper will be to discuss few advance techniques and provide an insight into this.

### 2. OBJECTIVE

To discuss the advance technique used by physical therapist.

Short description about these techniques.

Orientation to other health care professional for better healthcare management.

#### *Functional Dry Needling*

What for?

Dry needling is a form of treatment that treats underlying muscular trigger points for the management of neuro musculo-skeletal pain and movement impairments.

The goal is to reduce pain, inactivate trigger points, and restore function.

How it is done?

Functional Dry Needling performed by skilled, trained physical therapists using a thin monofilament needle which penetrates the skin and treats underlying muscular trigger points.

The technique uses a “dry” needle, one without medication, inserted through the skin into areas of the muscle.

The goal is to reduce pain, inactivate trigger points, and restore function.

What is trigger point?

Trigger points are the sensitive areas of tight muscle fibers which forms in muscles after injuries or overuse. A trigger point in a muscle can cause strain and pain throughout the muscle.

#### *ASTYM Therapy also known as augmented soft tissue mobilization*

What for?

To effectively initiate remodeling and regeneration of dysfunctional tissue in chronic tendinitis/tendinosis, joint and muscle stiffness, and pain and stiffness associated with early degenerative joint disease.

How ASTYM is done?

The ASTYM™ System is performed by physical therapy clinicians with ergonomically designed instruments. The ASTY System stimulates the breakdown of this dysfunctional tissue and allows functional restoration to occur.

What is dysfunctional tissue?

Adhesions and inappropriate fibrosis within soft tissue known as dysfunctional tissue. This tissue can result from trauma, surgery, immobilization or repetitive strain.

#### *Visceral Mobilization*

What for?

To re-create, harmonize, and increase proprioceptive communication in the body to enhance its internal mechanism for better health, thereby revitalizing a person, and relieving symptoms of pain, dysfunction, and poor posture.

How it is done?

Physical therapist will do an assessment and determine if restrictions in your abdominal or thoracic viscera may be contributing to your discomfort. Techniques are used to gently assist releasing the tension lines and improve visceral mobility. These gentle manipulations can potentially improve the functioning of individual organs, the systems the organs function within, and the structural integrity of the entire body.

#### *Vestibular Rehabilitation*

What for?

- To improve balance and reduce problems related to dizziness
- Balance and/or leg strength/flexibility
- Gait (how we walk)
- Visual stability and mobility
- Neck mobility and neck and arm strength
- Positional testing, including an inner ear exam
- which will improve ability to function in activities of everyday living
- Reduce risk of falling and ultimately
- Improve quality of life.

How it is done?

Vestibular Rehabilitation therapist will do an assessment. Based on the findings, a plan of care is developed. Plan of care includes Specific interventions such as Epley maneuver and the Semont maneuver and exercises such as Brandt-Daroff exercises and Log roll exercises.

#### *Kinesiology Taping*

How it is done?

It is a non-restrictive type of taping applied over joints and muscles after acute injuries to support weakened or injured tissues,

How it works?

- Kinesiology tape gives support and stability to joints
- It helps to relieve pain and reduce inflammation, to facilitate lymphatic drainage after injury, relax overused tired muscles
- It structurally supports or functionally enhances the function of muscle groups in movement on a 24hr/day basis

#### *Strain/Counter strain (SCS) Techniques*

What for it is used?

The below are treated by SCS

- orthopedic disorders involving pain,
- fascial tension,
- local edema,
- joint hypomobility,
- muscle spasm,
- muscle dysfunction or weakness

How it works

This technique works to inhibit hyperactivity of the spasm reflex, allowing the muscle to relax by improving oxygenation and eliminating pain.

### 3. CONCLUSION

By orienting the above techniques to healthcare professionals it is possible for the medical workforce to deliver a better healthcare delivery system. By adopting standard training methods for the above specialty techniques, and setting up councils on the lines of the councils for pharmacy, nursing and other professions, India will be in the position to optimize holistic care for its population.

### 4. FUTURE OUTLOOK

- Availability of Physical Therapy Practitioners practicing specialty.
- Awareness to the common public regarding the specialties.
- Referral of other health care experts to these specialties for better health care management.
- Regulatory bodies such as separate council to ensure quality standards.

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## Augmenting Value through Brands

**Dr. Suresh Paul Antony**

Professor, Indian Institute of Management, Thiruchirappalli, Tamilnadu

Recently you would have spotted Bournvita's unusual packaging. Bournvita is available in packages like toilet cleaners, tissue boxes, soap cases, etc. Even though you may not have encountered these packs, you would likely have read about the 'Forced Packs' campaign in the media. The intent is to shock consumers when they reach out for the iconic Bournvita jar at shopping aisles and websites. These strange-looking packs help them draw a parallel to situations such as when parents force children to follow a prefixed path that may work for others but may not be true to the child's potential (Gumpartha and Patra, 2020).

"When people around saw the idea, the emotions it evoked was all the proof we needed, that we've hit upon a truth that needs to be told. Forced Packs is an intervention; to stop pushing our ambitions onto our children." (Harshad Rajadhyaksha & Kainaz Karmakar – Chief Creative Officers, Ogilvy India). Tim Wu writes about how our time and attention are harvested and sold in his book 'The Attention Merchants'. We face a constant barrage of marketing communication in our daily lives (Neharkar and Anute, 2022). With so much clutter and the never-ending battle to catch and retain our attention, marketers always look for innovative ways to reach the consumer.

- Are brands getting into territory that is not their turf?
- Are they departing from their classic utilitarian platform to create and mediate value?
- Are brands edging instead into the business of ethical stands and social causes and becoming one of those brands with a conscience?

The layman's view of marketing and branding is that marketing is equal to advertising – the art of seeking attention from the wary consumer (Mohanty et al., 2022).

- Is it only about establishing the brand's identity?
- Or is the brand using economic, cognitive and relational variables to manifest itself?

Let us examine brands and their role in augmenting value to the consumer. Brands are fundamentally identity markers to establish points of difference (Hsiang-Ying and Tu, 2018). Many practising managers refer to the brand as much more than that. A brand creates a certain amount of awareness, reputation, trust, prominence & so on in the marketplace (Ananthi, 2018).

- A sweater is just a sweater unless it is worn or owned by Marilyn Monroe; it then sold for \$ 11k+
- A pair of earrings worn by Kate Winslet in the Titanic fetched \$25k.
- A dog collar owned by Charles Dickens sold for nearly \$12k in 2009.

Points of difference can, however, disappear in an instant. A watchful competitor can copy the newest and most complex product within weeks (Anetoh et al., 2020).

- Is it challenging to produce a drink like Coke, a cigarette like Marlboro, a suit like Armani, and a microprocessor like Intel's Pentium? Not seemingly.

But importantly, consumers will not buy these me-too-copy cats at the same numbers and prices. They buy well-known brands because they have confidence in their quality, aspire to their status and sometimes personally identify with the brand's philosophy (Saputra et al., 2020). The Bournvita campaign seeks to wake up society and reconfigure how success is defined.

- Does a profession more than our potential define success?
- Would a significant customer segment identify with the brand's philosophy and find value in consuming it?
- Would the housewife finding the Bournvita she wants out of stock in the store, walk out, and travel afar to buy it elsewhere?
- Will the Bournvita brand now become stronger?

We shall first examine brands from a resource-based view of the firm. We can group the firm's resources under six heads.

1. Tangible: Plant & machinery, land and other tangible assets
2. Technology: Patents, access to proprietary processes
3. Strategic: Licences, natural monopolies and so on
4. Reputational assets like brands
5. Human resources

## 6. Organisation & culture

The nature of these resources and their combination determines the firm's core capabilities – the ability to do what they are best at as no other can. For instance, consider Intel's ability to make chips, 3Ms flair for innovation, or Microsoft's ability to write code like no other (De Toni et al., 2018). These capabilities shape the firm's core business processes.

- Customer management: The ability to attract and retain customers through products and services
- Supply-chain management: The ability to deliver value to the consumer by partnering backwards and forward.

The business processes, in turn, translate into an advantage vis-à-vis the competition. Therefore, relative advantage.

- But can this advantage be sustained over some time? There lies the challenge.

The apple cart can be upset not just by competitors but by others. Employees and celebrity ambassadors alike can eat into the value generated by the advantage the firm has built (Saher et al., 2021).

Ultimately, the brand seeks to deliver shareholder value.

- In its journey, branding efforts and investments made by the firm bolster its image. But will the image be of any value?
- Has the forced pack campaign bolstered Bournvita's image?
- If so, does it convert into brand power? The ability of the brand to influence the behaviour of relevant market entities like the target customer, collaborators and employees.

While the brand image directly impacts consumer behaviour, we must consider the role of other company-orchestrated non-brand activities related to the product, services, price, incentives, communication and distribution, which indirectly impact consumer behaviour (Swaminathan et al., 2020).

Consumer reaction to brands involves three key aspects -

1. Purchase: since brands create customer value, they generate incremental demand for the firm's offering and increase the likelihood that customers will buy the branded offering (Cid et al., 2022). Thus a customer who may not be interested in a nutritional health drink might be interested in Bournvita if she finds the brand meaningful and relevant.
  2. Usage: In addition to the likelihood of buying Bournvita due to its brand power, the consumer is likely to use Bournvita more frequently rather than use it only intermittently or half-heartedly (He, 2022).
  3. Advocacy: If we accept the argument that the legacy brand Bournvita is powerful, it is more likely to encourage customers to promote the offerings from Mondelez. Many customers have shared this content on social media, which is expected to create greater brand awareness and bolster existing brand preferences, ultimately increasing demand for Bournvita.
- Is it the mission of Bournvita to change the world? Unfortunately, many parents indeed transmit their unrequited ambitions to their children.

Nourishing a child's true potential and not grooming them into something else is not the newest idea on the block (Dwivedi et al., 2019). Many brands have attempted to latch themselves onto a larger purpose. One is taken back a decade to stationery brand Classmate from ITC. The advertisement showcased kids being the first themselves than being called the "next Kishore Kumar" because he is a good singer or the next Einstein. After all, she excels in science. "Instead of being the next somebody, can I, please be the first me?" was the clarion call. Laudable social goals indeed.

- Is the discussion getting distracted by its execution?
- Does the campaign have solid legs to deliver impact?
- Is this another creative gust of wind that will deliver on some vanity metrics?

Some marketers seeking to establish points of difference and augment customer value often believe that image-building exercises suffice to serve the purpose (Sadyk and Islam, 2022). However, note, for instance, Katyal, Director - Marketing: Gum, Candy, Beverages (GCBM), Mondelez India. He says, "Over the last seven decades, Cadbury Bournvita has built a strong bond with parents by delivering on the nutritional needs." He adds that they are confident that the packaging innovation will help parents take notice of the campaign and the #FaithNotForce pledge. More important is what you say and how you say it. And most important of all, of course, is what you do. Instead of showing your values, you must act to make them understood by people. That is the bottom line.

What do brands stand for?

- The first core component of the powerful brand is the promise it makes and keeps.

The Covenant characterizes it. A covenant is typically an agreement, usually formal, between two or more persons to do or not do something specified. Here the brand covenant is neither legal, though.

One of the earliest references to a covenant is the Judaic times when God agreed with his chosen people living in the desert. The conditional promise made by God is that he will protect them and take them to the land where the metaphoric milk and honey flow. In return, the chosen people must remain faithful to Him and not worship any false Gods.

Closer home, Arjuna faces a dilemma. He has to fight with his cousins on the Kurukshetra battlefield. Lord Krishna makes promises to Arjuna. The Lord offers the sweetest solace and the highest hope to all His children, even the erring and bewildered. "You should always think of Me and simultaneously carry out your prescribed duty. Then, with your activities dedicated to Me and your mind and intelligence fixed on Me, you will attain moksha."

So, the brand is God, and the target customer segments its chosen people. Bournvita promises its target customers unsurpassed nutritional value like no other. In return, the customer shall not consume any other dietary drink but Bournvita. This promise is inviolable as one couched in divinity. But, unfortunately, business history is replete with stories of brands that have failed to realize this fact and have turned fallen Gods, fallen from grace and fighting hard to get back to a high pedestal.

Now how do we deliver on the Covenant?

- Quiddity is the quality that makes a thing what it is, the essential nature of an item.

It traces its roots from the Medieval Latin quidditas, from Latin quid. Another term for the essence of an object, literally its "whatness" or "what it is". The essence is most vital since it informs consumer attitude towards the brand. It is the product that delivers the Covenant. The product is the vehicle for customers to believe in the Covenant – reason to believe. If Bournvita intends to provide nutritional value and add to the well-being of its chosen people – here, the children, Bournvita cannot escape from its core value mission.

The mission of changing societal mores can only be secondary.

- Finally, how is the Covenant represented to its intended audience?

Representation is the use of signs that stand in for and take the place of something else. It is through representation that people organize the world and reality through the act of naming its elements (Wang and Wang, 2021). The layman's view of branding is that marketers communicating all the time sometimes go for the jugular and overkill (Chatzipanagiotou et al., 2019). Any amount of posturing and identifying with social causes cannot mask the primary responsibility of Bournvita to deliver nutritional value. Brand managers have a fundamental responsibility to ensure that brand manifestation remains consistent with the core responsibility of the brand – the job to be done Covenant. No less.

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## Faculty Members Work Life Balance During COVID 19

**Yogambal. N**

Ph.D. (Part-Time) Research Scholar, Department of Management Studies, Periyar University Centre for Post Graduate & Research Studies, Dharmapuri-635205, Tamilnadu, and Assistant Professor, Knowledge Institute of Technology, Salem.

**Dr. P. Karthikeyan**

Associate Professor of Management Studies, Periyar University Centre for Post Graduate & Research studies, Dharmapuri-635205, Tamilnadu.

### Abstract

*Adjusting work and life will help with getting what accomplishment infers and reveals how to continue with presence with restored vision and reason, Because of the explosion of Coronavirus - 19 pandemic changes occurred in each point. Employees confronted a serious of mishaps because of innovation changes which thusly have impact in their degree of acknowledgment in wok life balance. Present review made an endeavor to gauge the degree of understanding related with pertinent socio-economic factors chose for this reason from Engineering college teaching fraternity in Salem Region. In this review essential information examination was completed utilizing chi -square test, ideas were made in light of the assessment of the review.*

**Key Words:** Work Life Balance, Socio Economics factors, Technological factors.

### 1. INTRODUCTION

Faculty members work nature took new aspects towards the innovation transformation due to pandemic situation. It breaks the situation of customary technique for adjusting work and Life. Here changes happened to change over them into online platform. New factors affecting Balance between work and life activities of employees arose totally. Helpful testing technique was utilized and 146 respondents' information were gathered. Out of the total population only faculty members in Salem District are focused to study the level of acceptance.

### 2. OBJECTIVE OF THE STUDY

To figure out the degree of acknowledgment of balance between work and life balance and to survey the variables which impact employees balance between these two related with demographic variables like age, Gender, Educational qualifications.

### 3. STATEMENT OF THE PROBLEM

This study centered in estimating whether the elements which impact employees in the Balance between work and life activities related with suitable socio- economic attributes viz. Age, Gender, Educational qualifications, have an influence on their level of acceptance.

### 4. METHODOLOGY

The present study used primary data and the same was collected using a well-structured questionnaire in the study area.

### 5. HYPOTHESIS OF THE STUDY

The present study established the following null hypotheses statements to test the relationship associated between the variables used for this study and are given below;

H<sub>0</sub>: There is no association between age of the respondents and their level of agreement

H<sub>0</sub>: There is no association between gender of the respondents and their level of agreement.

H<sub>0</sub>: There is no association between educational qualifications of the respondents and their level of agreement.

## 6. DATA ANALYSIS

Data analysis carried out using pertained data collected from the study area was analyzed using cross-tabulation and chi-square analysis and presented below.

**Table 1 - Age of the Respondents and Level of Agreement**

Age	Level of Agreement						Total	
	Low (up to 97)		Medium (98-106)		High (107-125)			
	No.	%	No.	%	No.	%	No.	%
1-30	14	28.6	12	24.0	10	21.3	36	24.7
30-45	30	61.2	36	72.0	32	68.1	98	67.1
Above45	05	10.2	02	4.0	05	10.6	12	08.2
Total	49	100	50	100	47	100	146	100

Source: Primary data

**Table 2 - Gender of the Respondents and Level of Agreement**

Gender	Level of Agreement						Total	
	Low (up to 97)		Medium(98-106)		High (107-125)			
	No.	%	No.	%	No.	%	No.	%
Male	21	42.9	26	52.0	26	55.3	73	50.0
Female	28	57.1	24	48.0	21	44.7	73	50.0
Total	49	100	50	100	47	100	146	100

Source: Primary data

**Table 3 - Educational Qualification of the Respondents and Level of Agreement**

Educational Level	Level of Agreement						Total	
	Low (up to 97)		Medium(98-106)		High (107-125)			
	No.	%	No.	%	No.	%	No.	%
PG	24	49.0	33	66	23	48.9	80	54.8
PG with Doctorate	11	22.4	06	12	8	17.0	25	17.1
PG with M.Phil	14	28.6	11	22	16	34.0	41	28.1
Total	49	100	50	100	47	100	146	100

Source: Primary data

## 7. DISCUSSIONS

It is observed from the above analysis that,

- 68 % (32) of the respondents have high level of agreement belongs to Age between 30-45 years.
- 55.3 % (26) of the respondents having high level of agreement belongs to Malecategory.
- 48.9% (23) of the respondents having high level of Agreement belongs to PostGraduate.

**Table 4 - Socio-economic factors and Level of Agreement**

Socio-economic factor	Calculated Chi-Square value	5% Level of significance	Degree of Freedom	Remarks
Age	2.621	0.623	4	H <sub>1</sub> Accepted
Gender	1.161	0.447	4	H <sub>1</sub> Accepted
Educational Qualifications	4.578	0.333	4	H <sub>1</sub> Accepted

Source: Primary data

\* Significant at 5% level of significance

From the above analysis it is proved that, there is a close relationship between the selected socio-economic variables selected for this study such as Age, Gender, Educational qualifications. Hence, it is decided to disprove null hypotheses framed for this study and the following alternative hypothesis wereaccepted,

H<sub>1</sub>: There is an association between Age of the respondents and their levelof agreement.

H2: There is an association between Gender of the respondents and their level of agreement.

H3: There is an association between Educational Qualifications of the respondents and their level of agreement.

## 8. CONCLUSION

It is revealed that like Age, Gender, Educational Qualifications all are closely associated with the level of Acceptance of Work Life Balance.

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## Teacher Mental Health in Education – A Review Study

Sabira Khanam

M.Ed. 1<sup>st</sup> year, Department of Education, Integral University, Lucknow

### Abstract

*An integral part of the carefree school life in the last decades is being taken over by stress and anxiety among students. Family pressure, Peer pressure, self-induced pressure, inflation and unemployment had been a few factors earlier, but the pandemic added to it uncertainty and fear of the unknown making the condition worse. The pandemic itself proved testing to academia. The school had to close their door, teachers and students embraced online without preparation and with plenty of inhibitions. The digital divide played a crucial role in a learning loss. Uncertainty in the time and mode of exam and admission drove the students further into the stress zone. Even after two years, the battle with Coronavirus is an ongoing one. Post pandemic, the academic, social and personal adjustment have taken a toll on the school-going youngsters. Those in the secondary stage of his schooling continue to be burdened with prevailing uncertainty regarding future decisions of choice of course to study and career opportunities.*

### 1. INTRODUCTION

This module has been specially designed for teachers to make them more aware, empowered and enhance sensitivity towards mental health issues and concerns, and feels empowered in preventing illness and promoting wellness in schools. While in this module, we are addressing teachers: through teachers, we wish to reach out to students, families and the community at large, so that all could join hands together in shaping healthy habits, behaviors, environment, and a healthy society.

*Satoshi Yamaguchi (2020)*

Satoshi Yamaguchi (2020) has worked on “Teachers mental health in education “. He found that at adolescence time mental disorder increase sharply, to provide and seen the school in good manner, provide initial assistance to teacher.

*Miller (2019)*

Miller (2019) has worked on “Teacher mental health in education “. He found that depression is bad for mental health. So increase awareness about mental health reduce stigma, improve earlier detection, etc.

*Stan Kutcher (2013)*

The author (2013) has worked on the topic “Teacher mental health in education “. He found that the mental health plays an important role in teaching. So always be positive in all situations. All the problem solved by set your mind always be positive.

*Jessica Whitley (2013)*

Jessica Whitley (2013) has worked on “Teacher mental health in education “. He describes that the mental health is very necessary to acquire any achievement in any field. So, always prepared for any situation, for preparedness mental health is necessary.

*Jennifer Dods (2016)*

In this article, the author (2016) worked on “Teachers mental health in education “. He said that the teacher helps to support the student related to mental health, because mental health disorder is very common in all students.

*Cathecene Morgan (2015)*

Cathecene Morgan (2015) has worked on “Teacher mental health in education’. He found that the curriculum is the main cause of the mental disorder. So the teacher responsibility to support mental health problems.

*J. Glazzard (2019)*

In this article, the author (2019) worked on “Teacher mental health in education “. And he has provided the information about the study is stress- triggers work. So the mental health is very necessary for teachers because in activities there is so pressure.

*Wendy (2011)*

Wendy (2011) worked on “Teacher mental health in education”. He found that the responsibility of a school is to provide awareness about a school based mental health practices.

*Viviane (2007)*

In this article, the author (2007) worked on “Teacher mental health in education “. And found that as the school provided the work to the teacher, according to mental health.

*Susan.S Han (2005)*

The author (2005) has worked on “Teacher mental health in education”. He found that all the co-curricular activities, which is organized in a school must be related to mental health.

*Sarah Harding (2019)*

The author (2019) has worked on “Teacher mental health in education “. And found in the school environment, the program related to teacher mental is very necessary.

*Baker (2021)*

Baker (2021) investigate on “Teacher mental health in education “. And found that in the COVID-19 pandemic season. Lack of face to face teaching and stress of online teaching create the mental health problem.

*Marit Helen (2018)*

The author (2018) has worked on “Teacher mental health in education “. And found for checking teacher mental anxiety and questionnaire given to the teacher for solving which helped to identify teacher mental health.

*Ruijuan Yang, Xuqun You, Wei Feng (2019)*

The authors (2019) have investigate on “Teacher mental health in education”. They found that education is one of the main pillars for the development of student. So student mental health is very helpful for solving the student problem.

*Elizabeth Bettini (2020)*

The author (2020) has worked on “Teacher mental health in education”. And they found that during COVID-19 pandemic the student life is full of sorrow and they lost their conscious mind because of facing familial violence and poverty. So this is the responsibility of teacher and school staff for supporting student mental health.

*Viviane Koovers-Masfety, Carmen Rios-Seidel, Christine Sevilla-Dedieu (2007)*

In this article, the authors (2007) have investigate on “Teacher mental health in education “. And they found that the lack of support from colleagues due to their mental health problems. It has also feared of physical and verbal abuse and therefore it could be the highest risk for teachers to maintain their mental health problems.

*Jonathan (2019)*

In this article, the author (2019) has worked on “Teacher mental health in education “. And he noticed that the teacher is busy whole year in maintaining assessment and extra -curricular activities. So this will effect the teacher mental health and the children aware their teacher mood and even, feeling stress which they hide from it.

*H.Gilberds (2016)*

The author (2016) has investigate on “Teacher mental health in education”. He found that the mental healthtraining provided in their school. As a result of trainingpotential mental health can be calculated.

*Tracy (2013)*

The author (2013) has worked on “Teacher mental health in education “. He noticed that the teacher mental health help in preparing the school related programs according to their IQ level.

*Gail (2017)*

In this article, the author (2017) has worked on “Teacher mental health in education”. He found that the mental health help in increasing ratios of literacy.

## 2. CONCLUSION

The role of teachers in the teaching learning process has changed drastically. He has to update himself at regular intervals of time to meet the required demands. Since it is a well known fact that the teaching is not everybody’s cup of tea, but an extremely complex professional business as for as its structure is concerned. Tofunction properly in and outside school mental health has a special role to play both for his own well being and in bringing effectiveness and quality in carrying out teaching learning process in the classroom in general, and in particular, for all round development of the students.

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## Work-from-home Security Issues and Risk over Internet

Zohaib Hasan Khan

Electronics & Communication Engineering Department, Integral University, Lucknow

Piyush Charan

Electronics & Communication Engineering Department, Manav Rachna University, Faridabad

### Abstract

*COVID-19 pandemic has forced many of us to work from home in order to minimize the spread of the virus. While remote work has become more common in recent years, the pandemic has accelerated this trend, and it's likely that many organizations will continue to offer remote work options even after the pandemic ends. Working from home has many benefits, such as avoiding long commutes, having more flexibility in scheduling, and saving on transportation costs. However, it also comes with its own set of challenges, including the security issues, need to manage work-life balance, deal with potential distractions, and maintain communication with colleagues and supervisors. Security concerns for those who work from home have grown more relevant as the number of people working remotely has increased. In this paper, we have covered the most common security issues and some potential solutions. To be successful when working from home, it's important to establish a routine and create a dedicated workspace. This can help you stay focused and minimize distractions. It's also important to communicate with your colleagues and supervisor regularly, using video conferencing tools or other communication channels to stay connected. In addition, it's important to take care of your physical and mental health while working from home. This can include taking regular breaks, exercising, and practicing mindfulness or other stress-reduction techniques. By taking these steps, you can be productive and successful while working remotely during the COVID-19 pandemic and beyond.*

**Keywords:** Network Security, Insider threat, Firewall, viruses, eavesdropping, IP Spoofing Attacks, Denial of Service, Phishing

### 1. INTRODUCTION

The COVID-19 pandemic has had a significant impact on how businesses and governments operate. The pandemic has forced organizations to adapt to new ways of working and communicating, as well as to respond to new challenges and opportunities. One of the most significant changes has been the shift to remote work. Many businesses have had to rapidly adopt remote work policies in order to protect employees and slow the spread of the virus. This has required organizations to invest in new technologies and tools to support remote collaboration and communication. The pandemic has also highlighted the importance of digital transformation. As businesses and governments have had to adapt to new ways of working, many have accelerated their efforts to digitize operations and services. This has included the adoption of cloud technologies, automation, and artificial intelligence to streamline processes and improve efficiency.

The epidemic caused by COVID-19s has fundamentally altered the manner in which companies and governments function. Several businesses have closed their doors for good, despite the fact that certain tasks may be performed online. The concept of performing business operations using the work from home approach wherever it is feasible has become the new way of working for many people and organisations, including governments. Throughout the era of information technology, there has never been an event that has driven a worldwide work-from-home movement.

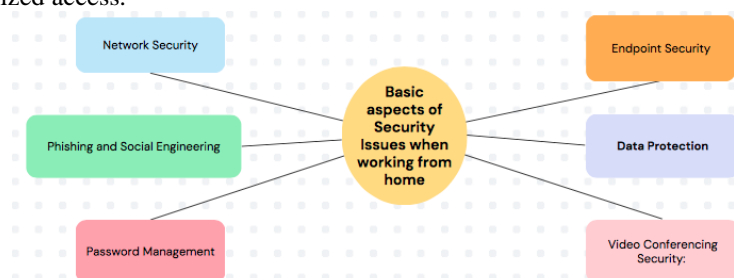
In addition, the pandemic has brought new challenges related to supply chain disruptions, changing customer demands, and financial uncertainty. This has required businesses to be more agile and responsive to changing conditions, as well as to prioritize resilience and risk management in their operations. The COVID-19 pandemic has reshaped the way businesses and governments operate, accelerating trends towards remote work, digital transformation, and agility. While the pandemic has presented many challenges, it has also created new opportunities for organizations to innovate and adapt to changing conditions.

### 2.

## 2. SECURITY ISSUES

This section discusses the several basic aspects of security issues when working from Home and challenges that must be considered to ensure the safety of sensitive information and systems. Some of these aspects include:

- i. **Network Security:** Working from home can put sensitive data at risk if the home network is not secure. It is important to secure home networks with a strong password and regularly update the firmware on the router. Virtual Private Networks (VPNs) can also be used to encrypt data and keep sensitive information secure.
- ii. **Phishing and Social Engineering:** Phishing and social engineering attacks can easily trick users into providing personal or sensitive information, leading to potential data breaches. Employees should be trained to identify suspicious emails, messages, or phone calls and be cautious about giving away personal or sensitive information.
- iii. **Password Management:** Passwords should be complex and unique to each account to prevent unauthorized access. Password managers can help manage multiple passwords and ensure they are secure.
- iv. **Endpoint Security:** Endpoints are the devices that connect to a network, such as laptops or mobile devices. Ensuring that endpoints have updated antivirus and firewall software installed can help protect against malware attacks.
- v. **Data Protection:** Sensitive data should be encrypted and backed up regularly. Cloud-based storage and backup solutions can be used to protect against data loss.
- vi. **Video Conferencing Security:** With the increase in video conferencing usage, it is important to ensure that video conferencing platforms are secure, and meetings are password-protected to prevent unauthorized access.



**Figure 1: Basic aspects of security issues and challenges when Working from Home**

## 3. RESEARCH GAP OF SECURITY ISSUES IN THE WORK FROM HOME

While there is a growing body of research on security issues in the work-from-home context, there are still several areas that require further investigation. Some potential research gaps include:

- I. **Understanding the human factors involved in security issues:** There is a need to better understand the human factors involved in security issues, such as employee attitudes and behaviours towards security practices. This could help organizations to develop more effective security training programs and policies.
- II. **Assessing the effectiveness of security measures:** There is a need to assess the effectiveness of security measures in the work-from-home context, such as VPNs and endpoint security software. This could help organizations to identify potential weaknesses in their security infrastructure and develop strategies to address them.
- III. **Examining the impact of work-from-home on employee security:** There is a need to examine how work-from-home arrangements impact employee security, such as the potential for increased stress and fatigue leading to a decreased ability to detect security threats.
- IV. **Exploring the impact of work-from-home on organizational security culture:** There is a need to explore how work-from-home arrangements impact organizational security culture and how to maintain a strong security culture when employees are working remotely.
- V. **Investigating the impact of work-from-home on security incidents and breaches:** There is a need to investigate the impact of work-from-home arrangements on the incidence and severity of security incidents and breaches, and how these incidents can be prevented or mitigated.



#### 4. TECHNOLOGICAL SECURITY AND INSIDER THREAT

The Technological security refers to the measures taken to protect technology systems and devices from unauthorized access, theft, damage, or disruption. This includes hardware, software, and network security. There are several important aspects of technological security, including:

- I. **Authentication and Authorization:** Authentication and authorization are used to ensure that only authorized users have access to sensitive data and systems. Authentication verifies a user's identity, while authorization determines the level of access that the user has to a particular system or data.
- II. **Encryption:** Encryption is used to protect data by encoding it so that it can only be read by authorized users. Encryption can be used for data in transit (such as email) or data at rest (such as stored files).
- III. **Firewall:** A firewall is a network security system that monitors and controls incoming and outgoing network traffic. It can be used to prevent unauthorized access to a network or to prevent the spread of malware.
- IV. **Antivirus and Malware Protection:** Antivirus and malware protection software is used to detect and remove viruses, malware, and other malicious software that can damage or steal data.
- V. **Patch Management:** Software vulnerabilities can be exploited by attackers to gain unauthorized access to systems or data. Patch management involves keeping software up-to-date with the latest security patches and updates to prevent exploitation of known vulnerabilities.
- VI. **Intrusion Detection and Prevention:** Intrusion detection and prevention systems are used to monitor network traffic for signs of unauthorized access or attack. They can also be used to prevent attacks by blocking suspicious traffic or activity.

A common risk to any organisation is insider threat. Insider threat refers to the potential risk posed by individuals who have access to sensitive information, systems, or facilities within an organization. This can include employees, contractors, or third-party partners who may have legitimate access to sensitive data, but could use that access to harm the organization's cybersecurity. Insider threats can be intentional, such as an employee deliberately stealing sensitive data, or unintentional, such as an employee accidentally sharing confidential information. Insider threats can be difficult to detect and prevent because insiders already have authorized access to systems and data.

However, there are several strategies that can be used to mitigate the risk of insider threats to cybersecurity, including:

**Employee training and awareness:** Regular cybersecurity training and awareness programs can help employees understand the importance of cybersecurity and the risks associated with insider threats. This can include training on how to identify and report suspicious behaviour or incidents.

**Access controls and monitoring:** Access controls and monitoring can be used to limit the access of employees to sensitive information and systems. This can include access controls that limit the privileges of employees to only what they need to do their job, and monitoring systems that detect and alert administrators to suspicious activity.

**Behavioural analysis:** Behavioural analysis can be used to detect abnormal behaviour or patterns of activity that may indicate an insider threat. This can include monitoring for unusual network traffic or access to data outside of an employee's normal responsibilities.

**Incident response planning:** Incident response planning can help organizations prepare for and respond to potential insider threats. This can include developing a plan for detecting, investigating, and responding to insider incidents, as well as regularly testing and updating the plan.

#### 5. POSSIBLE DANGERS AND COUNTERMEASURES FOR ONLINE SAFETY

Internet attacks include viruses, system and boot record infectors, eavesdropping, hacking, worms, Trojans, IP Spoofing Attacks, Denial of Service, Email Bombing and Spamming, and Phishing. Viruses replicate via files. They attach to files and execute when the file is opened. Encryption may disguise virus payloads. Encrypted viruses may decode themselves. Encrypted viral data makes detection and analysis difficult. Eavesdropping is unlawful communication access. An unauthorised individual passively eavesdrops on networked communications. Active eavesdropping occurs when an intruder listens to and injects anything into the communication to distort or produce false communications by altering part or all of the content, recycling existing messages, deleting messages, or changing the source of messages. Worms are network-propagating programmes. Worms spread without a file. Mass-mailing and network-aware worms are the primary varieties. Mass-mailing worms are fascinating since many assaults might be worms, viruses, or both. Emails may carry viruses or Trojans. Email

may become a file, but it's more abstract. Hence, email is the attack vector, even when viruses are sent through email attachments.

"Spoofing" the firewall's packet source IP address may let a hacker through. Using a trusted host identification may get them past the firewall. Responsible data management prevents such assaults. To prevent source IP spoofing from your site, block outbound packets with a source address other than your internal network. Bombing by sending email to hundreds or thousands of people is called email spamming. Replying to emails sends them to all the original recipients, worsening email spamming. Large quantities of email delivered to or via a single site may create a denial of service by overloading network connections, exhausting all system resources, and filling the disc with numerous posts and syslog entries. Phishing is a third party attempting to get personal information from an individual, group, or organisation for financial advantage. Phishers try to get customers to provide sensitive information like credit card details and online banking passwords. They may utilise it for fraud.

**Table 1 - Comparison of Attack Strategies and Internet Remedies**

<b>Attributes of Computer Security</b>	<b>Type of Attack</b>	<b>Internet Security Technology</b>
<b>Confidentiality</b>	Eavesdropping, Hacking, Phishing, Denial of Service (DoS), and IP Spoofing	IDS, Firewall, Cryptographic Systems, IPSec and SSL
<b>Integrity</b>	Viruses, Worms, Trojans, Eavesdropping, DoS, and IP Spoofing	IDS, Firewall, Anti-Malware Software, IPSec and SSL.
<b>Privacy</b>	Email bombing, Spamming, Hacking, DoS and Cookies	IDS, Firewall, Anti-Malware Software, IPSec and SSL
<b>Availability</b>	DoS, Email bombing, Spamming and Systems Boot Record Infectors	IDS, Anti-Malware Software, and Firewall.

## 6. DISCUSSION AND CONCLUSION

As long as data can be easily accessed and sent online, cybercrime will remain a serious problem on a worldwide scale. Internet users need to be confident in their security while doing business online, thus this is an essential concern that must be addressed. In this work, we discuss various techniques for securing the Internet. Basic aspects of security issues and challenges should be taken into account to ensure secure work from home operations. Employers can provide training and resources to ensure that employees are aware of these security issues and challenges and know how to protect themselves and the organization. Further research is needed to understand the unique security challenges and risks associated with work-from-home arrangements, and to develop effective strategies for mitigating these risks. Technological security is an essential aspect of protecting sensitive data and systems from unauthorized access and attack. Employers and individuals should prioritize the use of technological security measures to ensure the safety and privacy of their information. Insider threats can pose a significant risk to cybersecurity. By implementing effective strategies to detect and prevent insider threats, organizations can help protect their sensitive data and systems from potential harm.

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## Cyber Security for Gen Alpha: A Review Study

Ayushi Prajapati

M.Ed-1<sup>st</sup> Year (2023), Department of Education, Integral University, Lucknow



### Abstract

*In this challenging and technical world every person is becoming more and more dependent on digital technology and the world is rapidly getting in touch of modernity. That's why cyber attacks are becoming more common in our social and personal life. So the generation Alpha will have to learn new skills in order to work in their fields and more on cognitive ability. That's why I would like to work on cyber security for Gen Alpha.*

### 1. INTRODUCTION

In this world and age, where online realm equates with the offline one, we are faced with challenging questions pertaining to our privacy and ultimately our security. Millennials, as the generation that for the most part took up the torch of being parents to Gen Alpha, have the privilege of learning about online privacy and security through trial and error. As the world of technology evolves so do threats to our online privacy, we should take a moment to think about how to guide Gen Alpha through the process of learning about the importance of online privacy.

*A study of cyber security challenges and its emerging trends on latest technology, G.Nikhita Reddy, G.J. Ugander Reddy*

In this research the researchers' awareness about the technical environment and safe use of new technologies and spreading awareness about the higher priority of cyber security. And How to companies maintain privacy as well as limitations to secure and creating responsive solution and crisis management through predictive and preventive.

*Cyber security: a systems thinking and systems theory approach to managing cyber security risk, by Hamid M. Salim (2014)*

The objectives of this thesis is to understand the approaches for managing cyber security risk. Propose a new method for managing cyber security risk more effectively and this these is investigated widely used approaches and standards to aware and secure cyber ecosystem in the country and the among students to insuring secure cyber space ecosystem.

*Visual analytical for situational awareness in cyber security, Fisher Fabian (2016)*

The objective of this research is provides situational awareness among us and to gaining the situational awareness and data streaming on a larger scale have to understand the modes of Cyber attacks

*The cyber security dilemma networks instruction trusts and fears in the international system, Buchanan, Benjamin (2016)*

This thesis is used that not only does the security dilemma apply to Cyber operations but that the importance of the digital domain mean that the effort is deeply pronounced. This thesis is shows that Nations have great incentive to break into the networks of others and presents the real World evidence and trends indicating that the problem is only going to get more serious before the text close with suggestions on partial solutions.

*Cyber-attacks in the era of covid-19 and possible solution domains, Isaac chin Eian (2020)*

In this thesis the researchers' objectives and aim is cyber security will be developed with the integration of the latest technology such as artificial intelligence block chain, interest of things and much more. Spreading awareness about the importance of cyber security should be on high priority.

*Cyber security: Challenges for society, Atul M. Tonge Suraj S Kasture, Suribhi R. Chaudhary (2013)*

This thesis examines the significance of privacy for individual as a fundamental human right and violations of human rights arise from the unlawful collection and storage of personal data one key to improve cyber security is a better understanding of the create and of the vectors used by the attackers of circumvent Cyber defences.

*Cyber security challenges in developing Nations, Target, Adam C. (2010)*

The objectives of this thesis to provide ICT policy makers in countries experience in transformative internet growth it should be required all Nations to have effective cyber security policies to have safe and secure internet.

*Maritime cyber security: the future of national security, Hayes Christopher R*

In this research the researcher was aware about the national security in technical world. And insuring the cyber security ecosystem and aware about the approaches for managing cyber security risk

*Understanding India's cyber security challenges A study of digital India programme, Sushma Devi (2020)*

In this research the researcher creates a secure cyber ecosystem in the country generate educate trust and confidence in IT system and transactions in cyberspace and them by enhance adoptions of it all sectors of the economy to create a students' framework for design a security policies and for promotion and enabling actions for compliance to global security standards and best practices by way of conformity assessment.

*Attitude towards cyber resources interest in cyber resources and utilization of Cyber resources among post graduate students of education, Sudhakar K (2020)*

In this research the researcher opines that students should become acquainted with the privacy policy of the social media channels and customize their privacy settings to control who is and what is the need information which is needed from them they must keep their personal and private information log down social engineering cyber criminals can often get their personal information with just a few data points, less you share publicly the better.

*Prevention and control of Cyber crimes in India are socio legal study, Panda, Manirani (2007)*

In this research the researcher suggests us about the cyber security. There is great need for establishment of electronic courts and electronic learning process for people in India to prevent and control cyber crime if above mention suggestions are implemented and security measures are adopted we can hope for a cyber world's where the mind is without fear.

*Implications of Cyber law in the area of Cybercrime, Pawar, Ramchandra G (2008)*

Researcher concluded that cyber law is not effectively implemented and hence the main objective of enhancement of IT act 2000 is not achieved if the suggestions given by the researchers in his research are properly incorporated the cyber law will be implanted more effectively.

*A study of international frameworks for handling privacy issues in cyber space in the light of attitude of users of social networking sites and need for a privacy framework for India, Mittal, Sandeep (2019)*

This study is a maiden attempt in India to understand the privacy behaviour of the uses of social networking sites and their acceptations from the law on data privacy. The results provide a reasonable inside for policy makers to strike a balance between the concerns of the state and the individual while pharming the data privacy law in India

*Cybercrimes and cyber terrorism in India, Iqbal, Syed Mohd Uzair (2013)*

The objective of this research is to highlight the foldable problems faced by the legal world's, which have raised their heads due to information expositions if cyber space is left ungoverned it will lead to disastrous end

*Cyber security policy in India examining the issues and challenges and framework, Anand, Rashita (2015)*

In this research the researchers discuss about current National Cyber security policy in India and examine what are the cyber security related issues faced by India in the national security scenario and assess what are the steps to be taken by India regarding cyber security challenges in the international setup and evaluate the cyber security policy this course and government stand regarding cyber security policy in national security discussion arena

*A critical study of laws and crime and security with special reference to Cyber crime in India and its development Anita Jairamji Gaikwad (2020)*

In this research the researchers discuss about the origins and development of Cyber world and crimes and evaluate critically principles of Cyber crimes and security and assess the role of judiciary in cyber crime and secretaries in India and other countries the constitution state of the supreme court in India and its system of justice delivery regarding cyber crime and security and compare and contrast the judicial behaviour of the supreme court of India and other countries specific area in constitution regarding cyber crime and security and suggest and reinforced remedial measures for preventing the controlling cyber crime at the same time assessing the majors of security and provision of IT act and up holding the spirit of constitution of India.

*Cyber security in financial and non financial transactions challenges and customer awareness, Khan Saquib Ahmad, Kamal Ahmad*

The researcher study and analyze the current cyber security schemes and concepts through reviews articles introduce and case studies and create an awareness among the users about cyber security and its role and two evaluate how many people are actually using cyber security rules while doing online transactions and understand the uses of financial and non financial transactions among users and learn about the initiative taken by government of India to control cyber attacks.

*Legal aspects of cyber security in India with special reference to data protection A critical study, Khatu, Amit Kumar Ashok (2019)*

Researchers aims and objectives about this study is data protection law in India is currently facing many problems due to absence of proper legislative framework. There has been a great hike in the number of cybercrime on a global scale. That and scale of stolen data is happening across the globe where physical boundaries pose no restriction or in fact seem no existence. The researcher study about the concept of data protection and cyber security and analyze various constitutional provisions on the privacy and rights of individuals and other entities and study the framework provided by the information technology act 2000 as well as rules frame and notification issued by the government for the protection and security of data. And comprehend the approach of Indian judiciary towards essential aspects of data protection.

*Cyber crime with special reference to cyber security a study, Sunowar Ameer (2021)*

In this research the researchers in is to provide a detailed analysis on the issues of information technology pertaining to Cyber crime security, and rights to privacy. Further this study would examine the growing incidence of Cyber crime in India and the need of cyber security to protect the netizens as well as the government. This research work would canvass the present Cyber law to check its efficiency in preventing and regulating such crimes.

*A framework for optimizing youth security and awareness regarding cyber Bullying, Shivangi Barola (2022)*

The study focuses on various issues related to cyber bullying among the college going students, awareness about cyber bullying, approaches for handling cyber bullying used by college and parents, identified relationship between demographic factors and cyber bullying and lastly the thesis analysis the conceptual framework for predicting and detection of Cyber bullying. This research is based on a study which attempts to check on how much of Cyber Bullying exist among youth especially and how much of Cyber bullying happen through mobile phones. The study

also attempts to explore prevalent forms of cyber bullying among youth and the reasons why they fall into this kind of trap.

## 2. CONCLUSION

Based on the study of above research reviews it can be concluded that the cyber security is the most important factor in our lives because nowadays, cell phones and the internet have become an important part of our lives it is now important to teach your kids the importance of social media computer security and privacy there is the need of teach them regarding cyber threats, phishing, cyber bullying and their potential impacts. Hence, it is always good to create awareness among your children regarding online threats. For this, it is always better to create a comprehensive awareness among them.

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## Some New Results on the Prime Graphs and its Line Graphs of Rings

Laithun Boro

Department of Mathematics, St. Joseph University, Nagaland

D. Saveinai

Department of Mathematics, St. Joseph University, Nagaland

### Abstract

In this paper we continue study and examine the new result of the prime graph  $PG(R)$  and its line graph  $L(G(R))$ . Prime  $PG(R)$  is a simple undirected graph having  $V(PG(R)) = R$  and  $E(PG(R)) = \{xy \mid xRy = 0 \text{ or } yRx = 0 \text{ and } x \neq y\}$ .  $L(GP(R))$  is the graph whose vertex set is edge set of  $E(GP(R))$  and any two distinct vertices are adjacent in  $L(PG(R))$  if and only if their corresponding edges share a common vertex in the graph  $GP(R)$ . If  $x, y$  is adjacent in  $GP(R)$ , then the corresponding vertex in the line graph  $L(GP(R))$  is denoted by  $[x, y]$ .

**Keywords:** Prime graph; line graph.

### 1. INTRODUCTION

The study of graphs associated to algebraic structures has become an exciting research topic in the last two decades, leading to many fascinating results and questions. Many fundamental papers devoted to graphs assigned to rings and modules have appeared recently, for instance see [1, 5, 6, 12, 13, 10]. Recently, Bhavanari et al. [6] introduced the prime graph of a ring. Prime graph  $PG(R)$  of a ring is defined as a simple graph whose vertices are all elements of the ring and two distinct vertices  $x, y \in R$  are adjacent in  $PG(R)$  if and only if  $xRy = 0$  or  $yRx = 0$ . In this article, we consider  $G = (V, E)$  as a undirected graph with vertex set  $V = V(G)$  and edge set  $E = E(G)$ . For  $v \in V(G)$ , we denote degree of  $v$  by  $deg(v)$ . A graph  $G$  is connected if there is a path between every two distinct vertices; otherwise disconnected.

The number of vertices in  $G$  denoted by  $|G|$  is called the order of  $G$ , and the number of edges of  $G$  denoted by  $|E(G)|$  is called the size of  $G$ . For  $v \in V(G)$ , we denote degree of  $v$  by  $deg(v)$ , minimum and maximum degree of  $G$  by  $\delta(G)$  or  $\delta$  and  $\Delta(G)$  or  $\Delta$  respectively. A closed trail of length three or more in a graph  $G$  is called circuit. A circuit  $C$  in a graph  $G$  is called a Eulerian circuit if  $C$  contains every edge of  $G$ . A graph  $G$  is said to be a complete graph if any two of its distinct vertices are adjacent and a complete graph with  $n$  order is denoted by  $K_n$  and  $K_{1,n-1}$  is known as a star graph. A connected acyclic undirected graph is called tree. A spanning tree can be defined as the subgraph of an undirected connected graph. It includes all the vertices along with the least possible number of edges. If any vertex is missed, it is not a spanning tree. A spanning tree is a subset of the graph that does not have cycles, and it also cannot be disconnected. A leaf of an unrooted tree is a vertex of degree 1. The maximum leaf number  $l(G)$  of a graph  $G$  is the largest number of tree leaves in any of its spanning trees and the minimum leaf number  $ml(G)$  of a connected graph  $G$  is the smallest number of tree leaves in any of its spanning trees. Any undefined terminology can be obtained in [11].

Throughout this article  $R$  is a ring with unity, and  $Z(R)$  denote the set of zero-divisors,  $U(R)$  denote the set of units respectively. Any undefined terminology can be obtained in [2]. In this article, we study and examine some new results of prime graph  $PG(R)$  and line prime graph  $L(PG(R))$  of ring  $R$ .

### 2. RESULTS AND DISCUSSION OF $PG(R)$ AND $L(PG(R))$

In this Section, we study and examine the main results of  $PG(R)$  and  $L(PG(R))$ . We start with the following Remark.

*Remark 2.1.* If  $R$  is a commutative ring, then the prime graph is nothing but a zero-divisor graph defined by Beck [3]; otherwise prime graph  $PG(R)$  is a subgraph of zero divisor graph  $\Gamma(R)$ . The reader can find some examples of prime graphs  $PG(R)$  which are not zero divisor graph  $\Gamma(R)$  in [6].

In next results, we focus on the degree and leaf number of the prime graph  $PG(R)$ .

*Lemma 2.2.* Let  $R$  be a commutative ring with unity. Then  $\Delta(PG(R)) = |R| - 1 =$



$deg(0)$ , and for all  $x \in U(R)$ ,  $\delta(PG(R)) = deg(x) = 1$ .

*Proof.* Since 0 is adjacent to every elements of  $R$  in  $PG(R)$  and so  $deg(0) = |R| - 1$ . Now, let  $x \in U(R)$ . Then  $xRy = yRx = 0$  if and only if  $y = 0$ . Therefore, it is easy to check that  $deg(0) = \delta(PG(R)) = 1$ .

**Theorem 2.3.** *Let  $R$  be a ring. Then  $l(PG(R))$  is  $|R| - 1$ .*

*Proof.* Since 0 is adjacent to every element of  $R$  in  $PG(R)$ . Therefore, we can construct a star graph of  $PG(R)$  taking 0 in centre. This yields that  $l(PG(R)) = |R| - 1$ . In order to determine the degree of  $L(PG(R))$ , we recall the following Theorem:

**Theorem 2.4.** [13, Theorem 4.2] *Let  $PG(R)$  be the prime graph of a ring  $R$ . Then the degree of the vertex  $v \in V(PG(R))$  is*

$$deg(v) = \begin{cases} ann(v) & \text{if } v \in Z(R) \text{ and } v^2 = 0 \\ |ann(v)| - 1 & \text{if } v \in Z(R) \text{ and } v^2 \neq 0 \end{cases}$$

The following Corollary can be get from the above Theorem 2.4.

**Corollary 2.5.** *Let  $PG(R)$  be the prime graph of a ring  $R$ . Then total number of pendant is  $|U(R)|$ .*

In the following results, we concentrate on the line graphs associated to the prime graphs of rings. Now, in order to study and determine the degree of  $L(PG(R))$ , we recall the following Theorem.

**Theorem 2.6.** [4, Theorem 1.1] *Let  $G$  be a non-null graph with  $n$  vertices and  $m$  edges. Then the following result holds:*

- (a)  $L(G)$  has  $m$  vertices and  $\frac{1}{2} \sum (deg v)^2 - m \cdot |E(G)|$ .  
 (b) The degree of a vertex  $e = uv$  in  $L(G)$  is  $deg(e) = deg(v) + deg(w) - 2$ .

*Proof.* Let  $PG(R)$  be the prime graph of a ring  $R$ , and  $u \sim v$  in  $PG(R)$ . Then  $[u, v]$  is a vertex in  $L(PG(R))$ . Now, the following four cases completes the proof:

**Case 1.** Let  $u, v \in Z(R)$  and  $u^2, v^2 \neq 0$ . Then by Theorem 2.4, we have  $deg(u) = |ann(u)|$  and  $deg(v) = |ann(v)|$  in  $PG(R)$ . Therefore, by Theorem 2.6, we have  $deg([u, v]) = 2(|ann(u)| + |ann(v)| - 1)$  in  $L(PG(R))$ .

**Case 2.** Let  $u, v \in Z(R)$  and  $u^2, v^2 = 0$ . Then by Theorem 2.4, we have  $deg(u) = |ann(u)| - 1$  and  $deg(v) = |ann(v)| - 1$  in  $PG(R)$ . Therefore, by Theorem 2.6, we have  $deg([u, v]) = 2(|ann(u)| + |ann(v)| - 2)$  in  $L(PG(R))$ .

**Case 3.** Let  $u \in Z(R)$  such that  $u^2 \neq 0$ , and  $v \in Z(R)$  such that  $v^2 = 0$ . Then by Theorem 2.4, we have  $deg(u) = |ann(u)|$  and  $deg(v) = |ann(v)| - 1$  in  $PG(R)$ . Therefore, by Theorem 2.6, we have  $deg([u, v]) = 2(|ann(u)| + |ann(v)| - 1)$  in  $L(PG(R))$ .

**Case 4** Let  $u \in U(R)$ . Since the ring  $R$  is finite, and so  $u$  is adjacent with  $v = 0$  only; moreover,  $v = 0$  is adjacent to every element of the ring  $R$  in  $PG(R)$ . Therefore, by Theorem 2.4, we have  $deg(u) = 1$  and  $deg(v) = |ann(v)| - 1$ . Therefore, by Theorem 2.6, we have  $deg([u, v]) = 2(|ann(v)| - 1)$ .

**Theorem 2.8.** *Let  $R$  be a ring with unity. Then  $L(PG(R))$  is a complete graph if and only if  $R$  is isomorphic to either  $Z_4$  or a division ring.*

*Proof.* Let  $L(PG(R))$  be a complete graph. Then  $PG(R)$  is either a complete graph  $K_3$  or a star graph. Since there does not exist  $K_3$  in  $PG(R)$ . Therefore,  $PG(R)$  is a star graph. Since all the non-zero elements of  $R$  is adjacent to zero in  $PG(R)$ , and so  $R$  is isomorphic to either  $Z_4$  or a division ring.

Conversely, let  $R$  is isomorphic to either  $Z_4$  or a division ring. Then the proof is trivial.

In the following result, we prove the existence of Eulerian criterion of  $L(PG(R))$ .

**Theorem 2.9.** *Let  $R$  be a finite ring. If  $|R| \geq 4$ , then  $L(PG(R))$  is Eulerian.*

*Proof.* First we assume that  $|R| < 4$ . Then  $L(PG(R))$  is a complete graph of either  $K_1$  or  $K_2$ . Therefore, if  $|R| \geq 4$ , then by Theorem 2.4, we have every vertex of  $L(PG(R))$  is even degree and so  $L(PG(R))$  is

Eulerian.

*Theorem 2.10.* Let  $R$  be a ring such that  $|R| \geq 4$ . Then  $gr(L(PG(R))) = 3$ .

*Proof.* Let  $R$  be a ring such that  $|R| \geq 4$ . Then  $deg(0) \geq 3$  and so there exist at least one cycle  $[0, x] \rightarrow [0, y] \rightarrow [0, z] \rightarrow [0, x]$  of length 3 in  $L(PG(R))$ . Therefore,  $gr(L(PG(R))) = 3$ .

*Theorem 2.11.* Let  $R$  be a ring. Then  $L(PG(R))$  is weakly perfect graph.

*Proof.* Let  $R$  be a ring. Since  $x \neq 0 \in R$  is adjacent to 0 in  $L(PG(R))$ , and so  $L(PG(R))$  contains  $|R| - \{0\}$  complete subgraph. Therefore,  $\omega(L(PG(R))) = \chi(L(PG(R)))$ . This yields that  $L(PG(R))$  is a weakly perfect graph.

In order to prove the planarity of  $L(PG(R))$ , we recall the following result. —  
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*Theorem 2.12.* [9, Theorem 9.7] A graph  $G$  is planar if and only if  $G$  does not contain  $K_5$ ,  $K_{3,3}$ , or a subdivision of  $K_5$  or  $K_{3,3}$  as a subgraph.

*Theorem 2.13.* Let  $R$  be a ring. Then  $L(PG(R))$  is planar if and only if  $|R| \leq 6$ .

*Proof.* Let  $L(PG(R))$  be a planar graph. Therefore,  $L(PG(R))$  is not contain either a subdivision of  $K_5$  or  $K_{3,3}$ . If  $\Delta(PG(R)) \leq 5$ , then an inspection will show that  $L(PG(R))$  has no subdivision of either  $K_5$  or  $K_{3,3}$  and so  $|R| \leq 6$ . Now, if  $\Delta(PG(R)) \geq 6$ , then an inspection will show that  $L(PG(R))$  has a subdivision of either a  $K_5$  or  $K_{3,3}$ . Converse is trivial.

### 3. CONCLUSION

In this paper, we study and examine the maximum degree, minimum degree, and maximum leaf number of prime graph  $PG(R)$ . We also study and examine the degree, the completeness, the Eulerian, the perfectness and the planarity of  $L(PG(R))$ . We believe that, in future some more graph theoretic properties such as genus, domination number, topological indices and etc. can be studied in  $L(G_P(Z_n))$  and  $L(G_P(R))$ . Also, the line graphs associated to some other graphs defined on rings can be studied in near future.

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## Innovation in Education: A Review Study

**Azka Fatima**

M.Ed-1st Year, Department of Education, Integral University, Lucknow

### Abstract

*Innovation is the implementation to make the things new and for the betterment. The changes in innovation are not limited to nature. Changes are also taking place in the society every moment. New beliefs and ideas are taking place of old beliefs and ideas. As it is said that if water stays at one place, it will rot. So implementation is important. It makes the life easier. It can also have said that by adding new different features to the same product to form a new one. For innovation three things are important- (1) New idea (2) Creative thoughts and (3) New imagination. An example can also be taken to make it clearer. e.g. As earlier there were keypad phones with no internet but now it is added more features and introduced new Android phones in which we cannot only use internet but also through the internet we can see anything by just sitting at home.*

### 1. INTRODUCTION

Innovation in education means innovation in the field of education. It is basically the implementation of a teaching-learning process by using new different techniques and strategies. Educational innovation is primarily concerned with making the teaching-learning process more effective and interesting. It is related to new technology and new knowledge which is used by the teacher in the teaching process. There is a tendency for activity and experimentation in educational innovations. When the learning process and interesting then only curiosity arises in the learners. The techniques used in educational innovation, helps for the holistic development of a learner. By using innovative ideas in present time in the field of education improve the conditions in teaching-learning process. It also helps the learner to enhance their own creativity and make them resilient. It can also facilitate innovation and make learners the real-world problem solver.

*Peter Serdyukov (2017)*

Peter Serdyukov (2017) has worked on the topic "Innovation in Education: What works, what doesn't and what to do about it". He has presented an analytical review of the Educational Innovation field in the USA. He has classified the innovations and also discussed about the obstacles/barriers come to innovation and also mentioned ways to increased innovation based transformation in the education system. And his paper is based on a literature survey and author research.

*Dayang Rafidah Syariff M. Fuad, Khalip Musa, and Hamidah Yusof (2021)*

The authors (2021) have tried to give meaning and different ways of education in innovative ways like education with technological point of view. And they also tried to identify the barriers that comes in Innovative Education.

*Ronald G. Havelock (1970)*

In this article Ronald G. Havelock (1970) has worked on the topic " A guide to Innovation in Education". And he has provided the information that how a good and perfect innovation can take place in the field of education and who will facilitate or planned the innovation, so that innovation can be successful. To make it successful innovation those who work on it, represents a wide range of educational roles and people those who involved in this and played very important roles they are students, teachers, administrators etc. In this case study the material is presented and later they used to show the stages in a planned change. They suggested stages in such planned changes. And the author has detailed all those stages.

*Robert A. Blouin, William H. Riffie, Evan T. Robinson, Diane E. Beck, Charles Green, Pamela U. Joyner, Adam M. Persky, and Gary M. Pallack*

Eshelman school of Pharmacy, University of North Carolina

College of pharmacy, University of Florida school of Pharmacy, Western New England college

The University of North Carolina at Chapel hill

The authors (2009) have characterised both the current learning environments in pharmacy education and division for future learning environments. And they have mentioned the strategy to implement the innovations in educational delivery. They focused on 3 areas and these are (1) rejecting the use of the majority of classroom time

for the simple transmission of factual information to students. (2) to solve the problem students being challenged to think critically, communicate clearly and synthesize broadly. (3) adopting a philosophy of 'evidence-based education' as a core construct of instructional Innovation and reform.

*Norman R. Maier (1971)*

Norman R. Maier (1971) has worked on 'Innovation in Education'. He described how the whole participation of the students can be utilised as trainers it would be helpful in reducing educational costs. Author further says that situation can be created by dividing classes into groups or in pairs and in which students must converse in a foreign language comma they have to resolve a conflict conduct an interview or they have to solve problems together.

*Chong Guan, Jian Mou, and Zhiying Jiang (2020)*

The authors (2020) have worked on the topic 'Artificial intelligence innovation in education'. They collected the 20 years data through historical analysis. They tried to focus on 20 years of educational research and retrieved over 400 research articles on the application of Artificial intelligence (AI) and Deep Learning (DL) techniques in teaching and learning. They uncovered the keywords and those were associated with AI-enabled pedagogical adaptation research in each decade. They examined the data from 2000 to 2019 and found that some areas of research topics have stood the test of time. Their analysis focused on the models shifting and emergent trends, gaining prominence in the field of education. This paper serves to raise awareness on the challenges and opportunities behind AI and DL.

*Donna L. Russell (2005)*

International forum of educational technology & society,  
National Taiwan Normal University, Taiwan

Donna L. Russell (2005) has worked on 'Understanding innovation in education using activity theory' and his purpose of study was to describe how four teachers in four different cities in Missouri implemented a constructivist - based learning environment. And the study suggested that the teachers implemented innovation into the classrooms with different levels for the reform process.

*Melor Md. Yunus (2018)*

The author (2018) has worked on the topic 'Innovation in Education and Language learning in 21st century'. He has presented that innovation evolves all the time especially in English language teaching (ELT). He included in the article about digital platforms online corporation mobile learning, online authentic materials and online communication with people.

*Charles Leadbeater (2012)*

Charles Leadbeater (2012) has worked on the topic 'Innovation in education: Lessons from pioneers around the world'. He has presented that innovation in education explores the work who have developed new effective approaches to education. He further tried to focus on and raised awareness of why innovation in education needed and from where it comes and how it can be developed or it can be generated.

*Sonny Magana (2017)*

Sonny Magana (2017) has worked on the 'Disruptive classroom technology: A framework for innovation in education' and the author has presented a new framework to increase students learning. The T3 framework helps to categorised students' learning and the T3 explained as Translational, Transformational and Transcendent. It helps the teachers to find the examples of technologies using T3 levels activities guides etc. It is used for deeper learning that move technology at higher levels.

*Seechalio, Thapanee (2017)*

The authors (2017) have worked on 'Instructional strategies to support creativity and innovation in education'. They focused on the instructional strategies which supports the innovative education and creativity. They took the sample for study and took help from 11 experts who were related from the field of instructional strategies and they support innovation of education. All were the specialists from different fields. The authors used research instruments in this study. They have used three sets of interview questions designed for those specialists. The

results of the collected analysed data were presented through the form of descriptive analysis. The result found that instructional strategies support creative and innovative education. It is based on design-based learning, project based learning, problem solving etc. full stop it helps to create brainstorming and make learners able to think new ideas. Its result also shows that inductive and deductive thinking, classroom discussions, self-directive study. These all help students in learning activities and create innovation in learning.

*Jorge Gámez Gutiérrez, Jossie Esteban Garzón Baquero (2017)*  
University of La Salle in Bogotá, Columbia

In this article the authors (2017) have worked on the topic 'New cross-proposal entrepreneurship and innovation in educational programs in third level (tertiary) education'. They have presented in the article that capitalism promotes and needed the growing knowledge of entrepreneurs and creative people who have the ability to solving problems using innovation. They create new products by using new methods. The further found in the study that entrepreneurship beyond any business plan and they found a form that overcomes in mistakes. They found in the studies of 2008 and 2004 in the programs of management in Bogota.

*Larisa V. Shavinina (2013)*

The author (2013) has worked on the topic 'The Routledge International handbook of innovation education'. He has presented open new direction in education in reference to innovation education. His aim was to raise the question of how to develop innovators and innovative potential of today's generation in different fields. According to him today every government around the world getting interest in the development of Science, Technology, Engineering and Maths (STEM) inverters. It leads the current research especially in the fields of innovation, gifted education, scientific talent, science education and ability studies. The scholars or the people involved in it, discussed about how they can develop innovators through innovation education.

*James G. Emshoff, Craig Blakely, Rand Gottschalk, Jaffrey Mayer, William S. Davidson, and Stephan Erickson (1987)*

The authors (1987) have worked on 'Innovation in education and criminal justice: Measuring fidelity of implementation and program effectiveness'. They divided the field of social programs over the issues whether it should be circulated or not. They studied the issues and innovative programs. They evaluated every program. They used the method for collection data. They took lengthy interviews on phones, on-site interviews and analysis of program adopters. Further they studied the implications for educational policies and construct measurement.

*Ismael Peña-López (2014)*

The author 2014 has world on 'Measuring innovation in education: A New Perspective'. He has presented his book in which he presented innovations in the field of measurement and education as well. His objective was to give readers International comparative information about innovation in education compared to other sectors and in change in the dimensions of school practices. Another objective was methodological that access to approaches. And another objective was exploratory and is like showcases a large-scale pilot that presence over 200 measures of innovation in education. The last objective was perspective and its report proposed new approaches.

*Robert S. Friedman, and Fadi P. Deek (2003)*

The authors (2003) have worked on 'Innovation and education in the digital age: Reconciling the roles of pedagogy, technology and the business of learning'. He has focused on increasing number of potential students and how education can be conducted on them. The author has discussed the pedagogical, technological and business trends which affects in virtual education and how higher education can benefited from the explosion of opportunities. They also discussed the scope of services which used in information technology in academic environments. According to them educational innovations demands have been increased in digital age and it is moving towards complementary and comparable strategies.

*Richard F. Elmore (1997)*

Richard F. Elmore (1997) has worked on 'The Paradox of Innovation in Education: Cycles of reform and the Resilience of teaching'. He found the contradiction to improve Mathematics, Science and Foreign language instruction. In 1960, reforms have been pressuring schools for social inequality. The US encouraged wide-scale attempted by states and increased academic standards for students. The step was taken to improve the quality of

teaching and to change fundamentally governance and delivery structure of public education. Further, the author has presented new curriculum, teaching techniques and those were based on cognitive science.

*Findikoglu, Fuat; İlhan, Dilek (2016)*

The authors (2016) have worked on the topic ‘Realisation of a desired future: Innovation in education’. They have presented in it that how today’s world need every individual to have creative thinking and problem-solving skills. And how to work as a team. It is the same as what technology helps to construct the knowledge and transformed. It depends on the questions whether education is capable of developing critical and creative thinkers. They have focused on the creative thinkers who can fulfil the needs of social and economic world. Further, the authors also focused on the teachers who only not as teachers in fact, they also called as guide, facilitator or coach. According to the authors, the environment of the school is the place where children learn a lot. Innovation in educational activities ensured through an understanding of the benefits of using technologies in education. As the teacher and curriculum is important for the children, same way innovation in education is also important for the development of children.

*Romona Cachia, Anusha Ferrari, Kirsti Ala-Mutka, and Yves Punie (2010)*

The authors (2010) and worked on the topic, ‘Creative learning and innovative teaching: Final report on the study on creativity and innovation in education in EU member states. They have presented the report that brings evidence to the debate on the status, barriers for creativity and innovation in compulsory schooling in Europe. They have presented the final report in which creativity and innovation in education and collaborate with DG education and culture. The authors have collected data by literature, review, survey with teachers, and analysis of curriculum and of good practises, stakeholder and expert, interviews, and experts workshop. Their study found the need for action at both level, National and European. They found that European the educational culture is based on creative and innovative potential for the future generation.

*Stéphan Vincent-Lancrin, Joaquin Urgel, Soumyajit Kar, and Gwénaél Jacotin (2019)*

The authors (2019) worked on the topic ‘Measuring Innovation in education 2019’ and found in the study that it is used to improve the quality of the education sector. They explained that pedagogical practices help to increase the international education knowledge base. And how and what students using learning resources. It is to know more about the teachers that how they are changing their professional development practices. Innovation or linked up to better outcomes of education. Measuring innovation in education examines the change in students over the past decade in OECD education system. The report also presented links between innovation and educational performance.

## 2. CONCLUSION

Based on the study of above research reviews it can be concluded that today the innovation in education is very beneficial to implement for the whole system of education. Therefore, innovation in education through modern methods are proving very beneficial for the learners as well as it helps for the development of the society and country.

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## **The Status of Higher Educational Institutions for Women in Dimapur Municipality**

**Vilito Zhimo**

PG Student, Department of Education, St. Joseph University, Nagaland

**Dr. Fr. Sunny Joseph**

Professor, Department of Education, St. Joseph University, Nagaland

### **Abstract**

*“The status of Higher Educational Institution for Women in Dimapur Municipality” discusses the problems faced by the higher educational institutions for women in Dimapur Municipality. It also identifies the problems and suggests suitable measures for the improvement of higher educational institutions in Dimapur Municipality. The purpose of this study was to identify the problems and interest in women’s education, how and the conditions under which women’s education directly improves women’s own lives in the field of education, family and society. The descriptive study brought into light the impact of planning on the academic achievement of the students and the investment in the field of education. The findings are useful for the policy makers as well as for the education administrators for the effective management of women education in particular as well as for education in general.*

**Key words:** *women education, academic achievement, educational institutions, academic climate etc.*

### **1. INTRODUCTION**

Education plays an important role in the overall development of women. Women education has paved a way of success and developing a women’s career and in individual life. Women education refers to every form of education that aims at improving the knowledge and skill of women and girls. It includes general education at schools and colleges, vocational and technical education, professional educational, health education, etc. Women education encompasses both literary and non-literary education. The importance of women education was realized and spread all over the country. It is the women who are capable of building each child who may lead the country to the path of progress and prosperity. Educated women make the society cultured. By the worship of women does not mean the worship through conventional means, but where women are respected and honored, proper provision of education should be made available for women and equal freedom be given in the society. Higher educational institutions include not only universities and colleges but also various professional schools that provide preparation in such fields as law, theology, medicine, business, music, and art. Higher education also includes teacher-training schools, junior colleges and institutes of technology. Every child has a right to learn and get a good quality education, regardless of gender, where they live or their circumstances. Because educated girls can make informed choices from a far better range of options, educating girls saves lives and builds stronger families, communities and economies. With an education, girls will understand their rights, have a greater sense what is needed to support health and wellbeing, and they will have greater opportunities to be employed in a fulfilling way and achieve their full potential.

### **2. CONCEPT OF WOMEN EDUCATION**

Women's education can be regarded as a kind of knowledge given to women for enhancing their self-respect and self-dignity. This knowledge can be in form of formal, non-formal and informal education, it can also be in form of Adult Education, Community Development, Workshops, Seminars, Conferences and Training. Women's education is for making women to become economically independent and self-reliant, Women as mothers, are educators within their families, what they learn, they pass on to their children and their future generations. Ideally, women are to educate themselves, to acquire information and knowledge which will help them challenge norms, values and behavior pattern. Women need an education which will help them not only to read and understand the world but be masters of their lives and makers of their own destinies. They need education which will help them acquire the necessary analytical skills to understand the fast-changing realities of life, which will give them the confidence and strength to refuse to submit to conditions of indignity and inhumanity. It should be the type of education that will help women form strong groups so that they can gain more control over their lives and break their silence and make them visible. The classes’ environment should create an atmosphere which allows women more freedom, which gives them more opportunities to realize full human potentials.



### 3. NEED FOR THE STUDY

Women need an education which will not only help them in the search and acquisition of new skills and knowledge, but also help them to acquire and strengthen values like justice, equality, honesty, truthfulness and solidarity. It should also create or release energies in women to act with conviction and courage in their various struggles at different levels. Education should help women to develop an analytical and questioning mind and a scientific approach in understanding the realities around them. Women education refers to every form of education that aims at improving the knowledge, and skill of women and girls. It includes general education at schools and colleges, vocational and technical education, professional education, health education, etc. Women education encompasses both literary and non-literary education. Educated women are capable of bringing socio-economic changes. The constitution of almost all democratic countries, including India, guarantees equal rights to both men and women. Primary education is now a fundamental right. When a woman (or a girl) is ensured of her rights, the society at large is ensured of its sustainability. Realizing the importance of women education, the government and many non-government organizations took a lot of projects to spread women education. Education helps women to gain the skills needed to take on leadership roles at local and national levels. Better-educated women are more likely to join bodies, whether volunteer or elected, where they can take part in making decisions that affect their lives and those of their communities.

*Impact of education on women:* Educated women are now looked upon with dignity and honor. They have become a source of inspiration for millions of young girls who make them their role models. must be educated for a healthy and a happy life. An educated woman can be a better human being, successful mother and a responsible citizen. Educating women will definitely increase the living standard both in and outside home. An educated woman will force her kids to study further and wish them to live a better life than hers. Educating women results in promoting self-respect and also helps in raising the status of women. An educated woman will be aware of her rights. She can fight against social evils such as domestic violence, dowry demand, low wages etc.

### 4. SCHEMES FOR UPLIFT OF WOMEN

*Mahila Samakhya Programme:* New Education policy of 1968 led to the launch of Mahila Samakhya Programme in 1988 for the empowerment of rural women belonging to socio-economical weaker section.

*Kasturba Gandhi Balika Vidyalaya Scheme (KGBV):* Girls are educated to primary level through KGBV. It basically works in rural areas where female literacy is low.

*Sarshar Bharat Mission for Female Literacy:* This mission was launched with an objective to bring down the female illiteracy.

*Women education in Nagaland:* Women, in Nagaland, have surged past men in academia, particularly in research work. Besides, more women are attending colleges in pursuit of higher education and graduating with bachelor and master's degrees under regular mode than their male counterparts. The All-India Survey on Higher Education (AISHE) 2016-17 report, released by the Human Resource Development (HRD), affirmed the contention that in the echelons of higher education, women are decisively ahead of men in the state. In Doctor of Philosophy (PhD), considered the highest academic degree awarded by universities in most countries, out of a total current enrolment of 232 scholars in Nagaland, 138 are women and 94 men. Under Master of Philosophy, the female-male ratio is 9:1 in Nagaland.

The gradual surge of female academicians in Nagaland in recent years is reflected by data on faculty strength. Overall, there were all together 2193 teachers teaching at various level of higher education. Out of this, 993 were men while 1205 were women. There were also 2 differently abled (PWD) faculty members. For instance, for professors and equivalent, relatively older positions, males outnumber females decisively at 108 and 45 respectively, out of a total of 203. However, for the posts of Readers and Associate Professors, the data is reversed. Out of 263, 138 were women and 125 were men. As far as Lecturers and Assistant Professors are concerned, women were way ahead of men at 955 and 701 respectively out of 1656 positions. The Pupil-Student Ratio in Nagaland was also robust at 1:16 (under regular mode), while it was 26 nationally. Looking at the student enrollment at various levels in the last 7 years, the data shows a decline by 27.71% from 56389 in 2010-11 to 40762 in 2016-17.

The Women's Studies Centre, Nagaland University, was established in the year 2007 with the objectives to establish women's studies as an academic discipline as well as to work and contribute towards the creation of

gender sensitized society and create greater awareness of the special needs of women and work towards the eradication of feminization of various social evils. In this effort, the Centre has organized several training programs, capacity building and research studies in areas such as assessment of legal awareness among working women, status of women in Naga Society, impact assessment of carpet weaving in Phek District, entrepreneurial skills development training for unemployed girls, documentation of case studies on saving practices among low income women, free computer trainings for underprivileged girls and translation of legal rights for women in local dialects. The Centre is also pursuing to commence teaching programs. Currently the Centre is placed in phase II under UGC plan for women's studies. Thus, Women are the foundation, on whose back a progressive society thrives, each woman is a force of power, ideas, dedication, brilliance and winning charisma.

It was known that education of women students in India, was affected due to many factors. According to Hiroji (1989), and Kaveri (2000), the factors that may cause an obstacle in her Higher Education are: family set up, family attitude towards women education, her upbringing, and education of the parents, discrimination showed by the parents in favor of boy's education, large family, economic constraints, unrelated curriculum and ineffective policies. According to Das (1991), and Salim (1993), Santwani (1996) and Prasad (2006), due to the problems that women students face while taking up higher education, the number of cases of truancy, wastage, dropouts and stagnation increases.

It is observed that research work has been conducted in the field of gender inequalities. Chen (2002), Ruth (2008), Jarman (2009), and Kazue (2013) performed study on: low wages to females, decision making abilities of women and non-acceptance of female leaders. Abusharaf (2009) conducted work on problems of Sudanese women, whereas Kasandra (2010) performed research on problems of American college students. Weis (1985), Jarman (2009) and Kazue (2013) concluded that women are not given freedom to perform work or study 81 subjects of their choice. According to Arbouin (2009) and Indo Isa (2000) women cited following reasons to take up higher education: economic security, social mobility, career options, family expectations, self actualisation and pleasure gained.

The reviewed studies implied that whether it was in India or other countries, women faced prejudice on various grounds. It was expected of women to give priorities to their children and family. Higher education for women faced hindrance due to societal outlook and discrimination. Factors that attracted women towards higher education were better career options, economical gain and more social mobility. Women in higher education faced problems related to societal values, lack of good facilities and proper infra structure, economic constraints, unrelated curriculum, ineffective policies available career options and personal problems.

*Sample:* The analysis of the data collected from the two Educational Institution of Women in Dimapur which are based on the responses given by the Two Educational Head of Institution, 50 students and 6 teachers.

## 5. FINDINGS

The study found out that there are two women Educational Institution in Dimapur Municipality, one institution doesn't have adequate sources of facilities whereas the other institution has adequate number of facilities. Both the educational institutions are under Nagaland University. Total number of 1791 students studying in the Women Educational Institution in Dimapur Municipality with 63 working teachers along with 41 non-teaching staff and 36 classrooms. Educational Institutions of women are located near the temple so there is a drawback in concentration of the students as well as the teachers as it effects the overall surrounding of the institution due to noise pollution. The pass percentage of final years for the last 15 years for both the Women Educational Institution of women in Dimapur Municipality is above 85%. The students find it difficult to communicate with the teachers it becomes a drawback in the teaching and learning process. Teaching methods are sometimes difficult to catch up with by the students inside the classroom. Provision of awareness programmes are well managed by the students and find it necessary to adopt in the learning process. Another major finding was that participation in extracurricular activities does not affect the students grade rather it improve their learning and skills. It is also found that counseling class provided by the institution is less participated. 100% of the students agreed on the statement that education is the major factor that will help women empowerment.

It was found that the teacher finds it difficult to interact as well as communicate due to high enrollment of the students. Due to certain limits of the institution the teacher cannot implement many of their ideas for further plans. The teachers also found that their thoughts and ideas are not applicable due to the certain limits set by the respected institution. The teacher is not satisfied with the salary given as compared to their degree, experience and workload. They do not find much difficulty in using technology inside the classroom. There is no high standards of technology to use for teaching learning process inside the classroom. Lastly, another major finding

was that the teacher makes their own materials according to the syllabus. The study also found that women education can develop as well as empower the major factors that will help not only in the education but all-round development. Girls feel recognized at all girls' colleges and their participation is valued. Small classes and high expectations commit girls to become actively involved in the school environment. Girls are generally accepted by their peers and their peers encourage and support their academic success. They are in a safe environment to act as individuals with less demands to fit into a stereotype. Girls are supported for their strengths and treated as unique personalities by faculty, staff, and peers. Finally, girls feel that they are appreciated by their teachers. They tend to have a positive attitude about their teachers which serves to foster a positive and approachable relationship.

## 6. DISCUSSION AND RECOMMENDATION

Emanating from the literature search and the empirical survey of this research, it came to the fore that, women education overall needs attention. Guidance and counseling would be introduced in order to fit the emotional and physical development of the learners. The lectures would need to give feedback to the student classroom activities and academic performance. Extra-curricular activities would be managed according to the curriculum provided. Provide alternate study options like embroidery, tailoring, crafting, music, dancing, painting, pottery and self-defense. Increase involvement in political process would be encouraged to empower the women in order to know their quality, rights and be independent.

## 7. CONCLUSION

Thus, the purpose of this study was to describe women's perceptions of how education and skills development programme have improved their lives. The aim was to document the association between education in Dimapur municipality. In order to collect data, questionnaires were administered to 58 respondents. The results have shown that education attainment has different impact upon women education as it can enhance the skills, enhances earning potential of individuals and consequently, the increased earnings will help them to be independent as well as enabling women to experience greater economic opportunity. Hence, women education can be regarded as a kind of knowledge given to women for enhancing their self-respect or self-dignity.

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## Modern Education System: A Review Study

Shadma Mehdi

M. Ed. -1<sup>st</sup> Year, Department of Education, Integral University, Lucknow

### Abstract

*Modern education is not a documented knowledge, rather it goals to blooming the student personality although they prepare him all rounded growth then they face any trouble in life. Education is a platform in which youthful generation are trained and make them unborn ready. Education provides knowledge and chops which help the person to be exploitable. The Indian education system is veritably popular and diversified among the countries education systems due to its change in the ancient and the elaboration from ancient to the ultramodern education system. During medieval ages of education, scholar was trained by preceptors in such a manner that they can survive and live in that period. After independence, there's a tremendous growth in the Indian education furnishing tutoring and training in all aspects, but it doesn't satisfy the global demands of the request.*

### 1. INTRODUCTION

Modern education is the rearmost and contemporary interpretation of education that's tutored in seminaries and learning institutions in the 21<sup>st</sup> century. Ultramodern education doesn't just concentrate on prominent academic disciplines of Commerce, Science and trades but also aims to foster critical thinking, life chops, value education, logical chops and decision-making chops in scholars. Modern education also makes use the rearmost technology similar as mobile operations, audio and videotape platforms like YouTube, Pod casts, E- book, pictures, etc. to educate learners

*Kumar Mohit (21-Nov-2013)*

If we see the ranking of all the countries all over the world regarding education system, Indian ranks second in that list. They all are making efforts in shaping India to words growth the journey of education system was unstable for example from gurukul to IITs, every stages had advantages and disadvantage. This research is focused on both current and ancient education system. In each phase they fully concentrated on education system and they are differentiating between old and current modern education system.

*Geepti gupta, naveet gupta (2-Nov-2012)*

In this research they reviewed before British and post British education system and the changes in education system and they noted positive and negative sides India's Education system frequently play a major role to increase the economics of India. All over the world India's highest education market nearby \$40 billion per year. If Percentage of students perusing higher education raised from 12.4 to 30, there will be a requirement of 800 to 1000 university and about 4000 colleges in 10 years On higher education in India's development and current state by through several data's and stating the main that India's higher education faces

*Dubli pllana (20-april-2019)*

Creativity is improved and explain by us, India, Chile, Mexico, China, and Singapore in twenty first century Creativity build on three elements such as fairness, features and implementation. This research highlights the correlation and variations. Each and every country aim and spread equality all over the countries but not a single countries Focus on equality in employment. Few countries have improved equality in education although some countries face trouble of fair Education all over the countries. Creativity is most important implication to each and every educational system and it's also correlated with equality although carry out modern education. Most of the country are applied such as US and other countries. Creativity is applied through the ins system of education in a handful of districts whereas implement of creativity in different countries has different approach to spread modern education reform. Creativity is the beginning to change and is describe the improvement of education specially increase the development of whole economic state within the public.

*Oksana Beshpalova (08-Nov-2022)*

Education is a type of preparation which enhances the reasoning ability and also help to balancing when atmosphere is change this is not only give understanding in particular skill neither topic nor to achieve job and not for good performing in exam. It is also polishing intelligence, filter the spirit and understand own self. Quality of education has main impact on the quality of labour avail for social advantages this research noted Differentiation and variations of modern and ancient education system in India. And its highlight's basic structure of Asian education system they provide value employees to the public establish ethical social and civics plans Modern Education system have many complications but the result is self centred outcomes.

*Bekmanova ziyado addullayevna (12-2019)*

This report examines the problem of self-preparation of student, it's definition and concept were given with the help of anthology. The importance of development of independent training is seen as a kind of training which substance the principal and feature of organization in the higher education.

*Sudeep sarkar (31-Jan-2022)*

Modern education system moving close to digitization and after COVID 19 they move even fastest. Education system is very change after COVID 19 for example normal classroom change into Google classroom. This review studies the impact or effect of Google classroom. It is basically 3 areas of research, they are use of Google classroom in the field of teaching, factors that affect Google classroom and results of using Google classroom in education

In advance society, advance technology spread very fast in every area whether its daily life or education system. Education system are, develop by the help of integration innovation technology. Innovation technology increase the quality of education in modern education system

*Nina M. Stukalenka (19-Aug-2016)*

This research analysis the difficulty of integration of the regional university in countries such as European. In step with the writer, one of the primary challenge of modernization of the local better education machine is the creation of the device of higher expert education of the 1/3 technology which is the post to solve on the one hand the hassle of integration into the bologna method and alternatively the problem of elaboration of the idea of the Russian nearby higher college modernization special interest is paid to the outline of a brand new humanistic paradigm primarily based at the consist mindset of the instructor to the pupil as a man or woman and unbiased and responsible character with his very own historical past and on the equal time as a member of instructional procedure the paper covers the main trouble which does machine of the regional better training maybe faced with and outline the possibility or the unique education improvement

*Flyuza Fathullima (18-June-2015)*

An essential step in the inside the undertaking closer to a greater socially, environmentally and ergonomically sustainable phrase is identifying and fostering sustainability skills. there are fundamental global initiatives that identify sustainability related goals the sustainability improvement goals and those that understand the vital role of training in accomplishing such desire the decade of schooling for sustainable development. There also instruction studies that cope with education for sustainable improvement generally such initiative and research take western world perspective which exact make contribution to sustainability it is uncertain what indigenous information and pedagogies a part from the dominant western technique may want to assist to decorate. to cope performed in Ethiopia a rustic with more than seventh century old indigenous education gadget and indigenous expertise

*Yared Nigussie Demssie (22-Aug-2020)*

To utilize opportunities worldviews and pedagogy vis-a-vis fostering scs and incorporating them in modern schooling machines, 5 mastering design precept have been proposed. These are defined worldviews, makes use of indigenous knowledge, use sustainable oriented pedagogy, have interaction beginners, and construct on students enjoy. theoretically the take a look at contributes to sustainability schooling for sustainable improvement and indigenous knowledge. The findings may function a place to begin in designing schooling and schooling for broader sustainability strategies

*Biliyana Stojanova (14-Jan-2010)*

In previous years all over the nations mostly in growing states, they observed to studying the phenomenon of Creativity. These curiosities are not randomly increase however are the result of scientific-technological revolution, which sincerely suggests that exquisite and innovative minds take credit for the general progress in all spheres of lifestyles and that investing inside the development of creativity is Verycritical. However, we face the intense socio-political crisis which similarly emphasizes the want for widespread social development primarily based on secret activity. Discover the alternate inside the training in education system in that circumstance Any one can up-grate the innovation of the student inside its very difficult, the primary vicinity towards multitude of unnecessary memory of statistics and data this is common These days. In this experience, the remaining aim of contemporary instructional gadget should be the improvement of impartial, free, tolerant and Creative young human beings that could fulfill their wishes, however additionally the desires of contemporary society wherein creativity is the basis for Improvement.

*Sanjesh kumar (12-DEC-2016)*

Interest is the behavioral and cognitive procedure of selectively concentrating on a discrete Component of facts, even as ignoring other perceivable information. Selective interest is in reality the act of focusing on a specific item for a time frame and cumulatively Ignoring beside the point in formations that are also occurring. The prevailing research paper is an Effort to investigate the distinction of selective interest between college students of yogic Training device (yes) and modern-day education system. The pattern along with 60 intermediate residential students from both the education machine turned into randomly Selected. Sample changed into matched on the basis of instructional, age variety and sociology-monetary Popularity. For measuring selective attention 's troop check' became used. They give the permission to realize the Distinction between companies, analysis of variance (a nova) turned into applied. The findings Of present research display that the acquired cost of 'f' for schooling system on selective interest, regardless of their gender, was discovered to be 32.32 which is extensive at 0.01 ( $p < 0.01$ ) level. So, there is significant difference between students of yogic and modern Education system on Selective Attention. The value of 'F' for the interaction effect of Education system and gender on selective attention came out to be 2.60 which is no Significant at 0.05 ( $p > 0.05$ ) degree. So, that there may be no extensive interplay impact of Schooling system and gender on selective attention

*Priyanak sharma (13-Dec-2020)*

The Indian training system has been very popular some of the other countries training gadget because of The evolution from historic to trendy education system. In the gurukulam device the guru or acharya imparted Schooling to the shishya residing near or with the guru in the identical residence. There was a entire transition from The historic gurukul system to digital learning because of the sudden outbreak of covid-19 pandemic. With one of these unexpected Shift from offline to online mode in many components of the sector, the query which lingers in every body's thoughts is whether or not the adoption of online getting to know will maintain to persist publish pandemic and the way such transition can have an Impact on the educational region international. The prevailing paper tries to target the impact of sociology-demographic Characteristics on the name stage of on-line mode of schooling-a take a glance at among-st ug students in three elect Districts of Assam viz, kamrup (m), kamrup and nagaon The paper makes use of both primary assets as well as secondary Sources. The primary statistics is accrued via a nicely framed questionnaire supposed for the ug college students in the three Selected districts. The secondary facts is accumulated from resources like magazine, websites and many others. The paper also gift Positive findings of the study and also provide numerous tips to bridge the digital divide so that on-line getting to know is Promoted inside the procedure of coaching and learning

*Yuchtman (28-Nov-2016)*

A conventional education device, based totally at the Confucian classics, was a pillar of imperial China's social structure for hundreds of years, preparing elites for a chain of particularly aggressive Checks conferring gentry popularity and civil carrier positions. Reformers in overdue imperial China referred to as for the modernization of tutorial establishments, seeing in western schooling the competencies important to increase China's financial system. Inside the overdue nineteenth century, the Conventional training device was joined by way of a "cutting-edge", western tune, which presented Teaching in technological know-how, math, social technological know-how, regulation, and engineering. On this paper, early 20th

Century worker statistics from the Tianjin-pukou railroad are analyzed to identify variations in labor market effects associated with have a look at inside the traditional and modern-day Instructional structures. The worker records display that modern-day and conventional education were each associated with wage premiums, however that these had been extensively larger For individuals skilled at high tiers within the cutting-edge system, particularly those skilled in Engineering. Individuals educated within the traditional machine worked disproportionately Within the clerical department of the railroad, whilst people with modern education have been More often in managerial and technical roles. Qualitative and quantitative proof Shows that those outcomes are not driven by means of sorting into instructionalestablishments consistent with potential. These findings indicate that past years of schooling, the content material of education can play a critical role inside the procedure of financial development.

*Jennifer sterling groff (15-July-2013)*

Over the last numerous hundred years, local and national Academic structures have evolved from incredibly easy systems to exceptionally complicated, interdependent, policy-laden systems, to Which many query their value, effectiveness, and path they Are headed. Gadget dynamics is a area of evaluation used to manual Policy and system layout in numerous fields together with commercial enterprise And concrete making plans. Making use of this device to academic policy Analysis offers insights into the hidden dynamics of this Gadget, and may be a useful device in designing future Eventualities. We discover underlying dynamics of the modern-day us Instructional gadget the use of device dynamics modeling, and offer An analysis of this tool and its sensible utility in the us Educational system thru a case look at on America country of Rhode island in the 2007-2008 college year.

*Nerajaka Jayara (07-Feb-2016)*

This have a look at examines college students' review of the College students' on-line talents of course that we've got Carried out within the moodle platform in a developing U.S.A. and underlying facts era principles Which might be vital for an in-intensity information of e learning. A dependent a couple of desire questionnaire become Allotted among-st college students' who were enrolled in the Certificate of teaching in higher education course on the General sir john Kotelawela Defence College, Sri Lanka. A complete of 31 college students participated on this take a look at And finished written then they move online different desire quiz on moodle. The final results of this study Suggests that there is a strong positive response on elearning on moodle platform. Almost 61% of them Have been capable of get extreme appropriate results within the on line Examination and determined past due submission in both published And online examination. Although the final results is Initial in nature, the outcomes offer cause for Subject over the status of e-learning education in Moodle platform in sri lanka which is noticeably Exceptional.

*Mahesh T.S (13-Feb-2016)*

The Indian System of Medicine called 'Ayurveda', have been in use from time immemorial. It become the primary machine of health care within the historic and medieval length however has presently become a current system these days. It has its own ideas evolved in the course of its peak which shaped the basis for strong ideas upon which the complete device has grown and developed. But these days due to diverse political, social, cultural, etc. Turmoils that had resulted due to repeated and regular invasion on India proper from the a long time for nearly eight centuries have led to its fall of reputation from predominant machine to a cutting-edge or exchange system. But from the final decades, the failure of Modern device of medicine to offer secure and preferred fitness status to many human beings has resulted in retracing their steps in the direction of this technological know-how.

Today, training system of Ayurveda is a way greater extraordinary from the beyond techniques because it has passed through drastic changes completely. The end result of this variation has additionally affected the sphere and the technological know-how too. A query as a consequence emerges as to how a way this system and information will help it to reach the levels and importance that it turned into within the beyond with the present system of schooling. The present chapter is tries to give a detailed evaluate of the education device of India and its relative impact with appreciate to Ayurveda schooling.



*Aladian Nurcahyo (31-March-2019)*

The adoption of Service Oriented Architecture (SOA) in modern-day higher education will assist to clear up the troubles of adaptability by way of reducing integration complexity of recent systems, reusing services, interoperability and increasing the agility of learning device. Furthermore, share services and cloud computing solutions could have helped contemporary better schooling and universities to create low costs and efficient service management via collaboration and open environment. The introduction of interconnected current higher schooling surroundings has grown to be a critical way for gamers inside the field of schooling. This paper is to advise SOA adoption answers for universities and training establishments through modelling and designing the interconnected modern better schooling's system. The goal is to create a new educational environment where freshmen have digital course and facts available easily to support their instructional and profession desires. On the alternative hand, the solution is to recognize the way universities and education organization solved needs complexity of the digital mastering system by using reducing investment expenses. Moreover, we are purposing new options of the structure systems that centered on interoperability and go-platform capability in order to address excessive stage components range.

*Nuntana Wongthai (14-Dec-2021)*

The present observe draws upon Conceptual Metaphor Theory, its findings revealing the center standards of the modern training machine in Thailand. The records is gathered from fourteen handbooks concerning best guarantee in schooling published at the website of the Bureau of Higher Education Standards and Evaluation, Office of the Higher Education Commission and therefore the Education Criteria for Performance Excellence; website of Ministry of upper Education, analysis and Innovation. The consequences display that students are metaphorically understood as customers, products, business individuals, assets, and engines; instructors as engines and artisans; and educational establishments as service enterprise businesses, manufacturers, engines, depositories of expertise, and combat devices. The engine metaphor is observed in each detail of the training machine, reflecting the reality that the Thai schooling gadget tries its quality to broaden people in order to make sure they can stay up-to-date with contemporary trends and function efficiently in a enormously competitive worldwide surroundings. Moreover, the look at sheds mild at the effects of the "scholar-as-customer" metaphor, one which may reason a deterioration in students' creativity and enthusiasm in addition to inside the first-class of scholar-instructor relationships.

*Shahid-Al-Noor (10-Oct-2010)*

In this contemporary era the developing international locations might be remain mired in poverty except they preoccupy extra on widening the era and innovation to everywhere during the United States of America consisting of city to small rural regions. The essence of Computer is now swelling in such an extent that we can't assume a single moment without Computer; every person dwelling in a country now needs to be proficient in special aspects of Computer gadget and enlightens themselves with the innovative studies works so that it will thrive their day-by-day lifestyles style. However, despite the fact that the Computer Education is now indispensable for human beings of each stratification but due to the bad monetary condition many international locations are unable to introduce their inhabitants with wealthy technologies and innovation developed with the aid of pc gadget. Consequently, a shared based machine inspires for uniform distribution of sources between people of each stratum. In this research paintings we're introducing a structure of Cloud Computing for education region and speak the impact of our suggest structure on the availability of great sources to everywhere in the U.S. We are providing right here a comparative analysis of our proposed architecture with the present one to exhibit the benefits of the proffered architecture over the modern

*Chi u-kuei-chang-chien (22-Nov-2013)*

Taiwan has undergone radical innovation of its educational device inside the wake of political liberalization and democratization, with a request for a change inside the concept which diverts from 'DE-centralization' to 'individualization'. The reforms have led to 2 most important features of pluralism and generalization of schooling in our cutting-edge training system that allows you to more same and plural opportunities of schooling for college students in Taiwan. Nevertheless, a number of reform duties had been performed in haste without discretion and feature developed various issues with some deriving from the inherent instructional device and some from the reform duties themselves. The paper discusses three predominant educational reform worries and the issues associated with these concerns such as multilingual gaining knowledge of in essential schools, over-expansion of higher education establishments and 12-year

compulsory education.

## 2. CONCLUSION

Education is a very important and it plays a very important role in our life every. If we learn modern education system and apply in daily life then life goes more easy modern education system helps to enhance the skills for example critical thinking, analytical thinking and decision-making skills. In above review i observed all over counties change their education system and India ranks second in that list many research are based on ancient education to modern education some of researchers differentiate between British or post British education system its very important to upgrade our education system. In many research, the researchers talked about the modulation that were made during the time of pandemic. The normal classrooms were turned into the Google classroom for the safety and protection from viruses. These classrooms were difficult to adjust to but we're convenient for students as well as teachers. These researches are usefully in comparing the growth and changes in the education system through time. This tells which of the changes will help in the betterment of education system over time and how to tackle the problems that were faced.

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## The “Academic Performance” of Arts Graduates Students in Dimapur Municipality Nagaland

**Kevisenuo Belho**

Assistant Professor, Salt Christian College, Nagaland

**Dr. Fr. Sunny Joseph**

Professor, Department of Education, St. Joseph University, Nagaland

### Abstract

*Education is a progressive process confirmed with evaluation of the education in a certified manner. There is a need to find the most important factors affecting the performance of students, especially at graduation level of the students of Arts stream. The objective of this study is to assess the general performance of the arts graduates and to identify the factors enhancing the performance in order to assist the teaching learning process. It is a descriptive study. The findings refer to the need for the improvement of academic socialisation and the institutional climate that are in need of mentoring. The factors affecting academic performance include the institutional climate, the regularity of curriculum transaction and the learning resources. The findings are useful for the leaders of the institution in general and the teachers of higher education in particular.*

**Key Words:** Academic performance, socialisation, Institutional climate, mentoring.

### 1. INTRODUCTION

Academic performance means the knowledge and skills that students have mastered in a subject or course. It's basically a measure of how well students have performed in the various assessment items set for them based on some educational criteria determined by professional educators. Academic performance above all is looking beyond numerical grades.

*Meaning of Academic Performance:* Academic performance is the measurement of student achievement across various academic subjects. Teachers and education officials typically measure achievement using classroom performance, graduation rates and results from standardized tests.

*Importance of Academic Performance:* Academic performance is considered as a key criterion to judge one's total potentialities and capacities and it is very important in the field of study. Apart from academic performance achievement of the study habits and self-concept equally keep importance in students' academic spheres. Academic performance is important because it is strongly linked to the positive outcomes we value. Academic performance is important for the successful development of young people in society. Students who do well in school are better able to make the transition into adulthood and to achieve occupational and economic success. Therefore, academically successful adolescents have higher self-esteem, have lower levels of depression and anxiety, are socially inclined, and are less likely to abuse alcohol and engage in substance abuse. Thus, Positive self-esteem and self-confidence are critical factors in commitment to academic success.

Academic performance has always been associated to the evaluation tests results, which are those corresponding to student's IQ, and leaving aside other personal characteristics. Among such characteristics, the importance of emotional intelligence is worth highlighting I.e. on management, facilitation, understanding and perception, dimensions associated to personality traits and on emotional impulsiveness, respect for others, sociability, negotiating skills, openness to experience, self-confidence and of course, the meaning of life, since the creation of meaning is related to each person's individual development, in hand with other processes such as identity, relationships and life goals.

*Need for the study:* Today, there is a clear need for education to learn about the factors that influence a student's academic performance, considering the performance to be the quantitative result obtained during the learning process, based on the evaluations carried out by the teachers through objective test evaluations. Factors contributing to improvement in students' academic performance have received much attention from educators and researchers. Proper guidance from parents and teachers, communication still stand learning facilities have also been found as a significant determinant to academic performance.

*Relevance of the study:* Academic performances can take place better if the students are being motivated by their lecturers, more interaction and coming out of their comfort zone in which learning can take place easily. Moreover, it is also essential that the institutes should also look on the behaviour of the students with his classmates whether

he/she is accepted/rejected by them, his/her attitudes with the lecturers are also a very important factor determining the academic performance of the students and the institutes should also have checked on the quality rather than quantity of the students for better outcome of the students' performance.

*Objectives of the study:* The main objective of this research is to study about academic performance on students of Bachelor of Arts in colleges of Dimapur Municipality. The specific objectives of the study were: to assess the academic performance of arts graduate students, to identify the problems faced by students in academic performance at graduate level and to suggest measures to enhance the academic performance of arts graduate students in Dimapur Municipality.

*Population of the study:* The population of the study based on the number of the student selected colleges i.e on 2 private colleges and one government college in Dimapur Municipality. It included lecturers and principals of the college mentioned. The population of the study consisted of students studying in Bachelor of Arts colleges in Dimapur Municipality.

## 2. FINDINGS

*Socialization with students:* Institution are a great way for students to learn how to communicate, make friends, develop healthy relationships and get along with people who are different from them. Considering all of this scenarios the head of the institution says it' is important not only for the teacher but also for the parents too in, order to, encourage socialization in the best ways they can for their children.

*Motivation:* The result also found that the student's behaviors affect the teacher's motivation to teach. However, the area of teacher motivation has not received as much attention. Even teachers themselves sometimes overlook the importance of their motivation in the profession.

*Professional development course:* It is also found that the institution should also provide professional development course for lectures so that they can improve their knowledge and being patience as well as have good communication to organize good leadership among the students. And to also build mutual understanding among the students for teamwork and conflict resolution.

*Guidance for teachers:* It was found that the higher learning motivation, the better learning achievement is , whereas, guidance is the product of teacher's guidance. It is reasonable to say that teacher's guidance is a powerful treatment in the school.

*Well organized and percipient:* It was also found that the principal stress more on the well-organized plan of the institution. It was found that the regularity and attentiveness of the students and the lectures will also lead the institution to be well plan and well organized in any kind of the academic performance or any activities.

*Well trained teachers:* It was also found that well trained teachers should be selected while recruiting the lectures as they develop students' self-esteem and personal responsibility. And so by instilling the importance of these two qualities throughout will help the students in their learning.

*Infrastructure:* The study also found lack of infrastructure and they include shortage of funds, insufficient provision of developmental resources and inefficiency of developmental labour as well as poor repair and maintenance.

*Assessment of teachers by students:* The result also found that while assessing the lectures by students it gets caught up in the compliance mindset.

*Ratio of the student:* The study also found that the pupil ratio should be maintained as the students – teacher reflects the teacher's workload and how available they are to offer services and care to their students. It was also found that the lower the number, the better the educational process and learning will be.

*Students' behaviour:* It was also found that the behavior of the students is challenging as teachers can't actually control their students' behavior. That's because the only behavior a person can control is his or her own. And when teachers try to directly restrict what students say or do, they're usually left feeling frustrated and helpless.

*Student absenteeism:* One of the major finding was the student's irregularity. The study has found that student's absenteeism effects the performance of the pupils as they tend to lose the importance given by the lectures and missed out the topic.

*Progress in the course:* The study also found that the performance is generally improve as the students' progress in the course but the effort and quality of the students becomes hard to tackle when not scrutinized thoroughly.

*Assessing the performance of the students:* It was also found out from the study that the teacher should focus both on quantity and quality. Keeping in mind both quality and quantity should maintain the pupil ratio as this will help in the performance of the students equally.

*Monthly activities:* The study also found that monthly activities like classwork, class tests or homework given to the students will help them to improve their academic performance. It will also help the students to prepare well as advance preparation before the exam.

*Guidance and counseling:* It was also found that the lectures gave much importance to counseling for the students to be fit mentally, physically and emotionally. In order to improve the academic performance of the students the institute should appoint counselor in college to help the students deal with emotional issues.

*Teacher- student relationship:* It was found from the result that the relationship between the teacher and the student is imbalanced. As some student don't participate or involve much with teachers during the classroom activities as well as outside the classroom so, thus the teacher. The relationship between the teacher and the students overall shows less participation on part of the students in discussions and interaction with their lectures in the classroom.

*Hours spend for personal study plan:* The researcher also found that the student tends to take less part in their study plan. It was also found that the less active participation of the students in the field of study plan and keen interest for their academic performance.

*Lack of instructional materials:* One of the major findings of this study is lack of instructional materials like articles, audio-visual aids. It was also found that some lectures don't make use of power point presentation and lack of textbook materials. It is also found that the students are less satisfied with the materials that they received from their lectures.

*Working with classmate in assignment and group presentation:* The study also found that student working with classmate does not help much due to communication gab. It was also found that classmate take less interest to participate and depends on other when comes to group activity or assignment which delayed completing the task given. It is found that activities with classmate in relation to assignment outside the class are less helpful due to less cooperation and weak communication. It also shows that the students are less benefited.

*Finding problem regarding course and subject:* The study also found that the student finds difficult to follow the course and subject systematically. It is also found that the course is majority about the same but to some it's heavier or much heavier in contrary to that the work load are less balanced. It is also found that the students are having keen interest in some subject where they don't give much attention and less interest. It is found that the courses received by the students are somewhat difficult to attain, despite the weakness inherent.

*Instructors covering the course:* It was also found from the results that there are some instructors who don't complete the course. As such the student also stress upon covering the notes without the help of the teacher. The lecture should make sure that while covering the course should not be too fast nor too slow but medium and complete the course before exam.

*Opportunities and facilities for academic performance:* From the study it is found that the student gets less opportunities and facilities for academic performance. It is also found that due to the high ratio in the classroom all individuals do not get the same opportunity to perform the task assigned even if they want to do.

*Use of ICT:* It is also found that the uses of Information Communication Technology deliver learning and help the students to get Connect with the daily technology for improving performance academically.

*Discussion:* Academic performance in the Colleges of Education determines whether the students will proceed to university for higher degree or be able to secure a teaching job. Students' performance. The study also reveals the

quality of education and poor performance in Colleges of Education spells doom for the students whose life becomes uncertain and full of misery. It is also found that the students' academic performance is affected by several factors which include students' learning skills, parental background, peer influence, teachers' quality, learning infrastructure among others. Government efforts to improve academic performance have led to series of interventions like scholarship, training of the lecturers, providing of infrastructure and so on.

It is also found that the students are less satisfied with the materials that they received from their lectures. And less performance by the students gives interest in their personal study. Finding the motivation to study hard can be a big challenge for the students. Therefore, the students are needed to set a realistic goal, watch video tutorials, study with educational games, have self-realization, search for a productive place to study, do own research etc. Moreover, this will improve them to have personal time in their study which the teacher and parents can also play a vital role to introduce such action.

It is also found that group presentation helps them to build their inner self-realization as well as self-actualization. For those students who are in average and less categories what they can do to build their group presentation is that they should pay attention and have self-practice in order to hook the audience. It is also found that the students' needs to improve their weakest area and improve study plan to have a proper schedule of balanced activities, study at a set time and in a consistent place, review, recite and carefully organized notes on both lectures and assignment. The teacher can also guide the students and boost them up with the words of encouragement and also motivated the students to focus on study according to the time period. The parents too have to support morally in order to improve the study plan of their children in order to let them achieve good academic performance.

One of the major findings during the interview was that there is a disparity of internal marks between the private and government college. There is a need to identify the factors that cost marking above average by the private colleges in comparison with government colleges in internal mark allotment. It is also found that group presentation does not help them to build their inner self-realization as well as self-actualization. For those students who are in average and less categories what they can do to build their group presentation is that they should pay attention and have self-practice in order to hook the audience. Thus, the teacher can also identify such students and uplift them to improve their weakest area.

*Role of Motivation:* Motivation is an important factor for academic achievement. It involves internal and external factors that stimulate desire and energy in people to be continually interested and committed to the subject and to attain a goal. Therefore, motivational beliefs are very essential to academic achievements of students because it will help them to determine the extent to which students will consider value, put in efforts and show interest in the task given to them.

*Coping skills of the students:* Students nowadays can be really motivated when there is someone who can cope with their learning curve and their attitude towards working on a set goal. It is very essential to know the interest and skill of the students in order to motivate them properly. Pushing the students towards their interest, abilities, talent will enable them to showcase what they have really got. Hence, the factors like home, institutions, teachers and peer groups plays a vital role in shaping and moulding the academic performance of students.

*Choice of the course:* Best course will keep the students awake and well organized to keep a good record for themselves as well as keep a track on what is coming next for their career by choosing the right course. Therefore, it is important to conduct best course for the students as this will benefit the student's perception and positive result in academic performance. It will also enhance the students to choose and working together hand in hand with motivation, guidance and encouragement whenever needed. But to improve more the teacher and the student can nurture and extent good communication to fulfil the desire and interest with no boundaries.

*Role of Home:* Home plays an important role in moulding the student to achieve good performance in their academic. If parents support their children, show well responses and encourage them, there is a boost upon the children academic performance. Factors like security, stable environment and financial stability given by the parents to the child will automatically enhance the academic performance of the students. It generates intellectual stimulation, good models of constructive social and evaluation values and high aspirations related to personal fulfilment. Therefore, home environment becomes a significant factor for learning and development of children.

*Role of teacher:* Every student should be equally treated by the teacher and be frankly but not friend. Composure should be maintained. Utilize students' interest and encourage independent reading. The lectures should provide consistent feedback, significantly to improve students' performance. Lectures should self-assess how well they perform in learning. Create opportunities where the students can receive continuous and specific feedback that

helps them to improve. As it will also constantly recognize the strength. Thus, Teacher and students should simultaneously collect and analyse student learning information to determine where students are and where students need improvement.

*Teaching credibility:* Teaching Credibility also depends upon the quality of teachers. Availability of adequate and qualified teacher is a prerequisite of quality education. An academic performance can be improved only when the teaching quality improves. If a teacher has a skill in communication, listening, collaboration, adaptability and empathy can create and make a classroom lively and interesting. If a teacher is competent enough in their abilities of teaching, there is automatically an increase in teaching learning process. Enabling the students to achieve good achievement performance. For example, an intrinsically motivated student looks at the learning activity as an enjoyable process and gets great satisfaction through the process of learning. Resulting in overall achievement of students towards their goals. Thus, teacher's plays a significant role in improving academic performance of the students.

*Learning Resources:* Facilities of an institution have a great impact on academic performance of the students. The in adequate facilities and lack of materials leads to poor performance. Quality faculty members prefer to work in better colleges where there is offering of better inputs, resources and facilities. Hence, an institution which lack Innovative outlook and resources fails to provide good academic performance. As it hinders the overall learning experience of the students.

*Infrastructure of the Institution:* Educational facilities in infrastructure make learning process to run optimally, especially in learning objectives bringing out the potential of the students. Therefore, colleges by adopting modern technologies like teaching aids and gadgets help to improve promote academic performance.

*Human Resource Development:* Education is one of the most important aspects of human resource development. The students 'performance plays an important role in producing best quality graduates who will become great leaders and manpower for the country thus responsible for the country's economic and social development. Academic achievement is one of the major factors considered by employers in hiring workers especially for the fresh graduates. Thus, students have to put the greatest effort in their study to obtain good grades and to prepare themselves for future opportunities in their career at the same time to fulfil the employer's demand.

*Multiple strategies:* During the course of year it is to rely on various materials which may be produced by the teacher or a local facility. Therefore, the institution can also encourage the students to focus on various articles and social media in related to education so that they improve their writing and listening skills through such sources. Thus, the amount of information students received through instructional materials will be helpful to manage and organized. Students need to learn a wide range of abilities; therefore, it is extremely important that a teachers have a wide range of strategies to ensure that all students are able to achieve their best possible results. The teacher can also implement various tools to help the students to be satisfied in their materials and be more efficient and effective.

### 3. CONCLUSION

Academic performance is the outcome of student's effort in examinations. Student's academic performance determined by a number of factors. Academic performance is measured by the average marks of the previous semester and the total average marks. The determining factors of student's performance have attracted the attention of academic researchers from many years. They have tried to determine which variables impact student performance in positive and negative direction. The academic performance of students reflects on their ability to demonstrate the knowledge they have learnt in tests, quizzes, presentations and final examination. The importance of student's performance is not only evident to the students but also to the universities as it is a measure the success of their education process. Studies in the education literature have examined the factors that may influence student's performance that include physical facilities and qualified educators, student's attitudes, aspirations and self-awareness. In order to improve and achieve good academic performance the institute should provide opportunities and acknowledge important contributors to student's success. The institute should also facilitate various facilities like health care, library asset and inventory control, discussion forum, revenue management, etc. in order to nurture and build the students foundation well and good.

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# Bite Sized Learning in Education - A Review Study

Asfia Athar

M.Ed. 1<sup>st</sup>Year, Department of Education, Integral University, Lucknow

## Abstract

*Bite sized learning is as simple as it sounds. It is a breaking down of e-learning content, syllabus or curriculum and many things into digestible chunks which is easier to swallow for learners to work through at a pace that suits them. It is also known as micro-learning. Micro-learning started its journey to e-learning stardom with the domestic use of the internet in the mid 1990's. The first published term micro-learning in 1963 in a book called "The Economics of Human Resources" by Hector Correa. He implemented bite sized learning in the following some tips are -1.Create short modules for people to watch when they are alert and at their peak energy level is often leads to successful results..2.Stick to one topic at a time with only main concepts and avoid getting overcrowded information..3.Assess learners proficiency in a bite sized manor..4.Provide additional resources to those who want to expand their knowledge and skills..5.Create a bite sized learning scheduled to stay on track and up to date with everything. Thus, the micro- content or learning supplies job-oriented knowledge that learners can apply to their roles straight away and they need to put into practice.*

## 1. INTRODUCTION

Micro-learning or bite-sized learning is just like a miniature in education. Micro-learning or bite-sized learning strategies to engage students with content in small, self-contained information, very focussed chunks. It breaks up lecture time in every 15 to 20 minutes. Its environments are designed using digestible chunks to allow information to move from short term to long term memory. Its goal not just to engage in small micro activities, but also help them to retain knowledge and basic information. It gives individual an option to learn in a more fun, attractive and quicker way. Some videos or e- documents, slides, small bites of information is easy to remember. Even though we can learn some basic points through small GIF's, memes, and inspirational quotes. So, it is very popular now-a-days and helpful for future as well.

*Malcolm Poulin (2013)*

Malcolm Poulin (2013) worked on topic bite sized learning in education and found that it has presented on micro learning or bite sized learning strategies. He said that students acquired knowledge, learned and then they performed better where it will be needed. He emphasized on learning tightly and works for the better future.

*Gona Sirwan Mohammad, Sarkhell Sirwan Nawroly (2018)*

Gona Sirwan Mohammad, Sarkhell Sirwan Mohammad (2018) focused on bite sized learning in education and he find that on successful learning experience. They tried to tell that regular basis learning is more effective and successful. He explained information and divided into small pieces and deliver it to the learners. It also understand and learn the subjects easily.

*David Berg (2015)*

David Berg (2015) worked on topic bite sized learning in education and found that it has presented a change in learning patterns as the students reconsider lectures method. They also initiated bite sized learning through mobiles with short videos, slides and small content paragraph. They even high-lighted tutorials with videos so may gain knowledge in short term. They summarised that shorter is better for learning.

*Karzam Wakil (2018)*

Karzam Wakil (2018) worked on topic bite sized learning in education. He stated that a successful learning is based on experiences. He also viewed that regular learning can motivate students and also makes their mind creative. It also shows that micro learning can make the subjects easy to understand and even this learning is last long. It may be helpful and memorable for each students.

*Shankaraman Gottipati, Swapna, Venky (2018)*

Shankaraman, Gottipati, Swapna, Venky (2018) worked on topic bite sized learning in education and he has presented the effectiveness of bite sized learning in schools and Colleges. he involves in breaking an one hour lecture in two to three classes Which is explained practical exercises long and short answers in event through some meaningful assessment done by the students in the class. Primarily identify that learning better in chunks.

*Jeffrey Smith (2015)*

Jeffrey Smith (2015) Has worked on topic bite sized learning In education and he examined that the people or students living in our society. They afford technology and communication by lecture method. he assume some questions which is not answered through lecture method. But those question answers will be learned through Internet with short videos and clips.

*Anna fogel, Shengdong Zhao, Chao Zhang, Lijvan Liu, Yang Chen, Katherine Fennedy (2022)*

Anna Fogel, Sheng dong Zhao, Lijvan Liu, Yang Chen, Katherine Fennedy (2022) Has worked on topic bite sized learning in education. He explained his paper with the help of eating by spoon. he states that some people or people in a slow way which is helpful for thinner and fairness of body. In the same way students try to intervene them in education by spoon or eating behaviour slowly. He said that education in a slow motion and regular would make them optimised.

*Mark Lewis (2021)*

Mark Lewis (2021) Has worked on topic bite sized learning in education and he presented that his paper is based on micro learning in which he focussed that the content should delivered In step by step and short term activities also done. Simply says that it is a type of mini games level In which level one is the starting point and as per the student understand the rules and regulation. The attained more knowledge and trained them in education.

*Sarah Kernaghan-Andrews (2021)*

Sarah Kernaghan-Andrews (2021) Has worked on the topic bite sized learning in education and she represents that education is like a mini-games. She identified that micro learning is based on main eight topics Include cultural awareness, understanding different cultures, communications, learning styles, team working, hierarchy, Qualities in the working, place and stereotype Which is carried out Forward in future for education purpose.

*Christina Drakidon (2018)*

Christina Drakidon (2018) has worked on bite sized learning in education and she stated that online learning is used widely in all over the world. She found that if the student watched any learning videos regularly and many sample papers solved, they understand better and having the habit of continuous learning and study at a particular time. She also examined that the course should be in chunks, easier and flexible to understand. The students have basic knowledge of their topics by learning in chunks.

*Leila Ahmed (2021)*

Leila Ahmed (2021) Has worked on bite sized learning in education. She has represented her people on the basis of micro learning at the time of COVID-19 which is a pandemic. For all of us. she viewed teaching learning online and stated that the participants would Understand only limited things and videos. Some response and other only plays. For this tough situation participants and teachers prefer micro learning which is easy to understand.

*Sonia Bates (2019)*

Sonia Bates (2019) has worked on topic bite sized learning in education and He has presented in her paper that only 10 minutes sharing and learning session. This 10-minutes learning will be scheduled after lunch break in which she emphasise on knowledge and skills and promote them awareness, patience and aim of

improving standard.

*Alex Gunn (2015)*

Alex Gunn (2015) has worked on bite sized learning in education and he has presented that the learning through short videos and clips is most likely preferred by our new generation. They try to learn some from videos and other concepts would be understood by the tuitions and highly qualified coaching and institutes. He found that students clear their doubts through short videos and clips.

*Ahmad M. Khachan (2019)*

Ahmad M. Khachan (2019) has worked on topic bite sized learning in education. He has noticed that after schooling students try to connect with mobile learning in which they focus on micro learning and their aim is to learn more and more things in short term. By observing this, he presented that the relation between teacher student and academic institutions was obvious. Even though students' behaviour and performance get much better.

*Ahmet Ozmen (2019)*

Ahmet Ozmen (2019) has worked on topic bite sized learning in education. He has presented that interest of the students is global. He stated that many problems of students were solved by Google just asking questions and typing questions on search engines. By doing this type of activity, students have a keen interest in education and they learn minute things and points of each and every area.

*Simon Wing Wah So (2016)*

Simon Wing Wah So (2016) has worked on the topic bite sized learning in education. He has presented that teaching and learning in higher education is more easy and comfortable through instant messaging. He explained that the students could communicate through WhatsApp group which is most reliable and fastest technique of micro learning. Students asked questions and found their relevant topics short and simple form.

*Jeff Braham (2022)*

Jeff Braham (2022) has worked on the topic bite sized learning in education. He has noticed that curriculum is very small and short in higher level. He followed that students have no short courses and syllabus to study. It is like a chunking of things. The short curriculum is very helpful for micro learning.

*Borris Villic (2009)*

Borris Villic (2009) has worked on the topic bite sized learning in education. He followed that mobile learning or m learning is very effective and systematic for higher education. It is important as it contains PDAS, PDS, pdf, and other MP3 players. It has the ability to study anywhere anytime and any while. It should be characterised as portable and bite sized.

*Neil Ballantyne (2007)*

Neil Ballantyne (2007) has worked on the topic bite sized learning in education. He has found that delivery is object premises. He tackled on objects and try to create small e learning on them. He said that object is syllabus and we should study its whole syllabus by rationalised way. He found that object was learned before and it will be helpful for future learning and nurturing our micro learning.

*Kelvin Tan (2017)*

Kelvin Tan (2017) has worked on the topic bite sized learning in education. He has followed that bite sized learning is simply of asking questions of (what) and (should do) for learning. He examined in primary school of Singapore that a teacher practice and asking questions is helpful for micro learning. He duties that constantly asking questions and what should do is more easy and effectively and highly recommended for learnings.

## CONCLUSION

Learning broken into short, bite sized chunks at least has a higher chance of being used. It needs regular basis learning is more effective and useful for us. It is helpful in understanding the subjects in short and last long through some videos and clips. It is also noticeable that eating with spoon in small bites is helpful in chewing and digesting easily. The 10 minutes lecture motivate each student, attained knowledge and skills, promote them awareness, patience and aim of improving standard. Eventually the students have the abilities to stand in front of anyone, anywhere and anytime. So, we can say that bite-sized learning is very helpful for future and nurture our future.

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## **The Status of Primary Education at Yangching Village, Nagaland**

**Yungchu Phom**

PG Student, Department of Education, St. Joseph University, Nagaland

**Dr. Fr. Sunny Joseph**

Professor, Department of Education, St. Joseph University, Nagaland

### **Abstract**

*This research aims to assess the status of primary education in Yangching Village, Longleng District by studying the institutional curriculum, teaching methods, co-curricular activities and managements. The study also aims to understand the quality of education given which will lead the child to better and greater abilities. This research also suggests how village Education committee and school administration can involve in the child education during his/her elementary schooling. To gather the needed data, different references were used such as books, journals, and the internet. A questionnaire for the management, teaching staff, and students of the school were included. The questions were mostly based on the status of primary education. The conclusion statement is the last ending note to the research which tried to summarize the study and the overall finding that resulted from the study.*

**Key words:** *Yangching, Village Education Committee, Communitisation, etc.*

### **1. INTRODUCTION**

Education is the process of facilitating learning, knowledge, skills, values, beliefs, and habits of a group of people are transferred to other people, through storytelling, discussion, teaching, training or research. Education is not only for the mere acquisition of knowledge but also for behavior modification of a person. These means ensuring all the pupils are able to develop their cognitive, social, emotional, cultural and physical skills to the best to further their schools career carrying out this task places demands on a school's structure, teachers, school leaders and parents. Education opens up a world of possibilities for individuals by empowering them with knowledge. It is the cultivation of learning in various ways. One of the most common ways to obtain an education is by going to a formal school and learning from teachers, but it is not limited to that. Education in the bigger picture is the process of encouraging discovery and innovation. From the time we are born, humans keep learning, sometimes consciously and many times subconsciously. Education is an all-encompassing field of acquiring knowledge, values, skills, habits, and beliefs.

Primary education constitutes a very important part of the entire structure of education. It is the foundation which whole life of individual is built. Primary education is typically the first stage of formal education, coming after preschool/kindergarten and before secondary school. Primary education takes place in primary schools, the elementary schools for first and middle school depending on the location. Primary education works towards the harmonious existence of the pupils regardless of differences in ethnicity or critical background. Primary education is the initial stage of education and has its basic aim to create, establish and offer opportunity to all children regardless of age, gender or country of origin, to achieve a balanced cognitive, emotional and psychomotor development. A basic responsibility of the primary education is to help pupils become acquainted with their civilization and traditional and to develop respect and love for their identity, the Greek orthodox religions and their history. Primary education is the foremost and basic right of every child. Ensuring the accessibility to all children is not only the duty of government but also parents. The main objective of primary education is to bring awareness among the children, opens avenues of opportunities along with self-development and reduce inter-generational poverty. It is the first step in the making of welfare and society. Primary education is an out-and-out prerequisite for continuous development. Primary education improves the quality of individuals and thus the society. Primary education plays a vital role in ensuring the broad-based development of pupils.

### **2. IMPORTANCE OF PRIMARY EDUCATION**

The importance of early childhood education is now a recognized fact, that children need an enriched environment, intellectual stimulation and plenty of opportunity for socialization of the same age group from a very known to a large section of people. Primary education is immensely important to nature the growth of young children. It bears several benefits for the overall development of children. Primary school should aim at providing a rich, stimulating and caring environment in which the child feels happy, safe, secure and confident.

The role of primary education is to ensure broad based of the child. This includes development of social, cognitive, cultural, emotional and physical skills. Therefore, it is important for every child to get primary education.

*Need for primary education:* Primary education is the foundation on which the structure of knowledge wisdom is built. Primary education is the foremost and basic right of every child. It is a step in making the character of child. The role of primary education is to ensure broad learning of the child. This education should be delivered keeping information and entertainment hand in hand. Primary school aims at providing a rich, stimulating and carrying environment in which the child feels happy, safe, secure and confident. In order to provide quality education to the students, regular and punctual attendance of teachers is one of the most important factors. Irregular and unpunctual attendance on the part of the teachers bring various undesirable effects on their students. The study will promote and enable us to understand the current status of primary education wider in our village Yangching village, Longleng district. Through this study, it enables a person to develop the strategy, idea and innovation to solve the problem, ability enhancement and improving of the students.

*Relevance of the study:* Primary education forms the bedrock of development. It is in primary school that children learn foundation skills that prepare them for life, work and active citizenship. Quality education empowers children and young people, safeguards their health and well-being, and breaks cycles of poverty. Primary education fulfils the needs of students during the first few years of school life. It aims to ensure the development of children in order to develop their social, cognitive, cultural, emotional and physical skills to the best of their abilities.

*Objectives of the study:* The objectives of the study were to access the status of primary education, to identify the problems of primary education and to suggest measures for the improvement of primary school education in Yangching Village, Longleng District.

*Population of the study:* A population refers to any collection of specified group of human beings and non – human entities. Such as educational institutions, place of work, time unit geographical areas, prices or salaries. A population is a complete set of characteristics and a simple is subject of the population. The study of population is a group of individuals selected on the basis of inclusion and exclusion criteria which relate to the variables being studied. In research terminology the population can be explained as the comprehensive group of individuals, institution, objects and so forth with the common characteristics of that are the interest of a researcher. A population is the entire group that you want to draw conclusions about. A sample is the specific group that you will collect data from. The size of the sample is always less than the total size of the population. In research, a population doesn't always refer to people. The entire aggregation of items from which samples can be drawn is known as a population. A population is a distinct group of individuals, whether that group comprises a nation or a group of people with a common characteristic. The word population implies a group of people or at least a group of living beings. However, statisticians refer to whatever group they are studying as a population. The population consisted of all the teachers and students of primary school in Yangching village, Longleng District.

### **3. FINDINGS BASED ON RESPONSES GIVEN BY THE TEACHER**

Relationship with head of the institution and students: It was found that 100% of the respondents stated that teachers have a good relationship with the head of the institution and students.

Courses too heavy to complete in an academic: It was found that 100% of respondents stated that teachers were facing too heavy to complete the course.

Students regular in class: It was found that 100% of the students are regular in the class. The good attendance of the students shows that the relationship between them and teacher are having the eagerness to learn from their teacher.

Often conduct class: It was found that the Primary school teachers conduct class often. Where we got all the teachers agree "Yes" to the question which provided to them.

Homework/class work: It was found that 100% of the students are doing their duty of homework and class work which is provided by the teachers.

Student's performance: It was found that out of 100%, 50% of the teachers are well satisfied with the student's performance in their subject while 50% of teachers are not satisfied.

Aids and learning materials: 100% have respondent "Yes" to the question provided to them it shows that the schools provide aids and learning materials.

Library and reading room: It were found that the school does not have a library and reading room for the students. It can be seen that the Government Primary school in Yangching Village lack is giving importance to library facilities to school.

Staffroom/ teachers classroom: It was found that 100% of the schools have staffroom/ teacher common room. Where the question provided to them was responded “Yes”.

Enough classrooms: It was found that 50% responded “No” and 50% “Yes” as per observation the school should provide enough classroom.

Separate toilet: It was found that 100% of Government primary schools provide proper toilet for teacher and student so it was responded positively. A lack of access to proper sanitation facilities poses a huge barrier to education.

#### 4. FINDING BASED ON RESPONSES GIVEN BY THE STUDENTS

School playground: Based on the survey, the school has a proper playground for the students to play. It was found that 100% respondent “Yes” to the question provided to them.

Toilet for boys and girls: It was found that 100% of the Government primary schools have provided a proper toilet for boys and girls.

Uniform and textbook: It was found that the Government primary school provides with free uniform and textbook for the students where the uniform required wear regularly.

Assembly hall: It was found that 100% of “Yes” has positively responded to the questioned, which also shows that the students gather in assembly hall and get their opportunity to perform.

Strict rules and regulation: 100% of “Yes” responded that the school has strict rules and regulation also followed by the students. The school approach towards discipline for every self-discipline and responsibility conduct so as to contribute to the overall well-being of all in the school.

Blackboard: It was found that 100% of the school has provided a proper blackboard in every classroom. It shows that the classroom has enough black board.

Extracurricular activities: 100% of “Yes” responded to the question provided to them, activities include sports, drawing, annual day, cultural programs were organized. It shows that the school organized extracurricular activities for the students to overcome their interest and talent.

Desks and benches: It was found that only 46.15% responded positively and 55.84% responded “No” to the question provided to them. It shows that the school do not have enough desks and benches the school should provide extra desks and benches for the students.

Audio visual aids: 100% of the schools do not use audio visual aids for teaching because of technical facilities and also shortage of electricity in rural areas.

Library: It was found that 100% responded “No” to the question provided to them, the school does not have library facilities, but it is important that the school should provide library to cultivate learning habits.

Findings based on responses given by head teacher

Adequate classroom: It was found that the Government primary school does not have an adequate classroom. The school needs adequate classroom spaces with light, airy, and filled of work that aspire to do. The school should provide a beautiful space that makes them feel good to be at comfortable seating, and internet access.

Management board: It was found that 100% “Yes” responded positively, it also shows that there is management of board in school.

Teachers/ parents meeting: 100% “Yes” was agreed to the question provided to them, it is also found that Government Primary school often convene meeting with teachers and parents. It is shown that the schools were aware of the involvement of parents in the field of education together with children.

Teacher’s performance: It was found that the Headmaster of Government Primary School in Yangching village is satisfied with the teacher’s performance. It also shows the relationship between extent of teacher cooperation and job satisfaction.

Satisfactory co-operation: The headmaster of Government primary school is satisfied with the co-operation of parents, community and society. It is also found that 100% responded “Yes” to the question provided.

School classroom: It was found that 100% responded “Yes” there are enough classrooms for the students. It is also found that the school has more than four classrooms where the student gets an opportunity to learn inside the classrooms.

School curriculum: Based on the survey, the school curriculum of government primary school was found to be “NIL” as it shows that Government primary school in Yangching Village does not include any outdoor learning for the children.

School inspection: It was found that 100% of the schools are inspected by the Deputy Inspector of Schools (DIS) and Sub Inspector of Schools (SIS), it is responded that the inspection is done only once in a year.

Sports and games: It was found that 100% agreed with the question provided to them, the school allowed the children to conduct sports and games to feel good about themselves, develop relationships, learn about people.

Enough facilities: It was found that 100% responded “No” to the question provided to them, the school does not have enough facilities for the students to study including library, reading room and other facilities.

## 5. DISCUSSION AND RECOMMENDATION

From the study of primary school in Yangching Village, Longleng District shows that the teachers find difficulties in giving notes due to improper maintenance in library and also found that the teachers are finding difficulties in giving notes since there are not enough teaching aids in the school. The library is an important source of knowledge it develops the important habits of reading among the students, the school does not have library facilities. The school has been maintaining separate toilets for both boys and girls. It is also found that the school has a responsibility for maintaining proper toilets for teachers and students. In every school there should be separate toilets for male and female as they are different from each other. Primary school in Yangching Village does not provide enough desks and benches for the students. It should be provided because it helps the students to sit properly and concentrate on their studies and increase their learning skills.

The findings from the above state that many students felt that the school infrastructure were improper, the school management should take responsibility to maintain the school infrastructure. This will help the students to sit properly and concentrate on their studies. Infrastructure development is an important aspect that needs to be taken into account. The of the present study reveals that the infrastructure of government Primary school in Yangching Village is in poor condition without the basic utilities such as electricity. The good facilities will provide students with better academic performance. The government primary school provides free textbooks and uniforms which help the students in imparting quality knowledge among the children. The management should also provide quality textbooks in the school to the students in the learning process.

It is also found that residences are not provided for the teachers felt that the authorities should provide a separate quarter for them near the school. The school can access to usage of electricity-based lightning; ICT can improve the teaching learning skills which lead to better outcomes in the school. The state and district education department need to do a lot of curb problems by implementing some effective measures for the betterment and improvement of primary school in the state. Midday meals were found to be provided to all the students at schools. The school should continue to provide midday meals, which will help the students in maintaining proper health conditions. Training for the teachers is important for them to have effective class management skills. Training sessions are needed to help the teachers learn or create new teaching strategies which will bring the interest of their students in the classroom and encourage learning.

## 6. CONCLUSION

Education is the key factor to reduce poverty, increase in literacy rate and overall development of the individuals, community and nation. Primary education shapes the children’s mind so far for the better mind better education should be must for new generation. The study has highlighted and enables us to understand the status and various problems faced in primary schools by both teachers and the students. The primary school in Yangching Village, Longleng District has been playing a significant role in the community of the people to encourage and motivate the public to acquire education since the establishment. It is also well-known fact that primary institutions are way better in the development field and academic achievement, but public institutions are not far behind. Primary education is the foremost and basic right for every child. The primary data were supplemented by secondary data from relevant such as books, mark book, register etc. The study also gives us pictures of rural primary school along with its flaws and beauty. The study puts forward some of the most effective suggestions and remedies, effectively implemented to tackle those problems that curtails the growth and improvement of the school in general. The problem of the schools faced by students and teaching staff for effective classroom teaching is taken into consideration in this research.

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## **Staff Retention Based on Leadership Style – A Comparative Study across Banking and Insurance Companies in Bengaluru**

**Rajani H Pillai**

PhD Research Scholar, Department of Commerce, Periyar University, Salem, Tamilnadu, & Assistant Professor, School of Commerce, Mount Carmel College, Autonomous, #58, Palace Road, Vasanth Nagar, Bengaluru

**Dr. A. Arumugan**

Research Guide – Periyar University, Salem, Tamilnadu & Principal, Jairam Arts and Science College, Chinnathriupathi, Salem, Tamilnadu

**Purpose:** The objective is to study the relationship between leadership trait and employee job satisfaction.

**Design/Methodology:** A structured questionnaire was administered to collect the information from the employees working across private sector banks and Insurance companies operating in urban Bangalore through cluster sampling method to arrive at a sample size of 300. Staff retention, Job satisfaction and Leadership trait are the variables considered to validate the hypothesis using SPSS V.21 through Paired T-test.

**Findings:** There was a significant difference between the Recognitions and job security among the employees between the banking sector and insurance sector. The results indicated that the mean score of recognitions to the employees of banking sector was significantly higher than the mean score of employees of insurance sector, Job security among the employees of the banking sector was significantly lower than the mean score of Job security among the employees of the insurance sector and operational segment responsibilities among the employees of the banking sector was significantly higher than the mean score of operational segment responsibilities among the employees of the insurance sector.

**Original Value:** Leaders and their leadership skills play an important role in the growth of any organization. Leadership refers to the process of influencing the behaviour of people in a manner that they strive willingly and enthusiastically towards the achievement of group objectives. A leader should have the ability to maintain good interpersonal relations with the followers or subordinates and motivate them to help in achieving the organizational objectives.

**Key words:** *Employee Retention, Insurance, Banking, Leadership styles*

### **1. INTRODUCTION**

Leaders and their leadership skills play an important role in the growth of any organization. Leadership refers to the process of influencing the behaviour of people in a manner that they strive willingly and enthusiastically towards the achievement of group objectives. A leader should have the ability to maintain good interpersonal relations with the followers or subordinates and motivate them to help in achieving the organizational objectives.

The leadership styles of managers of selected public and private sector banks to examine whether there is any difference in their leadership styles. It also studies the aspects that found a specific leadership style like the accessibility of time, manager's behaviour, stress, self-ability, staff ability and tries to find the difference in the effect of these causes among the numerous bank groups and the bank managers. The study understands the major factors influencing the leadership styles of bank managers and analyse their impact on the leadership styles. It also compares the leadership styles of managers in the public sector banks & private sector banks in Kerala (Seethalekshmi, M.P, 2018).

### **2. THEORETICAL BACKGROUND**

The study adopted descriptive and analytical. (HarPui Ann., et. Al, 2018) this study analyse the factors that cause intention to stay amongst employees in the banking industry in Malaysia. The factors that will be thoroughly discussed in this study included compensation, career development and leadership. It is hoped that the relationship between these variables can be proved and the findings of this research will contribute towards raising management awareness concerning employees welfare and implement practices that fulfil basic expectations and requirements of employees. Few locations were targeted which include Penang, Kuala Lumpur, Selangor, Ipoh and Kampar. Four hundred questionnaires were dispersed to the respondents who work as middle and lower-level employees in Malaysia local commercial bank. Finally, 229 sets of questionnaires are

found to be applicable for the research. Overall reimbursement career growth and leadership are proved to be moderately correlated and also having a positive relationship with employees intention to stay.(Srivani, K. & Krishna Reddy, B, 2020) this study explains the employee retention strategies in select private banks in greater Hyderabad Telangana state Top five private banks rated by RBI HDFC, ICICI, AXIS, KOTAK MAHINDRA and YES banks are selected for the study. It includes identifying the retention factors and strategies influencing employee's decision to stay with the banks analysing the similarities in retention endeavours by banks. Total of 120 articles are reviewed to identify the retention strategies, factors and research gaps. Single proportion test, ANOVA, Chi-square, Rank sum method, Post Hoc test and paired comparison statistical tools are used to analyse the primary data along with descriptive statistics. Salary, Training and development, bonus, employee relations at workplace and Medi-claim benefits are important HR strategies that influence decisions of employees to stay with private sector banks to stay with the organization. Employees expect rewards and recognition for their contributions to the organization, sensible targets and better communication to stay motivated and work with the bank. (Sridharan. R., et.al, 2020) this study attempted to focus on the study of leadership styles in the telife Insurance Industry and also to find out the effectiveness of Leadership on the overall performance of the organization to make the prevailing leadership styles more effective and contributory for micro and macro development of insurance sector.(Samra Noor, 2020) this study investigates the impact of HRM practices on employee retention of commercial bank Al Habib Limited in Karachi-Pakistan. This contemplates emphases looking into primary data which bring been made through closed -ended questions with a five-point Likert scale. Those examine might have been recognized with 200 sample size of employees, directors what's most top-quality superintendents. This data has been gathered through a comprehensive planned questionnaire what's more overview from the respondents. Convenience sampling strategy need to be utilized within this contemplate. Also preparing and improving what's more remaining variables are the reward, career opportunities, investment clinched alongside participation in decision making has insignificant companionship with employee retention. SPSS version 22 will be utilized for the investigation of the information. Those finding exposes that motivation preparing needs altogether certain association with ER furthermore remunerates what's more recognition, profession chances and PDM need inconsequential acquaintanceship with ER. The model will be catching 29 per cent variety from the autonomous variable. The quality of F statistics may be 17.180 which indicated the model may be beneficial fitted.

### 3. RESEARCH METHODOLOGY

A structured questionnaire was administered to collect the information from the employees working across private sector banks and insurance companies operating in urban Bangalore through cluster sampling method to arrive at a sample size of 150 each from banking and insurance sectors totalling up to 300 respondents. SPSS Version 21 was the statistical package used to analyse the data collected to validate the framed hypothesis through Paired T-test.The objective is to study the relationship between Leadership traits and employee job satisfaction between the Banking and Insurance sectors. The variables considered for the study consist of Leadership traits, recognition, operational segment, job security. The cluster of recognition, operational segment, and job security variables is grouped as Employee Job Satisfaction.

### 4. RESULTS

Reliability analysis was performed on the variables comprising of 10 items. The Cronbach's alpha reflected the questionnaire with acceptable reliability ( $N = 300, \alpha = 0.880 > 0.70$ ). All the items appeared to be worthy of retention, confirming the items acceptable reliability.

$H_0$ : There is no difference in employee job satisfaction between the banking and insurance sectors.

**Table 1: Comparison between Banking and Insurance Sector Employee Job Satisfaction**

Variables	Banking Sector Scores		Insurance Sector Scores		Values	
	M	SD	M	SD	t	Sig.
Recognition	2.90	1.434	2.29	1.48	5.99	0.000**
Job Security	0.48	0.50	2.48	1.57	-23.72	0.000**
Operational Segment	1.95	0.802	1.44	0.49	10.46	0.000**

Source: Primary Data. \*\* Significant @ 1 per cent level.

Table 1 explains the comparison between the banking and insurance sector employee job satisfaction based on recognition, job security, and operational segment responsibilities. The obtained results are statistically significant at a 1 per cent level, and hence, the null hypothesis is rejected and alternative accepted. There is a significant difference in employee job satisfaction between the banking and insurance sectors. Paired Sample t-test was performed to compare the employee job satisfaction between the banking and insurance sectors. A paired-sample t-test was conducted to examine the relationship between the employees of the banking and insurance sectors were related.

## 5. FINDINGS & DISCUSSION

The results indicated that the mean score of recognitions to the employees of banking sector ( $M = 2.90$ ,  $SD = 1.43$ ) was significantly higher than the mean score of employees of insurance sector ( $M = 2.29$ ,  $SD = 1.48$ ), ( $t = 5.99$ ,  $p < 0.01$ ). There was a significant difference between the Recognitions to the employees between the banking sector and insurance sector at 1 per cent level. The results indicated that the mean score of Job security among the employees of the banking sector ( $M = 0.48$ ,  $SD = 0.50$ ) was significantly lower than the mean score of Job security among the employees of the insurance sector ( $M = 2.48$ ,  $SD = 1.575$ ), ( $t = -23.729$ ,  $p < 0.01$ ). There was a significant difference between the job security among the employees between the banking sector and insurance sector at 1 per cent level. The results indicated that the mean score of operational segment responsibilities among the employees of the banking sector ( $M = 1.95$ ,  $SD = 0.802$ ) was significantly higher than the mean score of operational segment responsibilities among the employees of the insurance sector ( $M = 1.44$ ,  $SD = 0.497$ ), ( $t = 10.464$ ,  $p < 0.01$ ). There was a statistically significant difference between the job security among the employees between the banking sector and insurance sector at 1 per cent level.

## 6. CONCLUSION

Employee Job satisfaction plays an important role in the process of effective leadership portrayed by the managers across the banking and insurance sectors. It enables them in better employee retention by adopting more structured strategies. Employers benefit from satisfied employees as they are more likely to profit from lower staff turnover and higher productivity if their employees experience a high level of job satisfaction. It results in better productivity, increases creativity with collaboration.

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## A Review Study on Creativity among the Students of Slum Urban Area

Rinki Saroj

M.Ed. First Year, Department of Education, Integral University, Lucknow

### Abstract

*Many units of the society are capable and successful, in which education and educational institutions are playing the main role, but some units of the society are not able to reach even after reaching the field of education, one of which is slum, hence this research The reasons and other aspects of the backwardness of this slum have been highlighted in the review.*

### 1. INTRODUCTION

In the run-of-the-mill life with modern technology, we and our country, society and links related to society, for example- schools, government, institutions, etc. are growing faster somewhere where we come to a developing country, the same developed countries like America and England. The country is at the peak of development. Despite all this, many links of our country and society are still hundreds of years behind these heights, if it is said so, it will not be an exaggeration, among these units there is a unit "Slum dweller" which is an unbreakable part of our society, and are playing an important role in our society, but these people are not able to live a normal life properly. Reason poverty illiteracy and family environment. People living in slums are important, but their children, who are an integral part of our society, are neither able to move forward, nor are they able to learn due to many reasons. We see that they have artistic and creative qualities. Despite the above-mentioned reasons, they are not able to move forward, and despite having potential like normal children, they are lagging far behind, for two-time bread, they are engaged since childhood and their childhood is lost in this context. Many researches have been done in which discussions and researches have been done on the topics of poverty, education security, security and education of girls etc. Keeping these topics in mind, a gap has come in the field of education of slum dwellers, which Somewhere there is a hindrance, this has been highlighted through research review.

Jitendra Kumar on the above topic focusing on slums in metropolitan cities in India (2014). I tried to shed light on the developmental trend moving from slums and villages to cities through descriptive and numerical survey method.

Sugata Baig, Suman Seth and Anish Gupta, on the above topic, a comparative study of slum life in metropolitan cities (2016), in which they have told about the attitude of slum dwellers and children towards the city, and also on the difficulties of living. Light has been thrown as well as about work and study.

Ayesha Abu Bakar, Om Baretta Romeis, Ashraf M (2019) In this, it has highlighted the positive development of slums in cities and how they are playing an important role in the development of the country, for example – playing the role in the sports world.

Sujita and Uko Nai, on the topic "Lack of education, light on the slums of Delhi (2022) In this, the researcher has thrown light on the backwardness of the slum children in the education world and its reasons, as well as where the overage and economic backwardness affect them. It is also told that he is leaving behind.

Ambika Singh and Rashmi Gaure have sent a study on the above topic, Comparative study of modernization of children with high and low educational progress in slums (2022) on the effect of modernization and thoughts of children with high and low educational progress in slums.

Vinod Kumar Yadav's research topic "Slum education" (2010) highlights the modernization and development along with the fallen education status of slums, as well as the positive attitude of poor-illiterate parents towards education. Has been highlighted.

Gunjan Rajput in her above topic "A Case Study on Pre-school Education in Lohar Urban Slum of Delhi (2015) highlights the status of slums located in high-tech city in terms of early childhood care and education

Deshpande's research paper 'Educational perspective of everyday life of slum children (2022) Case study in this, the refugees who are attracted to the city of Pune, who have come from the slum, their daily work, wages, etc., as well as the level of education.

The above topic by Meghna Veswikar and Manali Desai, the problems faced in the education of residential girls of Mumbai slums (2022), in which the slums of Mumbai, the fallen condition there and mainly the family community faced by the girls getting higher education there. And a descriptive aspect of institutional and social problems has been kept. This study was done on girls living in Sewri, Worli and Mankhurd townships who were getting education, these obstacles were also facing zero in government support.

UC Pandey, SR Nayak and CP Murseniya on the topic "Enhancing Educational Opportunities for Slum Dwellers" at the IGNOU Regional Center Bhopal. Anubhav" (2013) In this, he took up the program run by IGNOU Institute to bring the children living in the slums of Bhopal (Madhya Pradesh) who have left their studies, to increase the number of registrations. The study on the steps taken has been submitted.

The topic "Slums are no place for children to live" (2013) by KC Ernst, Beth S. Fillets, and Duke Duncan highlights the living conditions and problems faced by the slum dwellers themselves. It has also shown the reasons and reasons for the increasing attitude of slum dwellers towards the cities and has also done a comparative study on the effect.

Ron Mahaveer, Andrew Crooks, Eri Crotoru and Peggy Engris, "Study of Slums as a Social and Physical Construct, Challenges and Emerging Research Opportunities" (2016) In this they discuss slums as a cause of poverty and the trend of cities and basic needs in the city. The city has been successfully highlighted by the rapidly impacting infrastructure.

Submitted by Abhishek Banerjee Topic Effects of Socio-Economic Status on Child Education Case Study on Slum of Dankuni Municipality Hooghly West Bengal (2012) In which the influence of their families, large size of family, low source of income, etc. on slum children The negative impact on education and personality has been highlighted.

Submitted by Arya Gupta on the topic "Primary education a lifeline to urban slum transformation: a case study of schools in Dharavi, Mumbai (2011)" through interviews with urban slum dwellers, their children, schools, teachers, and non-governmental organizations in Dharavi, Mumbai. The infrastructure and problems were discussed, in which 33 schools were studied.

Godwin Myntra, Richard Duncan sent a systematic review of vaccination, urbanization and slum factors and interventions (2017), in which they have studied and described the problems of vaccination in slums, such as physical distance, transportation and education, etc. on the basis of statistical method.

A Narrative Review with Emphasis on Community Empowerment Challenges and Interventions for Health Promotion in Slums (2021) Submitted by Mohammad Hussain, Mahroulsani, Wahid Yesdi Faizabadi and Sara Ghasemi It has been reviewed as well as the resolution of the problems there has also been talked about.

The above topic 'Poor slum children in Delhi' by David Emmanuel Status' (2011), in this the researcher has conducted a descriptive research study on the socio-economic and educational status of the people living in Delhi slum by talking to the children through interview.

"Measurement of education in slums- Dynamic analysis of demand and supply (2015) on the above topic by Manasi Shah and Shreyasi Sen, in this the researcher talked about the level and development of education in the nation, mainly in a city like Calcutta, primary level education and Also described its importance and development and also talked about government policies.

Researched by Mustafizur Rahman on the topic Demographic Structure and Educational Status of Slum Population in Municipality West Bengal (2018) Level of education of slum population, their status economic backwardness, life, status of children etc. on the basis of demographic structural method study on Researched by Razia B on the topic "Reason for lack of early education among children living in slums" (2021) In this a significant proportion of the urban poor population in India is living in slums, which is deprived of education, including non-education of children. Study has been done on the reasons of enrollment and drop out which has been done through interview (on the settlements of Aligarh).

Stuart Cameron sent a research paper on the above topic "Access and exclusion of primary education in slums of Bangladesh" (2010), in which children living in slums in the growing population of Bangladesh have access to primary level education, Those who drop out, those who are registered but are not able to go to school, those who

have passed but are not able to continue their studies have presented their study through statistical analytical and interview.

Marilyn Wamukoya on the above topic "Nairobi Urban Health and Demographic Monitoring of Slum Dwellers 2002-2019 Values, Processes Challenges (2020) in which data on all this through increasing population development level in Nairobi City NUHDSS (Nairobi Urban Health and Surveillance Data) To collect and monitor slums for development and provide neutral data has been highlighted.

Adesh Chaturvedi on the above topic 'Challenges in Slum Upgradation Need for Innovative Approach' (2013), In this the population living in slums during the growing population, their education, their status, schemes being run for them like "Jawaharlal Nehru National Urban Renewal Mission" etc. have been studied. Research topic "Quality of life of slum dwellers of Jammu city" (2018) by Sudhamani and Rayana Ruby, based on the physical and geographical perspective, highlights the slum dwellers, living conditions, home cleanliness, education etc. inserted Went.

Martha Morrow, Greg Armstrong and Prarthana Dayal, Ramishelne on the above topic Documenting a Long-Term Development Model in Delhi's Slums (2020) Slum dwellers living in Delhi do not seek urban benefits but look at backwardness from the perspective of being surrounded by food and diseases an attempt has been made to transmit on qualitative and quantitative basis.

## 2. CONCLUSION

In conclusion, on the basis of the above reviews, we can say, not only in India, but in the world, the settlement is spread in large numbers, which may be in many fields, be it education, sports, economic-social and political. They are backward somewhere in almost every field, they are not able to go to school due to financial constraints, they are not able to collect even the basic things, due to poverty, they do not have the ability, artistic qualities, tendency to learn, they are unable to move ahead, and they are not able to live a normal life, the reason is poverty and illiteracy, because many policies are brought by the government, but due to being uneducated, they are not affected by them. Can't get benefited. Based on the above review, we can say that there are many reasons like illiteracy, poverty, lack of good resources, ignorance, conservative thinking, economic inferiority etc.

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## Antimicrobial Activity on Cow Dung Against *Escherichia Coli* and *Klebsiella Pneumoniae*

**Sanjani Arun Naikar**

3<sup>rd</sup> Year B.Sc. Student, Department of Microbiology, CSI Ewart Women's Christian College, Melrosapuram, Chengalpattu District, Tamil Nadu

**M. Sandhya**

3<sup>rd</sup> Year B.Sc. Student, Department of Microbiology, CSI Ewart Women's Christian College, Melrosapuram, Chengalpattu District, Tamil Nadu

### Abstract

To control the various microbial infection various synthetic drugs and chemical formulations drugs are in use. For the change we check antimicrobial activity on natural source of cow dung. In this experiment the various extract of cow dung has been possessed against bacteria like *Klebsiella pneumoniae* and *Escherichia coli*. As a result, the Indian cow possessed a superior antimicrobial activity as other cow dung. But the buffalo dung shows a partial antimicrobial activity against *Klebsiella pneumoniae* and *Escherichia coli*. The medicinal properties of these cow dung of Indian cow dung and buffalo cow dung are exploited to formulate drug for several diseases caused by antibiotic resistant pathogenic microorganisms.

**Keywords:** Antimicrobial activity, Cow dung extract, Antibiotic sensitivity test, *Klebsiella pneumoniae*, *Escherichia coli*.

### 1. INTRODUCTION

In India, cattle's rearing is a tradition in the country and intimately limited to the agricultural economy. Different products obtained from cow milk, ghee, curd, urine, and dung are used widely in a number of ayurvedic formulations. Cow dung is traditionally used as organic fertilizer in Indian sub-continental farming for centuries. The addition of cow dung increases the mineral status of soil, enhances the resistance of plant against pests and diseases; stimulate plant growth and other beneficial activities such as sulpho oxidation and phosphorus solubilization.

Cow dung can be defined as the undigested residue of consumed food material being excreted by herbivorous bovine animal species. Being a mixture of faeces and urine in the ratio of 3:1, it mainly consists of lignin, cellulose and hemicelluloses. It also contains 24 different minerals like nitrogen, potassium, along with trace amount of sulphur, iron, magnesium, copper, cobalt and manganese. The indigenous Indian cow also contain higher amount of calcium, phosphorus, zinc and copper than the cross-breed cow. *Escherichia coli*, is a Gram-negative, facultative anaerobic and non sporulating bacteria. *Escherichia coli* use mixed-acid fermentation in anaerobic conditions, producing lactate, succinate, ethanol, acetate and carbon dioxide. It is a common kind of bacteria that lives in the intestines of animals and humans and most are harmless. Eating unwashed greens such as spinach, lettuce or green onions or undercooked beef can cause the infection. Bacterial infections are usually treated with antibiotics. However, the antibiotic sensitivities of different strains of *Escherichia coli* vary widely. Gram-negative organisms, *E. coli* are resistant to many antibiotics that are effective against Gram-positive organisms. *Klebsiella pneumoniae* is a Gram-negative, non-motile, encapsulated, lactose fermenting, facultative anaerobic, rod shaped bacterium found in the normal flora of the mouth, skin, and intestines. *Klebsiella pneumoniae* tends to affect people with underlying diseases, such as alcoholism, diabetes and chronic lung disease. Multiple-resistant *Klebsiella pneumoniae* have been killed in vivo via intra-peritoneal, intravenous or intranasal administration of phages in laboratory tests. While this treatment has been available for some time, a greater danger of bacterial resistance exists to phages than to antibiotics

### 2. EXPERIMENTAL METHODS

#### ● STEP 1

Collection of cow dung, three types of cow dung is collected from the District of KANCHIPURAM

- 1) Indian cow
- 2) Jersey
- 3) Buffalo

#### ● STEP 2



Prepare powdered cow dung by shadow dry for 5 days

- 100 g of Indian cow dung
- 100 g of Jersey cow dung
- 100 g of Buffalo cow dung

STEP 3



Culture collection: *Escherichia coli* and *Klebsiella pneumoniae* were collected from Col. Dr. JEPPIAAR RESEARCH PARK

• STEP 4

Preparation of cow dung extract: 10 g of powdered cow dung (Indian cow, Jersey, Buffalo) is added to the 100 ml of acetone and ethanol in a conical flask. And it is kept in a rotary shaker for 3 days. After 3 days the extract is filtered in a Whatman No 1 filter paper and store it.



• STEP 5

Preparation of disc containing cow dung extract: The empty discs were impregnated with 50 $\mu$ l (2 mg/disc) of acetone extracts of cow dung from Indian cow, Jersey, and Buffalo dung separately and dried in the oven. Similarly, the empty discs were impregnated with 50 $\mu$ l (2 mg/disc) of ethanol extracts of cow dung from Indian cow, Jersey, and Buffalo dung separately and dried in the oven. This process was repeated until the disc was completely saturated with the extract. The disc was then used to study the antimicrobial activity of cow dung extracts against human pathogens.

• STEP 6

Antibiotic sensitivity test: For this antibiotic sensitivity test Kirby-Bauer method is followed. Prepare a 4 agar plate medium of Mueller-Hinton agar, 2 for *E.coli* and 2 for *K.pneumoniae*. Using a sterile cotton swab, spread the culture along the Mueller-Hinton agar medium and kept in the incubator for 24 hrs at 37 $^{\circ}$  C for overnight. Using a marker, mention the culture name and divide the *E.coli* medium into three parts for acetone (Indian cow, Jersey, Buffalo) and another *E.coli* medium ethanol ( Indian cow, Jersey, Buffalo) .*K.pneumoniae* into three parts for acetone (Indian cow, Jersey, Buffalo) and another *K.pneumoniae* for ethanol ( Indian cow, Jersey, Buffalo). After incubation, keep the disc on the agar medium on their labelled part. And keep the medium again in the incubator for 24 hrs at 37 $^{\circ}$  C and note down the zone of antimicrobial activity of cow dung among the *E.coli* and *K.pneumoniae* culture medium.

### 3. RESULT

Indian cow dung had possessed superior antimicrobial activity than cow dung. All the test microorganisms were sensitive to the Indian cow dung. Ethanol extract of the Indian cow dung had shown antimicrobial activity against the entire test organism, while acetone extract had shown antimicrobial activity *Klebsiella pneumoniae* and *Escherichia coli* only. The test microorganisms were resistant to cow dung extract from Jersey. Only the *Klebsiella pneumoniae* was sensitive to acetone extract of cow dung. Other extract had no antimicrobial activity against test microorganisms. The other two test microorganisms were resistant to cow dung extracts. Both acetone and ethanol extract had shown antimicrobial activity against *Klebsiella pneumoniae*. Cow dung extract from buffalo dung had shown partial antimicrobial activity against test microorganisms. The *Klebsiella pneumoniae* was sensitive to acetone extract of buffalo dung, but the same microorganisms were resistant to ethanol extract of the buffalo dung. The *Escherichia coli* were resistant to ethanol and acetone extract. This shows that the buffalo dung had partial antimicrobial activity.

#### 4. DISCUSSION

Indian cow, jersey, and buffalo a different healthy cows Cow dung was collected in the early morning at Kanchipuram. Cow dung was also put for shadowed dried. Different cow dung was collected and shadow dried for 5 d. The dried cow dung was powdered. The powdered material 100 ml of acetone and ethanol was added in 10 g of powdered different cow dungs (Indian cow, Jersey, and buffalo dung) in a conical flask and it was kept in rotary shaker for 3 d. The extract was then filtered using What Man No 1 filter paper. The antimicrobial activities of disc diffusion technique at different cow dung extract against *K. pneumonia* and *E. coli*. Indian cow dung extracts were activity against the both pathogens.

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## Comparative Study of "Stress" between Medical and Engineering Students: Research Review

Prensha Devi

M. Ed (1<sup>st</sup> Year), Department of Education, Integral University, Lucknow

### Abstract

*Now a day the reason for the pressure and tension among the students is increasing. There is tension between medical and engineering students. Today's education system, methods, work etc. are leading to the stress of the students, which is a big obstacle for the development of education, teaching, students and the country. Therefore, on this basis we will discuss through research review.*

### 1. INTRODUCTION

In the world of modern technical education, our country India is touching the heights of success. So, its credit goes to educational institutions like school, university, government etc., in which arts, science, Maths, economic various in every field. Various educational works are being run. In these units, in the field of science, where profession like doctor is playing a lot of roles in modern times, tension is seen in medical students. Educational programs are being run by the government Dr. APJ Abdul Kalam was a well-known name in scientific research. He achieved many achievements of research in the field of science and vocational course B.Tech in the subject of mathematics, due to which new technical methods and new equipments are being made in the field of technical technology at the present time. To do this educational business course, there is a lot of change in the stress and mood of the students today. Excessive syllabus in the curriculum and excessive curriculum expansion is the cause of tension somewhere. The pressure and tension from the students is increasing. This study can also be related to exams and can also be related to pressure from peers, teachers or parents. Stress is the body's response to a perceived threat, real or perceived, by preparing the body to deal with the situation. It develops due to the activation of stress hormones. The pressure to fail causes a lot of stress among students in college. Students like the pressure of performing well in colleges and getting good scores. Factors such as these contribute to increasing academic stress on students in college. In such a situation, when students do not live up to the expectations of their parents and themselves, then stress anxiety depression surround them. Sometimes this state of depression is so dangerous that they lead to suicide and stress. Let's execute and fellow students start taking wrong company and drugs.

Comparative study of perceived stress anxiety in medical and engineering students in the year December 2019 Balaji PS Murthy, Dr. Naveen Kumar did on the above subject, they said that stress, anxiety and tension in first-and second-year students during examination from both professional students Analytical or synthetic study of the factors related to the coping situation.

Kaushik Nag conducted a comparative study of stress among medical and engineering students on the subject, increased stress levels resulted in increased psychological problems such as depression, anxiety, drug abuse and suicidal ideation. Medical studies in North-East India and to assess and compare the level of depression, anxiety and stress among engineering students. They had higher levels of depression, anxiety and stress than engineering students. The risk factors of gender, education, socio economic status, permanent residence, satisfaction with academic performance, smoking and alcohol where Intake was found to be significantly associated with depression, anxiety and stress in students of both courses Most students reported mild to very severe grades of depression, anxiety and stress, which is a matter of concern. Early intervention is needed to reduce the development of this depression, anxiety and stress in students.

Jayalakshmi, Gokul Guna Sekharan (SRM Institute of Science Technology), in the year June 2016, to find out the level of mental stress of students studying in various professional courses. Mental stress is commonly faced by students pursuing various courses, which has adverse effects, such as overeating, high BP, insomnia, depression and suicidal thoughts. Students affected by stress may also turn to drug and alcohol abuse which leads to social isolation and a willingness to self-harm. There are many reasons for the stress of students which include pressure from parents, fear of their future, monetary problems, academic competition etc. Counseling can help in managing.

Sachinratan Gedam, Swapnil Patond, Prasenskelethane on the above topic Comparison of stress, anxiety, depression and coping among medical and engineering students emphasized in January 2016 that students of professional courses are prone to higher levels of stress, anxiety, depression and suicide huh.

Nihal Balaji, PS Murthy, Dr.Naveen Kumar, a comparative study of perceived stress anxiety among medical and engineering students during subject examinations (December 2019). These are told in this. Both professional analyze, synthesize and compare the factors associated with stress anxiety and coping in first and second year students during examinations in students.

Naveed Ali Siddiqui., Fatima Vintaj: A study of stress among medical engineering students in various medical and engineering colleges in Karachi Pakistan, March 2008. In the present study, the rate of stress among engineering students was higher than among medical students, it is recommended in the future there is a need to encourage qualitative studies of the causes of stress-reducing interventions for professional programs, especially engineering students.

Amenhabarikani in August 2009 on the above topic Study on stress in medical students Starting medicine for the first time as an academic is stressful for medical students They did a comparative, qualitative or in-depth analysis of the mental state of the students.

Mohammad studied the above subject in the year 2016, a comparative study of stress among medical and engineering students. Told that more stress was found in engineering students mentally and physically because engineering has a fact-based curriculum as compared to medical, due to which the subject's curriculum is difficult. That's why such systems like anxiety, tension, obstruction, teaching etc. are seen in students.

Jayanti Shah studied the above topic in the year January 2021 Comparative study on depression, anxiety and stress among medical and engineering college students in India. Physical stress is common in medical and engineering students as compared to other professional courses.

Sushank Pee Bahre' conducted the Menghan Shivraj study in the year July 2011 on the above topic "Comparative study of stress among medical and engineering students". He told, in today's time, a comparative study was done in the study and adjustment of changes in the social environment. How it can give rise to feelings of rejection, anger and inhibition on children, due to which many physical, mental problems have to be faced.

Naseer & Ayesha Fatima studied the above topic in a comparative study of stress between medical and engineering students (June 2016). He said that the process of vocational education in the society is becoming a stress barrier. Is the students who are suffering from mental stress blockade in this vocational education process.

Naveed Ali Siddiqui and Saba fatima the topic a comparative study of stress between medical and engineering student's years. Studied in June 2022 conducted a comparative cross-sectional study across various medical engineering colleges, used multiple techniques and found that engineering students had higher rates of depression, inhibition and stress than medical students in the present study. It is recommended here in the future that there is a need to encourage qualitative studies of the causes of interventions to reduce stress in vocational programs, especially engineering students.

Vivek Bivaghachvare, Girish B Dhumle and Alka Digour study stress among students of professional colleges in an urban area in India. Various studies done all over the world have emphasized that in order to pursue professional courses like medical studies, there is more pressure of studies on the students and they become victims of mental depression and mental depression. The aim of the present study was to assess stress among various business colleges and its association with various academic, social and health related factors of students.

Richa Yadav. A comparative study of stress among medical and engineering students has been found to have mental pressure and inhibition due to learning process anger, anxiety, mood, tension. These way students have a lot of social and family pressure and mental pressure, that's why those mental stress blockages are found in medical and engineering students.

Moveen and Anjaline: To study the stress and stress related factors among medical and engineering students studying the relationship of stress with various innate gender, social and health related factors in professional courses like medicine and engineering.

Eliza Omaraiya, MD Faizur Rahman, Rahat Bin Habib: Topic Prevalence of Stress Among Medical Students a comparative study between public and private medical schools in Bangladesh found that health professionals around the world are burdened with time-pressured workload Explains the reason for the stress. Mental stress is faced due to multiple roles and emotional issues.

Kumar, Dinesh Pramukh Swami Medical College and Kunjan Kumar Modi (Banaras Medical College Research Centre) studied anxiety and depression in medical students in January 2013. Mood health problems are a major health concern. Depression, stress, anxiety is a mental illness of students or Physical and mental health are adversely affected. Problem solving is a mental process and is part of the larger problem process that involves problem detection and further shaping of problems. All intellectual tasks are considered complex. Problem solving is the cognitive process of undertaking., Which requires more control and fundamental skills and stress control.

Manal Kar Kora and Padariya Khalid Al Dabal did the above topic “Comparative study of stress among female medical and non-medical university students in Saudi Arabia” Prevalence and effects of academic, stress on physical, mental, psychological and drift runner health as well as lifestyle changes Non. Unsuitable teaching methods and unsatisfactory environment and fear of failure in examinations by medical students is a matter of concern, compared to medical students, students are more prone to physical, mental health, anxiety and stress, negative lifestyle changes and physical, mental health problems.

Shabhat Naseem and Seema Munaf: That subject, Study on Suicidal Thoughts Depression, Anxiety, Stress and Life Satisfaction of Medical, Engineering and Social Science Students (July 2017) Told that getting higher education is not an easy task as it requires hard work, dedication and motivation. The idea is that depression is associated with the presence of anxiety and stress due to low levels of satisfaction with life in students experiencing difficulty in handling the demands of higher education.

Jockey Perdani Sawai and Rezki Perdanisawi studied the above topic Academic stress and depression among medical students in January 2000 Stress among university students, a serious member in the country. Becoming a health problem Stress is becoming a high rate mental problem among students. This has negative effects in life mostly. Stress anxiety among medical student’s depression. The mental condition has become.

Eisenhanen (University Medical Center Hamburg.) conducted a study in January 2017 on the relationship between perceived stress in first-year medical students and emotional distress of individual institutions. Levels of stress and emotional distress are generally high among first-year medical students. Anxiety and stress in students. The emotional process of inhibition teaching and inhibition etc. is becoming present. Personal stress in students regarding emotional distress anxiety depression being found under control.

## 2. CONCLUSION

The problem of stress is becoming common among medical and engineering students because of the rigorous academic curriculum of the students. Stress, anxiety, depression have been found. There is a need to encourage stress reduction techniques in professional courses and all professional courses, in effectively addressing and solving problems in troubleshooting. Students need a counselor for Parents and students should know that unnecessary expectation about education can lead to stress. So in the end it will be said that regular study habits and adequate preparation can help the student to avoid stress and anxiety depression.

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## **Role of Environmental Education in Sustainable Development of Society**

**Dr. Lalta Prasad**

Senior Associate Professor, Faculty of Education, Banaras Hindu University, Varanasi

### **1. INTRODUCTION**

Environmental Education is an important instrument to develop awareness and protection of Environment. Environmental Education can save the Environment and Society. Environmental Education is dealt with Environmental Awareness, Protection, Issues and Sustainable Development of Society. This paper also reveals the awareness of Environmental Education regarding development of awareness of Environmental Problems in the society. The present Paper indicates the causes of Environmental pollution and problems and its solutions of eradication of environmental problems through Environmental Education. The present Environmental problems can be controlled and eradicated only through development of Environmental awareness by Environmental Education.

The People are pressing against planetary boundaries in ways that may permanently alter systems critical for sustaining life on Earth (Rockström et al., 2009a; Steffen et al., 2015). Earth's systems are experiencing intense pressure on biological, chemical, and geological cycles, resulting from human-induced resource use and overuse at a magnitude never-before experienced (Barnosky and Hadly, 2016). Environmental education is a conservation strategy that creates such synergistic spaces, facilitating opportunities for scientists, decision-makers, community members, and other stakeholders to converge. Environmental education foregrounds local knowledge, experience, values, and practices, often in place-based settings; in this way, it encourages numerous groups, including those that may be marginalized, to interface productively with research (Toomey et al., 2017).

#### *Concept of Environmental Education*

Environmental Education is a holistic, lifelong learning process directed at creating responsible individuals who explore and identify environmental issues, engage in problem solving, and take action effectively to improve the environment. As a result, individuals develop a deeper awareness and understanding of environmental issues and have effective skills to make informed and responsible decisions that lead to resolute environmental challenges. Environmental Education can be taught formally in schools, classrooms, colleges and universities, or it can take place in informal learning contexts through NGOs, businesses, and the media, natural centers, botanic gardens, bird-watching canoeing, scuba diving and ecotourism. Besides, Environmental Education takes place in various non-formal education programs such as experiential outdoor education, workshops, outreach programs and community education.

#### *Concept of Sustainable Development*

Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. The concept of sustainable development can be interpreted in many different ways, but at its core is an approach to development that looks to balance different, and often competing, needs against an awareness of the environmental, social and economic limitations we face as a society. All too often, development is driven by one particular need, without fully considering the wider or future impacts. We are already seeing the damage this kind of approach can cause, from large-scale financial crises caused by irresponsible banking, to changes in global climate resulting from our dependence on fossil fuel-based energy sources. The longer we pursue unsustainable development, the more frequent and severe its consequences are likely to become, which is why we need to take action now. At its core, sustainability is a revolutionary concept, but unfortunately, difficult to define in a pragmatic way. The story behind sustainability is not far off. Many tensions can be found in the concept of sustainable development, from its vague and ambiguous definition to the failure to achieve a universally pragmatic and actionable framework. The great challenge that sustainability faces is not just teaching people, but defining it in a way that people can understand in the first place.

#### *Environment and Society*

Environmental Education is the most important instrument of eradication of Environmental problems and for sustainable development of Society. Through Environmental Education, we can control the environmental problems and minimize the environmental pollution and sustainable development can be achieved. Environmental Education is an important tool for developing Environmental awareness in society to check environmental issues.

The people can be aware regarding Environmental problems through Environmental Education. By this process, Environmental issues can be controlled and eradicated and sustainable development can be maintained.

Environmental pollution can be protected and controlled to a certain extent. Therefore, Environmental Education is the most important weapon to control the Environmental pollution and enhance the Environmental awareness in the Society. If the people are aware and attentive regarding Environmental Quality and its protection for Quality Environment and better sustainable Development. If there is a Quality Environment in Society. Definitely sustainable Development will be continued for wellness and welfare of the Society.

#### *Environmental Programs for Sustainable Development*

According to domyessay, Environmental educators should deliver Environmental Education in a unique way as it is not only based on science, but also concerned with historical, political, and cultural aspects with the human dimension of socio-economic factors. It is also based on developing knowledge on socio-ecological systems. Environmental Education provides opportunities to children to build skills to become environmentally-smart, including problem-solving and investigation skills. Qualified environmental educators should work in the field, conducting programs, involving and collaborating with local communities, and using strategies to link environmental awareness, building skills, and responsible action. It is through Environmental Education that citizens, especially children, can test various aspects of an issue to make informed, science-based, unbiased, and responsible decisions.

Environmental Education (EE) is a process in which individuals gain awareness of their environment and acquire knowledge, skills, values, experiences, and also the determination, which will enable them to act - individually and collectively - to solve present and future environmental problems. Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1978). Environmental education enhances critical thinking, problem-solving, and effective decision-making skills, and teaches individuals to weigh various sides of an environmental issue to make informed and responsible decisions. Environmental education does not advocate a particular viewpoint or course of action.

#### *Environmental Awareness Programs for Sustainable Development of Society*

Environmental Programs are the main indicators to check the environmental pollution. We can aware the people regarding Environmental pollution through Environmental Awareness Programs such as Environmental Literary, Environmental Dramas, Nukkad Natak, Cleanliness of surroundings, Exhibitions, Social-cultural Environmental programs, Environmental protection Campaign and Cleanliness awareness Programs etc. By this we can aware the people regarding Environmental issues and educate them for protection of Environment. With these Environmental Education programs, we can minimize Environment pollution and save the environment. The sustainable development of Society can be achieved for wellness of Society. The progressive development of Society can be achieved for welfare of the people and society at large.

#### *Environment and Sustainable Development*

The concept of sustainable development is one that arguably is multi-disciplinary, complex, and systematic, yet defining the concept is without a doubt a great task. Sustainable development was a term first coined in 1980, when the intent of the concept was merely basic. It was in the World Conservation Strategy, a union between three prominent environmental non-governmental organizations IUCN, WWF, and UNEP, where sustainable development took on the meaning of 'conserving the earth's natural resources'. What the World Conservation Strategy had realized is that with the world's economic growth, came the near-sighted exploitation of the world's natural resources. The original, and sole, intent of the World Conservation Strategy was to bring nations together to stop the exploitation of natural resources, which in turn was negatively affecting the environment. Sustainable development was thus merely seen on quite a basic level, at the time of its coinage.

#### *Impact of Industries on Environment*

Humans are suitable to change relief, remove mountains in one Home, and produce artificial terrain forms out of waste material in another. They're suitable to change the directions of gutters and make long channels in the punishment. The power of technology is great, but, unfortunately, in utmost cases this power leads to the destruction of natural systems. MDCs, with their technologies and capital, manage nature to meet their position



of consumption and to support high living morals, while LDCs are forced to exploit nature for survival despite the trouble of future consequences. Now we can see that mortal influence on the terrain is truly severe and has become a matter of global concern.

It's a fact that presently mortal exertion can destroy natural cycles and ecosystems. There are multitudinous samples of this process of deforestation, especially in rain timbers; ozone caste reduction; global warming; species decimation and loss of biodiversity; chemical and thermal pollution; soil declination, and multitudinous others. In some cases, the changes are unrecoverable; in other cases, we can ameliorate the situation by the reconstruction and restoration of destroyed systems. Humans must realize and break this problem for the survival not only of our generation but also future generations.

### *Effect of Pollution on Environment*

Today, we are living in the industrial age. The various types of Industries are working and producing toxins and poisonous gas, smoke and ashes which are very hazardous for humanity and their health. The industries should check the pollution and do some precautions for Quality, Environment and sustainable development of the Society. The industries are releasing their wastes into rivers and on open lands which are the main cause of Environmental pollution. This Types of wastes, chemicals and dirty water Generated by industries. It causes Air Pollution, Water Pollution, Noise Pollution, Agriculture Pollution, Soil Pollution and Earth Pollution etc.

## **2. FACTORS OF ENVIRONMENTAL POLLUTIONS**

### *Industries*

Industries have been polluting our environment, especially since the beginning of the industrial revolution, as mentioned above, notably due to the increasing use of fossil fuels. In the 19th century and for a significant part of the 20th century, coal has been used to make machines work faster, replacing human force. Though pollution by industries mainly causes air pollution, soil and water contamination can also occur. This is particularly the case for power-generating industries, such as plants producing electricity (May they be a dam, a nuclear reactor or some other type of plant). Also, the transportation of this energy can be harmful to the environment. We can take as an example the transportation of petrol through pipelines; if there is a leak in the pipeline, the soil will automatically be polluted. At the same time, if the tanker transporting petrol from its production plant to the place where it will be consumed leaks or sinks, the water will get contaminated.

### *Transportation*

Ever since men abandoned animal power to travel, pollution of the environment has become higher and higher. Its levels have only been increasing until now. Similarly, to industries, pollution caused by transport can mainly be attributed to fossil fuels. Indeed, humans came across a long way from horse carriages to cars, trains (which, before electricity, used to be propelled by coal), and airplanes. As traffic is increasing every day, pollution follows that evolution.

### *Agricultural Activities*

Agriculture is mainly responsible for the contamination of water and soil. This is caused by the increased use of pesticides, as well as by the intensive character of its production. Almost all pesticides are made from chemical substances and are meant to keep diseases and threatening animals away from the crops. However, by keeping these forms of life away, the harm is almost always made to the surrounding environment as well. Furthermore, as agriculture gets more and more intensive to feed the increasing world population, more environments and ecosystems are destroyed to make space for the crops. Some of them, like rapeseed –used to make oil – demand a lot of space for a relatively small output.

### *Trading Activities*

Trading activities include the production and exchange of goods and services. As regards goods, pollution can be caused by packaging (which often involves the use of plastic, which is made from fossil fuels) or transport, mainly.

Residences

Finally, residential areas provide their fair share of pollution as well. First, to be able to build homes, the natural environment has to be destroyed in one way or another. Wildlife and plants are driven away and replaced by

human constructions. As it requires the work of industries, construction itself is also a source of contamination of the environment. Following that, when people settle in, they will produce waste every day, including a part that cannot be processed by the environment without any harm yet.

### 3. EFFECTS OF ENVIRONMENTAL POLLUTION

#### *Effects on Humans*

The effects of environmental pollution on humans are mainly physical, but can also turn into neuro-affectations in the long term. The best-known troubles to us are respiratory, in the form of allergies, asthma, irritation of the eyes and nasal passages, or other forms of respiratory infections. Notably, these well-spread affectations can be observed when air pollution is high in cities, when the weather gets hot, for instance. On top of that, environmental pollution has been proven to be a major factor in the development of cancer. This can happen, for example, when we eat reminiscences of pollutants used in the production of processed foods or pesticides from the crops. Other rarer diseases include hepatitis, typhoid affectations, diarrheal, and hormonal disruptions.

#### *Effects on Animals*

Environmental pollution mainly affects animals by causing harm to their living environment, making it toxic for them to live in. Acid rains can change the composition of rivers and seas, making them toxic for fishes; an essential quantity of ozone in the lower parts of the atmosphere can cause lung problems to all animals.

#### *Role of Environmental Education in Sustainable Development*

Environmental Education is the most important instrument of eradication of Environmental problems and for sustainable development of Society. Through Environmental Education, we can control the environmental problems and minimize the environmental pollution and sustain the development of Society. The Quality Environment can be achieved for the healthy life of people and their wellness. The sustainable development can be achieved if we have a Quality Environment. It is possible only by spreading Environmental awareness among people through Environmental Education. Through Environmental awareness, we can minimize the pollution and sustain development of Society. We can develop a healthy and quality Environment for the wellness of Society and sustainable development.

Therefore, it is a fact that sustainable development can be achieved through Quality Environment. The Quality Environment can be achieved through Environmental Education and its awareness among the people. Environmental Education plays a vital role in sustainable development of Society through Environmental awareness. We can have a healthy Society and Quality Environment for effective sustainable development if we control the pollution. Indeed, Environmental Education is an important instrument for sustainable development of the Society. Environmental Education plays a significant role in extending Environmental awareness for Quality and healthy life of people for sustainable development of Society.

### 4. CONCLUSION

Indeed, Environmental Education is an important instrument for sustainable development of the people and Society at large. Environmental Education can play a vital role in the Extension of Environmental awareness programs among the people for protection of the Environment and continue the sustainable development. Therefore, Environmental Education is an important panacea for protection of Environment and maintaining sustainable development. Infact, Environmental Education can play a vital role in Development of Environmental awareness and its protection for better sustainable development of the Society. The sustainable development can be possible only in the condition of Quality Environment. If we have Quality Environment in the Society then effective sustainable development can be continued for wellness and welfare of the Society. Therefore, Environmental Education is an important instrument which plays a significant role in protection of Environment and continue the sustainable development of Society.

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## **Student Learning Style in Academic Achievement: A Review Study**

**Anamika Chand**

M.Ed Student, Faculty of Education, Integral University, Lucknow

### **Abstract**

*In this challenging world every person is becoming more and more dependent on digital technology and the world is rapidly getting in touch of modernity. A large percentage of people's lives are spent in school. Some of their learning experiences begin here, but they don't stop there. In school, students learn a lot of things, including the fundamentals of reading, writing, and math as well as knowledge and abilities for their future careers.*

### **1. INTRODUCTION**

The idea of "learning styles" aims to characterise the ways in which individuals absorb knowledge about their surroundings. Visual, auditory, kinesthetic, or hands-on learning are all ways that people can learn. They can also learn through hearing, touching, or manipulating an object. Persons at the same school study with the same teachers' guidance and are surrounded by nearly identical people, but they learn in different ways.

#### *Operational Definition of Variables*

##### *Learning Styles*

There are several ways that different people learn best, or their learning styles. The idea of learning styles is founded on the idea that members of groups frequently learn information more effectively through individual and preferred modalities. One of the most often used tools for categorising people into VARK is the Learning Styles Inventory. Reading/writing (R), Aural (A), Visual (V), and Kinesthetic (K).

##### *Academic Achievement*

A student's, a teacher's, or an institution's level of short- or long-term educational success is measured by their academic achievement or performance. Academic achievement is demonstrated by the completion of educational milestones such as secondary school diplomas and bachelor's degrees.

### **2. REVIEW OF RELATED LITERATURE**

Shruti Pal (2019) discussed on Learning styles to enhance learning in the language classroom. The objective of the paper to develop, identify a learning styles model, materials, and what helps them learn better for use in Indian English classrooms.

Meseret Getachew Tessema (2019) researched on the relationship of university student engagement with teaching style learning style and academic achievement in Ethiopia. The research paper is about to investigate the learning styles of university students in Ethiopian public universities. It determines university students' engagement from the learning style of students. The writer also mediating effect of learning style and academic achievement on the relationship between teaching style and students' engagement.

Rohtesh (2021) worked on Academic achievement and learning styles of secondary school student in relation to extraversion introversion divergent thinking and locus of control. The thesis is for the relationship of extraversion, introversion with learning styles of secondary school students and the difference between academic achievement of introvert and extrovert the researcher is also study the relationship of Locus of control with learning styles of secondary school students.

Rajvir Singh (2020) research on A study of achievement motivation among secondary school student in relation to their learning style school environment and self-concept. In this research the researcher aims to examine the achievement motivation, learning style of school pupil as male & female, rural & urban, private and government at secondary level.

Balasundaram K (2020) investigated on Intellectual style and learning style of teaching working in schools in relation to their teaching style. In this research paper the author examines the preference of teaching style,

intellectual style, learning style of teachers working in schools. He also pointed there any significant relationship among of teaching style, intellectual style, learning style.

Sangeeta (2018) worked on A study of learning and decision-making style of senior secondary student in relation to emotional competency. In this thesis a writer examines the emotional, decision making, learning style's difference among senior secondary students on the dimensions of emotional competency with respect to gender, locality, type of school, stream. He aims the difference of emotional competency between right and left cerebral hemispherical preferred rural, urban and government of boys and girls.

Kavita (2018) worked on A study of academic motivation vocational choices learning style of minority community students as constitutionally defined. The objective of the thesis to compare the various academic motivation, vocational choices, learning style of rural and urban, self-finance & traditional, art and commerce, and minority & non-minority girl student.

Nisha Kumari Study of learning styles of high school student in relation to their gender category. In this research the researcher aware about double, triple interactional effects of gender, category and locus of control on the visual, aural, read/write, and kinesthetic learning style of high school students.

Himani Pani (2011) worked on Learning Style and Attitude Towards Studies of Class X Students in Relation to Social Category, Gender and Locality. The objective of the thesis is to understand the attitude, relation to social category, gender and locality of student toward studies.

Seema Singh (2015) worked on the topic Preferred learning styles and academic achievement of children with hearing impairment. In this research the researcher suggests us the preferred learning styles of CWHI studying at upper primary level in terms of their Perceptual and Social aspects individual and group learning style, their relation to gender, severity of hearing loss, type of educational setups, their academic achievement as auditory, visual, kinaesthetic, and tactile learning styles.

Taruna (2014) investigated Interrelationship and influence of learning and thinking styles on the academic achievement of high school student. Researcher concluded to identify, assess, analyse the learning styles (Visual, Auditory, Kinesthetic, Independent, Dependent, Competitive, Collaborative, Avoidant and Participant) of students. He examines the difference in learning styles, thinking style of low, average and high achiever male and female, analyze the difference in learning styles of first born (eldest one) and later born (youngest one) student.

Ravi Babu M (2015) worked on the influence of learning style and study habits on the academic performance of secondary school student. In this research the researchers discuss about influence of gender, management, medium, fathers' education, fathers' occupation, mothers' education, mothers' occupation, family income on the, study habit and learning styles, and there corelation of secondary school students.

Anoop Asawari, Gudipudi (2009) researched on A study of B.Ed student teaching styles in relation to their learning style self-efficacy and personality. The researcher study and analyze the strength, different of association of student teacher TGD of TS with their independent, dependent, collaborative, comparative, avoidant, participative learning skills. Also compare the TMD of TS with different level.

Chinu Kishore Agrawal (2015) researched on the study of learning styles in relation to personality of professional students. The study focuses on to measure personality types, it's effect and compare learning style in term of gender of professional students.

Meera devi (2019) studied the topic A study of learning style and parental encouragement of government and private higher secondary student in Haryana. In this research the researchers in is to provide a detailed analysis on the reference to gender, type of school, learning style of boy and girls, gov. and pvt. school student to their high and low parental encouragement.

S B Prabhakara (2019) worked on an investigation of Study involvement of high school students in relation to their style of learning and thinking, and adjustment. The objectives of the paper were examining the differences in the study involvement of male-female, high school students studying, effect of styles of learning and thinking, adjustment, gender, and different types of school.

Sonika Kakkar (2014) worked on a study of academic achievement learning style and creativity of the student of higher secondary level. Objectives of the paper was effect of learning style, academic achievement, student's

creativity; co-relation among academic achievement, creativity and learning style and suggest to improve the academic achievement.

Imran, Mohammad (2020) worked on Impact of parental involvement school climate and learning styles on academic achievement of senior secondary level **students**. In this research the researchers discuss about parental involvement, learning styles, school climate, gender (male/female), area wise (rural/urban), board wise (U.P. Board/C.B.S.E. Board) differences in academic achievement of senior secondary level students. Also talk about the impact and their differences.

Sarma, Ruma Das (2009) researched on Philosophical objectives and its impact on learning style and academic achievement. In this paper the researcher says about find out philosophic objectives from Indian context relate philosophical objectives with learning style. He had deferent aspects, investigate the influence of philosophical objectives on academic achievement.

Rasool, Rabiya (2017) researched on Psychological Wellbeing Study Involvement and Academic Environment of Government and Private Secondary School Students A Comparative Study. In this research the researchers discuss about the Psychological Wellbeing, Study Involvement, Academic Environment, Academic Achievement, its compare of Govt. and Private Secondary School Students and find the relationship between Psychological Wellbeing, Study Involvement, Academic Environment and Academic Achievement of Secondary School Students.

### 3. CONCLUSION

The outcomes of this study suggest that primary school pupils continued academic success may be related to their relatively positive home environments and intellectual interests. As a result, there is anticipation that the expansion of services like free books, uniforms, educational counselling, and midday meals, especially for female students, would lead to qualitative improvements in academic performance.

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# Teacher Adjustment in International School

Siwangi Gaur

M.Ed-1st Year, Department of Education, Integral University, Lucknow

*The quality of classroom processes, students' academic adjustment and teachers' psychological development can be studied. Teachers and students in elementary school classrooms participated in a very methodological longitudinal study of classroom social dynamics, evaluating the quality of teacher-student interactions. Completed student social assessments and reported on peer community sense and school relationships oblique motivation for schooling and teachers assessed students' social behavior and aggressive behavior among students is promoted commitment quality of teacher preparation motivation and staff support are considered leaders of improving the quality of education in schools are discussed*

## 1. INTRODUCTION

Human beings are the wonderful creation of God. It is only human beings who deal the knowledge building and the formal transformation and transaction of knowledge. Human beings are wise and knowledgeable and they needed the institutional means for cultivation of knowledge. On the other hand, education system is the most intellectual development by human being as its business is the practice of knowledge. It is the teachers who are the responsible for knowledge creation and transaction to the young generation. Hence, as the role and responsibility are concerned, teachers are the prime factor of education even in this child centrism. Teachers are the heart of educational process. They make and keep a direct connection in between education and society. They help students for their all-round development and make them a qualitative citizen to build a strong nation. Teacher helps their pupil to adjust every situation. Not only that they also try to keep balance in every situation. Because if they are unable to adjust with problems, they can't help their students. The success of the learner mainly depends on the ability and the quality of the teacher. Adjustment is the process which helps every people to adopt some suitable technique in society or environment. On the other side if the adjustment problem will exist there they can't teach effectively.

Education involves interaction between the pupil, the teacher and the social environment. These three components are equally responsible for the success and failure of the total educational programme. Educationists are agreed that the goodness of an educational programme is determined to a large extent by the quality of learning process. Whenever the learner failed to attain the prospecified goals, something was wrong with the teacher, either with the plan tried them out. The success of the learner mainly depends on the ability of the teacher. Teacher is the most powerful weapon of every invention. The whole educational program is controlled by teacher. Naturally they are the heart and soul of educational system. Teachers plays the important role for transmission and spreading the knowledge and intellectual power in every human being. Teachers are the real originator of a nation builder.

## 2. REVIEW OF LITERATURE

**A.J. Watson, N.G. haiten, D.S. squares**

1991- Elsevier

In the second year of Seema, teachers' adjustment and satisfaction were studied in relation to school staff. In that time the teacher relationship in the school was clear and fair. Restrictions were considered in the quality of teaching preparation, motivation and support of the staff.

**Ha Guyain**

2020

Interviews were conducted over 6 days with SI teachers working in an international school in Vietnam. These findings combine with prior research and studies by scholars, providing a deeper understanding of the impact of compensation and benefit programs on SI teachers' adjustment. Has been discussed

**R. Sachdej**

2018

Search.proquest.com

It focuses on the adjustment factors for teachers in an international school in Thailand to shed some light on the phenomenon of new teacher adjustment in an international school and how to adjust to the very cultural environment of the school



N. Ueithaykumar, N.M. Ravi – international journal of Acadrmic (2020) research in business and social sciences  
This research describes the overall negative and positive experiences of teachers in accommodating artistic children in the classroom. Most of the teachers in the international school are not fully prepared to accommodate artistic children.

**Radharani Rai Ujjwal Kumar Haldar International Journal of Innovative Research Explorers (3), 222-227, 2018**

In the present research operation, the researcher has told about his study to find out the answer of teacher adjustment in relation to the gender mental state of secondary school teachers and teacher adjustment has been told about the study of environmental deregulation.

**R. Baiset**

2018- repository

This research explores how teachers adjust to living and teaching abroad. And in this research, cultural adjustment has been explained by the teacher and effectively to adjust the dialogue.

**P. Barua**

**M. Gogoi**

International Journal for Research in Education –2016

In this research, it has been told about the teacher adjustment of secondary school men and women, in this study, it has been told about the adjustment of teachers in Assam, how to adjust in the physical environment.

**U. K. Haldar**

**R. R. Roy**

IATSD for Advanced Research in Applied Sciences

General 5(3),468-476,2018

In this research, how has adjustment been made between teacher adjustment and job satisfaction of secondary school teachers of West Bengal at the present time, in this study two scales like 1. Teacher Adjustment Scale developed by Mangal 2007 and 2. In the Job Satisfaction Scale (JSS) developed by Singh and Sharma, necessary data has been collected and used.

**K. Farhattunisha**

- amity.edu.

In this research, there is a positive relationship between teaching aptitude and adjustment of secondary and higher secondary school teachers, but there is very little and city relationship, positive things have been found in the teaching ability of teachers, but it has been found to be negligible towards adjustment.

**C. Mare, M. T. Green burg**

Psychology in education -2001- boli online library

A teacher has been told about the way a teacher relates to students with disabilities and a teacher towards children with disabilities, as well as a teacher for special children and children with disabilities, understanding their feelings and adjusting with them is very important. It is important and the contribution of teachers in this field should be fully

**R. K . Nayak ,**

**H. Panda**

**Hari Priya**

-2019 academia education.

In this, Pandey (1973) has done a study on teacher adjustment in relation to professional endeavor, aspirational adjustment and role conflict of primary and secondary teacher, a comparative study of female and male teachers with academic and general environment has been done is .

**Shivnath Singh ,**

Senior marrion Mathew sije

The purpose of this research is to explain the teacher adjustment of secondary school of CBSE and UP Board of Allahabad, in which the researcher has told about the forms of adjustment created and standardized by SK Mangal, as well as government and private schools. Comparative study of.

**Jean A. Bekar**

Psychology school of general 44, (2016)

In this study, the current child-teacher relationship has been explained, as well as school adjustment has been highlighted by teacher adjustment and the contribution of teacher-child relationship to their achievement of social adjustment has been described.

**Imare noor ,****Yasaare atkash – arnas ,****Burkru – abbak,****Mustafa kale,**

Educational science- principal and practice

18(1), 2018

Research on children who initially have difficulty adjusting to school has mostly focused on school dropout characteristics of children and families, gender, age, personality, ethnicity, socioeconomic background, parenting behavior, and adjustment in the relationship with parents. Have been told about

### 3. CONCLUSION

Teachers are those person, who can manage all the obstacles in educational system. Teachers make a connection in between institutions and society to achieve the goal of education. If they adjust with their environment only then they shall be able to make a strong nation. The findings of the study show that effects of the gender, locality, designation, and experience in teaching could not make a difference in teacher adjustment which is very utmost priority for total development of educational program as well as student's life

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# Impact of Digitalization of Zakat in Accelerating Financial Inclusion Goals: An Evidence From India

Dr. Nazia Akhlaq

Assistant professor, Department of Commerce and Business Management, Integral University, Lucknow

## Abstract

*The paper aims to study the role of the Digitalization of Zakat system in collection and distribution of zakat to the needy and vulnerable section of the society belonging to the minority community in India. Poverty reduction, economic growth, and financial stability are the goals that must be followed rigorously for Sustainable Development Goals (SDGs) and the digital zakat system can help in the upliftment of a particular section of society that will help to improve the economic condition of the people. According to a recent estimate of India's religious demographics for the year (2020) by the Pew Research Center, there are 213.34 million Muslims residing there, making up 15.4% of the population. Muslims are the second largest population of India, and a majority of the Muslims belong to marginal backgrounds. In a growing economy like India with the second largest population in the world, the very idea of Financial Inclusion of all sectors of the economy seems quite challenging. Zakat system can help in providing solutions to the challenges faced by the community and will ensure their upliftment. This paper discusses the role Zakat can play in combating the challenge of financial exclusion a country is facing for decades and how the upliftment of the community can help to fulfil the goal of financial inclusion for growth of all segments of the society. The literature was reviewed to find out that apart from several measures taken by the Government to achieve the objective of absolute financial inclusion of all sectors of economies, what role the zakat management system can play in accelerating the efforts toward the accomplishment of Financial Inclusion goals. The paper chapter also intends to discuss the very vital and novel aspects of financial inclusion through Fintech-driven services and how the use of digital technology can channel the entire system of collection and distribution of Zakat to the poor and needy people of the minority community in a fair and speedy manner. The methodology adopted for the paper includes an imperial study. Data was collected through a structured questionnaire comprising of 25 questions. The respondents were the zakat payers using the digital platform IZC (India zakat.com), the sample size as calculated using the Yamane formula. The sample size selected for the study is 133. Chi-square test and frequency distribution was used for the interpretation of collected data. The findings of the study suggest that zakat distribution through digital platforms and collective zakat can help a particular section of the society to overcome the challenges of credit, lack of education, sanitation, medical benefits and entrepreneurial development. The author concludes that the Zakat system also referred to as the third pillar of Islam has hidden benefits that can be implemented at all times and surely will help to bring positive results. Future work can be emphasized on finding out and analysing the technology-based strategies on the zakat management system that may supplement the financial inclusion scheme.*

**Keywords:** Financial Inclusion, Poverty, Zakat system, Economic growth, Digitalization, Minorities.

## 1. INTRODUCTION

Poverty eradication, economic development, Indebtedness, unfair income distribution, regional imbalances, upliftment of the community, and inclusive growth of all sectors of the economy are the major problems in an economy like India or any underdeveloped or developing economy, and finding a solution to these issues in low-income nations is a global concern. Governments, Nationalized Banks, Financial institutions, and micro finance organizations are collectively and individually working on various platforms to solve finance and money-related problems of the economy. The idea of financial inclusion to bring every household in India under the umbrella of the formal financial banking system can be achieved only if there is a proper flow of finance in the economy. It requires collective efforts from Government and society to come together and work in this direction. In this regard, the role of zakat can make a paradigm shift in the entire economic system.

Zakat is an obligation of every Muslim who is earning. It is the third pillar of Islam. The Islamic laws and the shariah directs every Muslim to give a certain portion of their earnings as zakat. Under Islam, zakat is a significant type of charitable giving that is required by faith. For Muslims, paying the Zakat is crucial because it allows their money to be cleansed of all transgressions. Every Muslim determines his or her own Zakat on an individual basis. Typically, this entails the payment each year of 2.5 percent of one's capital. This amount is then given to the needy and deserving as per the convenience of the zakat giver. Zakat can play a significant role in poverty alleviation, if properly collected and distributed it can help to curb this social evil called "Poverty". The zakat distribution and management are one of the

important and required aspects in every nation to be executed successfully and concurrently with the national plans for economic development, social growth and financial inclusion of the community.

Advances in technology and digitalization of the entire financial system with the introduction of fintech for fast and convenient financial payment the entire transaction is now shifting towards digitalization of payments. After covid-19 pandemic a large section of the population has shifted towards digital payment system. These digital mode of payments can also accelerate the payment and collection of zakat from the large section of population in a very short time span and collection and management of collected zakat will also improve with technology. The zakat and distribution of zakat can be systematically organized and managed to provide its in numerous benefits to the vast section of society who are deprived of necessities and need finances for their survival, on the other hand small businesses can also benefit from collective zakat and crowdfunding.

## 2. FINANCIAL INCLUSION

Individuals and enterprises with financial inclusion have access to useful and cheap financial products and services that fulfil their requirements, such as monetary transactions, payments, savings, credit, and insurance, supplied responsibly and sustainably. It may assist the individual in gaining cheap access to financial services such as formal savings, credit, payments, insurance, and remittance. It enhances the GDP by accelerating currency circulation. Financial inclusion had a very vital role in an economy like India, the second largest population in the world. Still, a large section of the population is deprived of formal financial services due to financial illiteracy, lack of awareness, education, accessibility, regional imbalances, lack of infrastructure facilities etc. Hence there is a need to spread awareness about its importance and bring a majority of the population under the umbrella of financial inclusion. As financial inclusion is critical for the more inclusive growth of the entire population of the country.

Financial inclusion, or the use of formal financial services by previously unbanked individuals and businesses, is one of the crucial areas where recent financial innovations have aided significant progress. With the usage of mobile phones for financial services, developing countries have been able to bypass the traditional method and achieve significant financial inclusion gains.

## 3. OBJECTIVES OF FINANCIAL INCLUSION

Financial inclusion seeks to involve everyone in society in responsible financial management. Many poor Indian households do not have access to financial services in the country. Financial inclusion attempts to break down these barriers and give low-cost financial services to those who are less affluent.



*Source: Researcher's work*

**Fig 1.1:** Objectives of Financial Inclusion

## Zakat

The third pillar of Islam, Zakat, is a mandatory activity for all qualified Muslims, and it entails donating a certain amount of one's profit to charity. Giving 2.5 per cent of one's economic riches to those in need is not a voluntary act of generosity; it is a requirement that every qualifying Muslim must fulfil every year.

Zakat has a variety of economic effects, including influencing impoverished people's income levels, increasing consumption levels in national income, and increasing the level of production in the economy. Zakat can help reduce poverty and ensure fairness in the allocation of income and wealth.

### 4. BENEFITS OF ZAKAT

Zakat has numerous benefits few most relevant to the topic are listed below:

1. Zakat has a strong humanitarian and social-political value, such as preventing class strife, distrust, and corruption in society.
2. Zakat will help to maintain the country's socio-economic equilibrium by encouraging the wealthy to continue to assist the poor.
3. Zakat is the financial system that keeps money in circulation in Muslim countries.
4. Zakat also prevents hoarding and protects Muslims against a variety of other vices, as greed is at the core of many immoral behaviours.
5. Zakat will result in a more loving, caring, and assisting society in the future.
6. In the long run, zakat payment will lead to the growth and development of all human beings, as well as the elimination of the poor-due.
7. Zakat has the potential to improve everyone's faith and spiritual advancement.

Thus on the basis of above discussion I can propose this hypothesis: ***H<sup>1</sup>*-There is no impact of zakat on the upliftment of the society and vice versa**

### 5. MULTI-DIMENSIONAL USES OF ZAKAT FUND FOR SOCIETAL WELFARE

Zakat establishes the bar for creating a thriving community. It ensures that society's most vulnerable people are cared for. It promotes social well-being on a local and global scale by embracing human connections.

The first category to benefit from zakat funds are the poor and the needy of the society, the second category includes the administrators of the Zakat, the fourth category uses zakat as a tool for advocacy, and the fifth category uses zakat to free those in bondage, Labour or slavery. Zakat in the sixth category is permissible to pay the debts, in the last and seventh categories, it can be used for the welfare of the society. Fig 1.2. Shows various dimensions in which the use of zakat funds is permissible.

1.2. Zakat and its dimension



Source: Researcher's work

## 6. ROLE OF ZAKAT IN ALLEVIATING POVERTY

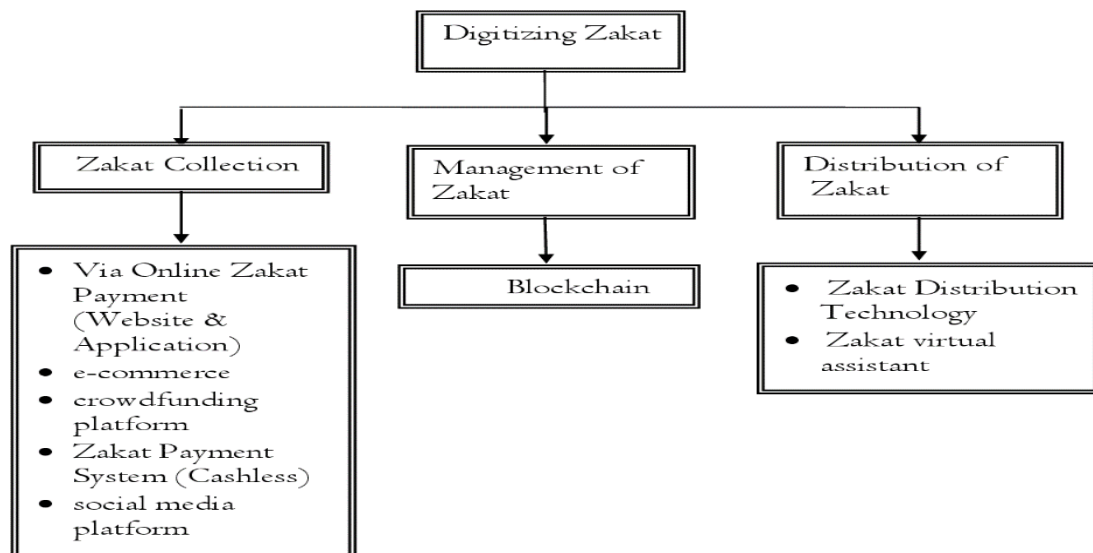
Poverty is a multidimensional and complex issue that will continue to be a problem for us in the foreseeable future. Countries have adopted a variety of approaches to address poverty. Interest-based microfinance is a widely used technique in many regions of the world. It has had some success, but only at the expense of the poor receivers' severe indebtedness and difficulty. However, one can demonstrate how the Islamic Zakat system, as well as effective marketing, may be used to alleviate poverty across the social spectrum.

Like formal financial banking and microfinancing, there is no interest associated with the Zakat payment, and the recipients are not obligated to repay it. Zakat aims to enrich the destitute rather than just provide them with a means of subsistence. It functions as a social philanthropic giving instrument, and if correctly handled, the receivers can set up small enterprises to manufacture goods and cover their basic requirements.

The effectiveness of Zakat in alleviating poverty is determined by the methods employed to distribute funds in a given society. Zakat funding has been institutionalized in several nations through government and non-government organizations. Zakat fund recipients have benefited from the institutionalized system. Zakat can be used to boost infrastructure development, agriculture, and farming, which are the main sources of income for many in our country, in addition to individual and household poverty alleviation. It may assist in the creation of jobs by establishing Micro businesses for the less fortunate, as well as possibilities for common people to sell their wares at the local market. It may also ensure that a society's governance and social fairness are upheld. Thus on the basis of above discussion I can propose this hypothesis **H<sup>2</sup>- There is no impact of collective zakat in transforming the community and vice versa**

## 7. DIGITALIZATION OF ZAKAT FOR ACCELERATING FINANCIAL INCLUSION

Zakat money can be gathered in an agency or institution that can distribute, channel and administer Zakat to address poverty that continues and improves the economy of a country. Rapid technological developments and Digital financial platforms are becoming famous among users due to the convenience and speed of financial transactions with safety. During the Covid-19 pandemic, a large section of the population shifted towards digital platforms for making financial payments and availing of financial services. This helped in boosting the financial inclusion idea even during the lockdown. Digitalization of Zakat funds through various schemes and proper channels can help to reach a maximum number of beneficiaries of these services.



Source: Semantic scholar (2019)

Fig: 1.3. Digital Mechanism for Zakat

Fig: 1.3. Shows that the digitalization of Zakat collection, management, and distribution with the help of various platforms can help in the proper utilization of these funds and will also ensure that the funds are used for the welfare of the vulnerable and weaker section of the society. Thus on the basis of above discussion I want to propose hypothesis three- **H<sub>3</sub>: There is no impact of digital platforms in accelerating the distribution of zakat to beneficiaries.**

## 8. SIGNIFICANCE OF THE STUDY

The study focuses on the distribution of zakat through the proper digital channel for effective and timely distribution of zakat. The Objective of the Government of India is to achieve absolute financial inclusion. The use of technology has greatly enhanced the way that zakat is collected and distributed in the minority community in India. The method for collecting zakat has improved in the recent past. People who used to visit zakat institutions directly to pay the zakat can now pay their zakat online. This is time saving, effective and also very transparent system. This study focuses on the use of digital platforms in streamlining the entire system of zakat calculation, donation, collection, management and distribution among the needy and deserving belonging to the minority community. According to a recent estimate of India's religious demographics for the year (2020) by the Pew Research Center, there are 213.34 million Muslims residing there, making up 15.4% of the population. This zakat money can help to solve the problems of the people who are financially weak and socially backward in this 15.4% of the population of the minority community, they can utilize this money to meet credit-related challenges they face in business, education, medical etc. The study highlights the use of digital platform in collecting and distributing zakat from a larger geographic area and distributing to every nook and corner here it is required. Digitalization of zakat also helps to bridge the gap between the zakat seekers and how *“The zakat givers and the Zakat seekers of today can become the zakat givers of tomorrow”*.

## 9. THE RATIONALE OF THE STUDY

The purpose of conducting this study was to study the impact of the digital zakat system on financial inclusion of the section of the population in the minority community that is vulnerable and faces in numerous challenges especially financial constraints in life. In comparison to the Middle East and western countries, the payment of zakat with the help of a digital platform is quite less. Collective zakat can be used for bringing change in society on a large level. The study also put emphasis on the point that proper management of zakat and its systematic and planned application can boost the efforts of financial inclusion initiatives.

## 10. SCOPE OF THE STUDY

The study focuses on the collection and distribution of zakat among the needy and deserving effectively and speedily. The study takes into consideration the digital zakat platform, [Indiazakat.com](http://Indiazakat.com). It is a one-of-a-kind, Social Crowdfunding platform that aims to unite Zakat Seekers and Zakat Givers together on one platform. Its goal is to conduct business solely to bring socio-economic change to people's lives, rather than for the sake of generating commercial profit. Zakat is an obligatory donation that Muslims must give if their wealth exceeds a certain threshold each year. Although most people distribute the required Zakat amount, it is often unstructured. Such disorganized distribution isn't a long-term answer to the community's poverty. My study is an attempt to highlight the importance of digital platforms for reaching a large number of beneficiaries in different geographic locations with the help of technology, which in turn will help in reducing poverty and achieving the goal of absolute financial inclusion.

## 11. LITERATURE REVIEW

The management of Zakat programs in Nigeria has remained a critical issue. Unlike in some Muslim countries, where the central government organizes the collection and distribution of Zakat, in Nigeria, due to the country's multi-religious makeup, that important task is delegated to various state governments and private Islamic organizations, and in most cases, the burden of distributing Zakat is placed on individual Zakat payers to find the needy themselves. This paper is an analytical study that relied on secondary sources. By evaluating existing literature on the topic as well as the experience of Zakat institutions around the world, it recommends strategies to improve Zakat management in Nigeria. (Abdullahi, Shafiu Ibrahim, 2022). This study aims to examine the potential for advancing commercial zakah for accelerating the welfare of disadvantaged members of society. The primary and secondary data is used in the study. Through semi-structured in-depth interviews, primary data from 34 business entrepreneurs in Bangladesh were collected. In order to calculate the business zakah of five business enterprises and provide an indicative picture of the anticipated volume of business zakah in Bangladesh, secondary data have been gathered from yearly reports. In order to answer the study objectives, obtained qualitative data have finally been thematically analyzed as per the proper procedures. The findings reveal that around thirty-five per cent of sample entrepreneurs have used the business zakah fund for fully and partially financing their social projects. The study also says that average annual business zakah fund in Bangladesh amounts to nearly 144m BDT (around US\$1.7m) per business enterprise. The findings suggest that business zakah has a vast scope and

promising prospect to become a tool for financing social projects that can help in the growth of the economy of the country. (Hoque, N. 2022). This study's objective is to highlight the importance of zakat in poverty reduction and incorporate zakat with the mainstream government poverty eradication program to eradicate poverty, (Jahangir, Rashed & Bulut, Mehmet, 2022). Based on the gender of zakat recipients, this study seeks to examine how zakat contributes to the decrease of income inequality and the relief of poverty. 1,300 zakat recipients in five distinct locations of West Java, Indonesia, were investigated. Poverty was assessed using the Centre of Islamic Economic and Business Studies (CIBEST) model, while income inequality was assessed using the Gini coefficient and Atkinson index. According to the models, the study suggests that zakat distribution programmes benefit male-headed families more favourably than female-headed ones in terms of the falah and after one year of zakat distribution programs female-headed families have better income distribution, while male-headed families do best in case of welfare loss. (Ayuniyyah, Q., Pramanik, A.H., Md Saad, N. and Ariffin, M.I, 2022). The COVID-19 epidemic has brought attention to digital financial services, as requires social distancing. However, if the use of digital financial services is scaled up quickly in times of crisis without sufficient laws and protections, the threats to stability and integrity, which are always present, may worsen. Efforts to increase the use of digital financial services should not, however, exacerbate existing divisions among consumers (Agur Itai, 2021). The literature on Islamic microfinance institutions (IMFI) published in reputed international publications is reviewed in this study. There are 71 publications in all that has been collected, and they are divided into many subject topics. Poverty alleviation is the most investigated topic, with up to 25 papers (35 percent). The substance of the study is offered at the end of each topic for future research, which will be valuable to academics and practitioners. (Rohman, P. S., Fianto, B. A., Ali Shah, S. A., Kayani, U. N., Suprayogi, N., & Supriani, I. ,2021). This research seeks to create a conceptual framework that explains the relationship between zakat institution governance and zakat payment compliance. This research uses content analysis and a review of multidisciplinary literature to examine zakat institutions, government governance, and compliance behaviour. The paper has constructed a model, based on Abioye et al. (2013), that considers the impact of governance systems on zakat payers' compliance, with trust as a moderator. Four governance mechanisms influence zakat payment compliance in the model. This model can be used in zakat systems that are regulated. The authors present a model to describe how governance affects zakat payment compliance. The study is unique in that it includes one new crucial variable. (Sawmar, A.A. and Mohammed, M.O., 2021). This study intends to examine how digitalization affected the administration of zakat during the Covid-19 outbreak. It also seeks to assess the advantages, disadvantages, opportunities, and risks associated with Indonesia's zakat digitization. This study used a qualitative methodology with a literature review and SWOT analysis technique. According to the literature, using digital tools to gather, manage, and disburse zakat is particularly helpful because it offers users a lot of convenience, especially in light of the Covid-19 pandemic. Digital platforms do, however, provide risks and limitations for muzaki and mustahik as well as zakat organisations. Zakat institutions can employ a range of approaches by making use of their current advantages and capabilities to combat these challenges and limitations. This technique is designed to maximize the collection and distribution of zakat donations while having a significant positive influence on the community's welfare, particularly for the underprivileged who are affected by the pandemic. (Ninglasari, Sri & Muhammad, Mumuh. 2021). The study says that Poverty is currently one of the largest problems the world is facing; it is thought to be the most important and significant social issue. Getting rid of poverty is one of the biggest problems for the governments and the people. The study suggest that digital zakat payment and the use of digital technology for the payment of zakat can help to remove poverty. The researcher also emphasises that the problem of poverty should be eradicated from society as it is a curse for the society and growth of individuals. (Mohammed, M.O., Robbana, A., Bedoui, H, 2021). Indonesia is the nation with the highest Muslim population in the world. As a result, Indonesia has a lot of scope and potential for the growth of zakat and digital zakat platforms as a means of reducing poverty, hunger and economic inequality in the society. In terms of internet users and digital platform users, Indonesia has been ranked 5th. Many Zakat institutions in Indonesia are digitizing their management as a result of realizing this potential of digital zakat. The purpose of this study is to trace the development of zakat institution management, from traditional management to digitization. The study focuses on BAZNAS the digital platform for collecting zakat in the country. In Indonesia there are no studies that examine the background and history of digitizing zakat management, this study specially aims to satisfy the historical need to understand the management of zakat in the past. This essay had a literary and historical tack. This essay covers the evolution of zakat management throughout in the past and the digitalization of zakat with the use of technology. (Zubaidah, Siti & Afifah, Afifah, 2020). The study focuses to examine zakat management and the crisis of confidence in the government's and zakat organizations' capacity to distribute zakat to the Quran's designated beneficiaries. Between zakat payers and collectors, trust is a crucial component, and when it is lacking, it impacts the payers' desire to pay zakat to the collectors (state or zakat agency). The need to examine the legality of the payer sending zakat directly to the recipients and whether this is a sin, as some have claimed, resulting from this crisis of confidence. The study concludes that while it is desirable to donate zakat to the government or zakat institution, it is also permissible to donate zakat straight to the recipients, particularly where there is a lack of trust in the zakat givers in the



government or zakat organization. (Owoyemi, M.Y, 2020), Zakat is one of the 5 pillars of Islam, that is obligatory to all the well-off Muslims, and it's far given to the needy. It is used to combat poverty. This observation examines Zakat's effect on poverty in Tunisia. Using simulated records of character health from the Tunisian family survey in 2010, the ability significance of the Zakat to war with poverty is highlighted. Fuzzy Poverty Measurement is computed which suggests that Zakat does lessen this measurement. The simulation outcomes show an enormous lower in the poverty index of Tunisia's seven regions, and poverty may be eliminated. (Bouanani, Mejda and Besma Belhadj, 2019). The administration of digital zakat is projected to improve the efficiency and effectiveness of zakat services, as well as boost zakat benefits, to achieve public welfare and poverty reduction. To investigate corporate strategy elements, the research approach employed was descriptive qualitative using SWOT analysis methodologies (strengths, weaknesses, opportunities, and threats). This research discovered a way for optimizing zakat by improving governance processes and data for zakat-based digitalization entities (Santoso, I.R, 2019). 9. The goal of this study is to identify the barriers to the growth of zakat (Islamic mandatory alms) and waqf (endowment) organizations in Northern Nigeria and propose acceptable remedies. The data for this article was gathered from key stakeholders in Northern Nigeria using a qualitative research methodology. The findings of the article reveal that zakat and waqf institutions in Northern Nigeria have not accomplished their fundamental Shariah purposes because the public has little or no faith in them. Furthermore, potential zakat payers and waqf donors loathe the political office holders appointing the administrators of the institutions. Finally, the administrators lack management and administrative expertise in the two institutions. (Ahmad, M, 2019), There is mounting evidence that adequate financial services benefit consumers, particularly women and low-income Kanpur Philosophers Vol IX, Issue I (I), January 2022121 adults. This article gives a global overview of financial inclusion and examines new empirical evidence on how the usage of financial products including payments, savings accounts, loans, and insurance can help inclusive growth and economic development. This paper also covers some of the obstacles to broader financial inclusion, as well as future research possibilities (Demirguc-Kunt. Et.al, 2017). This paper intends to create a conceptual framework for inclusive Islamic financial planning (IFP) by combining traditional Islamic institutions such as zakat and awqaf with contemporary notions of financial planning, financial inclusion, and financial literacy to address the poor's short- and long-term financial goals. (Ahmed, H. and Salleh, 2016). The goal of this article is to figure out how zakat institutions in Brunei may include financial inclusion into their operations and help zakat recipients meet their saving goals, with a focus on developing financial products and solutions for the destitute. The paper's findings emphasize the need for welfare beneficiaries to have bank accounts and credit facilities that satisfy their daily needs, as well as saving for their children's and grandchildren's education, and for welfare recipients who save. These findings have ramifications for how zakat and other Islamic social institutions might adapt to modern problems in personal finance, particularly in terms of boosting financial inclusion and understanding beneficiaries' saving motivations. (Ak Md Hasnol Alwee Pg Md Salleh, 2015). The importance of Zakah as a tool for poverty alleviation is highlighted in this study article. It goes over the basic notion of Zakah, how it is calculated, and how it is collected. The study proposes a revolutionary Zakah Fund concept that can be used as a tool for poverty alleviation. In addition, the study attempts to assess the concept's viability by conducting a relevant poll, the results of which can be utilized to improve the concept's understanding and utility. (U Ahmad, Moid & Mahmood, Athar, 2009)

## 12. RESEARCH GAP

On the basis of an intense literature review, it has been found that Zakat is an obligatory contribution for Muslims, they are required to give 2.5% of their earnings for different activities listed as per the sharia. Most of the studies undertaken for literature review were focused on:

- The payment of zakat, its importance, calculation of zakat, and timely payment of zakat.
- Most of the studies are done in Islamic countries very few studies are conducted in western countries and country like India.
- Almost no study discussed the role of Zakat in achieving the goal of financial Inclusion for Inclusive society in India.

This study will intend to focus on the aspect that how collective zakat, the digital platform of zakat management and distribution, and the use of technology for the distribution of Zakat can help in providing momentum and direction for the speedy collection and effective allocation and distribution of zakat funds among the most deserving or needy section of the minority community in India for Inclusive growth. This study will also focus on the digital zakat crowdfunding platform [Indiazakat.com](http://Indiazakat.com) and its role in speeding up the entire process of collection and distribution of zakat and proper management of the funds with the help of technology.

### 13. OBJECTIVES OF THE STUDY

To study the impact of zakat on the upliftment of society.

1. Their study the impact of zakat on the upliftment of the community( Minority community)
2. To analyse the impact of collective zakat in transforming the community.
3. To study the impact of digital platforms in accelerating the distribution of zakat to beneficiaries.

### 14. RESEARCH METHODOLOG

This study is Empirical in nature. The study was conducted with a qualitative approach. Data used in the study is the survey done by indiazakat.com (<https://indiazakat.com>).Data was collected through a structured questionnaire of 5 point Likert scale. Questionnaire comprised of 31 questions. Data was collected from 133 respondents from about 65 cities across the country and also abroad. These respondents were the user of online Zakat platform India zakat.com. Analysis was done on the collecteddata using SPSS.

The Variables identified for Evaluation of Zakat distribution on the basis of the hypothesis are:

**Table 1.1 Variable identification**

Sl.No.	VARIABLES
1	Frequency of Zakat distribution
2	Awareness to calculate the correct Zakat amount.
3	Medium of distribution of Zakat
4	Priority in Zakat Distribution
5	Best way to give Zakat
6	Potential of Collective Zakat
7	Zakat management system
8	The mechanism for Zakat collection
9	Digital crowdfunding platform
10	Do you agree that an initiative like www. IndiaZakat.com will help transform "Zakat seekers of today to Zakat givers in future"?

These variables are selected based on the nature of the study to analyze the impact of the digitalization of zakat in accelerating Financial Inclusion.

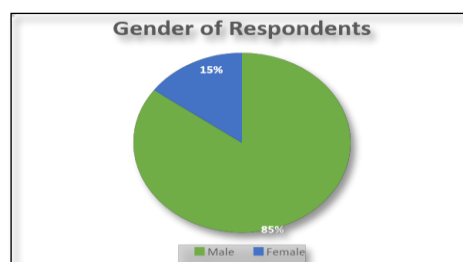
### 15. DATA ANALYSIS AND INTERPRETATION

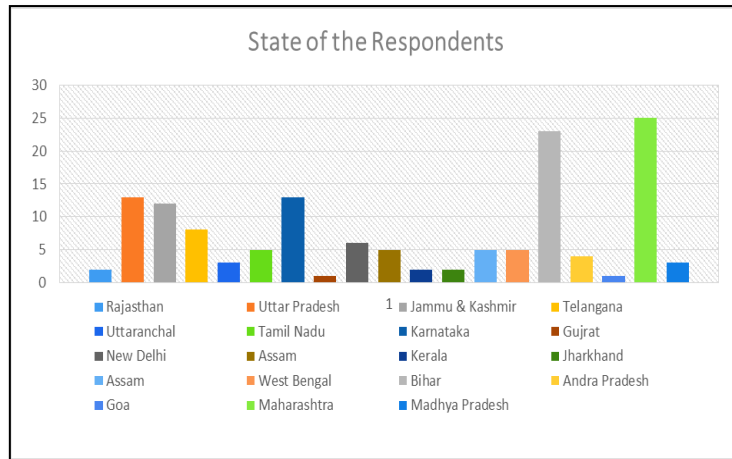
Analytical tools used in the study are frequency distribution and the Chi-square test. SPSS was used to perform an analytical test on the collected data. Data was feeded manually in MS-Excel then imported into SPSS.

Graph 1.1: Demographic profile of respondents

**Interpretation:** Graph 1.1 shows that 85% of the respondents are male and 15 % of the respondents are female.

Graph 1.2: State Wise distribution of the respondents





**Interpretation:** The above graph shows the demographic distribution of the respondents. The respondents are from different states of the country. Uttar Pradesh, Bihar, Maharashtra, Karnataka and Andhra Pradesh are the top 6 states in terms of responses.

**Table 1.2:** Frequency of Zakat distribution

Chi-Square Tests				
	Value	df	Asymptotic (2-sided)	Significance
Pearson Chi-Square	148.319 <sup>a</sup>	6		.001
Likelihood Ratio	44.775	6		.001
N of Valid Cases	138			
a. 8 cells (66.7%) are having expected count of less than 5. The minimum expected count is .12.				

**Interpretation:** The above table shows a significant value of less than 0.05 hence a strong relationship is found between zakat and its distribution.

**Table 1.3:** Have you been able to see the change in the lives of the person/family to which you have donated your Zakat in the past?

Chi-Square Tests				
	Value	df	Asymptotic (2-sided)	Significance
Pearson Chi-Square	139.833 <sup>a</sup>	18		.001
Likelihood Ratio	38.858	18		.003
N of Valid Cases	138			
a. 25 cells (83.3%) and the expected count is less than 5. The minimum expected count is .03.				

**Interpretation:** The significant value is .001 and .003, and a strong relationship is seen between zakat and upliftment of society, Hence Null Hypothesis H<sup>1</sup> is rejected. Thus zakat plays a major role in the upliftment of community (Minority community).

**Table 1.4:** Potential of Collective Zakat

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	147.779 <sup>a</sup>	6	.001
Likelihood Ratio	44.156	6	.001
N of Valid Cases	138		
a. 9 cells (75.0%) have an expected count of less than 5. The minimum expected count is .06.			

**Interpretation:** The value is less than 0.05, hence a strong relationship is found between collective zakat and upliftment of the community. Hence Null hypothesis H<sup>2</sup> is rejected, and the alternate hypothesis is accepted that collective zakat has the potential of transforming the Muslim community

**Table 1.5:** Digital crowdfunding platform

Chi-Square Test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	138.828 <sup>a</sup>	4	.001
Likelihood Ratio	36.958	4	.001
N of Valid Cases	138		
a. 6 cells (66.7%) have an expected count of less than 5. The minimum expected count is .12.			

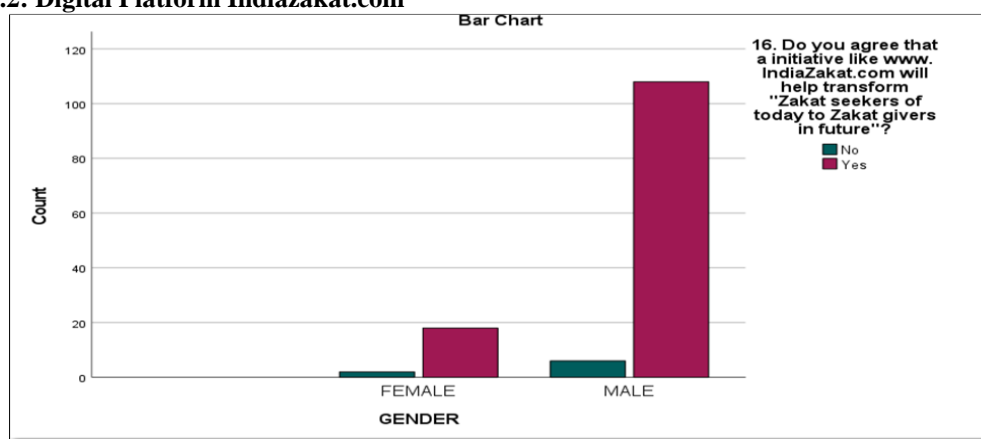
**Interpretation:** The Value in the table is less than the significant value hence a strong association is found between the digital crowdfunding platform and zakat distribution for the upliftment of the community.

**Table 1.6:** Do you agree that an initiative like www.IndiaZakat.com will help transform "Zakat seekers of today into Zakat givers in future"?

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	138.700 <sup>a</sup>	4	.001
Likelihood Ratio	36.802	4	.001
N of Valid Cases	138		
a. 6 cells (66.7%) have an expected count of less than 5. The minimum expected count is .12.			

**Interpretation:** The value is .001, hence a strong relationship is found between zakat and the growth of society

**Graph 1.2: Digital Platform IndiaZakat.com**



**Interpretation:** The graph indicates the percentage of zakat givers who agree that an initiative like IndiaZakat.com will help transform “Zakat Seekers of today to Zakat givers in future in more. Hence Null hypothesis  $H^3$  is rejected that there is no impact of digital platforms in accelerating the distribution of zakat to beneficiaries.

## 16. FINDINGS

The findings of the study suggest that

1. The contribution of men in zakat distribution is more than females, the reason may be a lack of knowledge or awareness.
2. The findings suggest that the majority of the respondents are paying zakat regularly, when asked about the knowledge of zakat and the method to calculate zakat, respondents gave a mixed response 60 % said they know how to calculate Zakat while 30% did not exactly know how to calculate zakat. 10% said they are can't say.66% of respondents said that they distribute Zakat during Ramzan and the rest of the respondents give Zakat as per requirement and need.
3. The majority of the respondents about 52% said they can see the change in society with the distribution of Zakat, 44% said they don't follow where the money is used and 4% said that it has no impact on society.
4. The majority of the respondents said that collective zakat is better than Individual Zakat.
5. More than 80 respondents agreed that collective zakat has the potential to transform society. 2% of respondents said and the rest of the respondents had no idea about it.
6. 94% of the respondents said that the digitalization of zakat through digital platforms like IndiaZakat.com or any other platform will help in reaching a large number of needy people. These platforms can also help to reach a large number of zakat givers, who want to give zakat and don't find an eligible person for that.
7. The findings suggest that digital financial platforms have gained a lot of popularity and acceptance among people due to their ease and convenience of use. These, these platforms can help in raising zakat funds collectively, which can be used for the welfare of society.
8. India Zakat .com is a digital crowdfunding platform which helps help the zakat givers to reach zakat seekers located anywhere across the globe. The findings of the study suggest that digital zakat platforms are the new age zakat distribution platforms that will help you to calculate your zakat properly and help you to reach the needy and poor in the community, also the idea of collective zakat can help the weaker section of the community in education, marriage, start-ups, construction and medical help.
9. The transparency of these platforms will also encourage the zakat givers to give their zakat through this platform.

## 17. CONCLUSION

1. Inclusive growth and overall development demand extra efforts and the box approach. The common lending platforms are not sufficient to cater to the needs of the ever-growing and demanding population.
2. Zakat's principal goal is to redistribute income from the wealthy to the needy. Through the redistribution of income and wealth for the benefit of the underprivileged, Zakat can play an important role in development.
3. The Zakat system can help to reduce poverty by providing finance to the minority community as per their requirements.

4. At the macro level, one of the main consequences of zakat payment is that it increases the purchasing power of zakat receivers.
5. Financial literacy drives can help to spread awareness about the benefits of the shariah system of ZAKAT.
6. Banks should provide a window for a zakat system, where beneficiaries can apply and avail of the services
7. The use of digital technologies can help zakat management become more efficient.
8. Mobile banking can play a vital tool in financial inclusion, the Zakat app can serve as a channel to provide services to a large number of people.
9. Digital zakat platforms like IndiaZakat.com should be promoted among the community and awareness can be spread through webinars, meetings, audio/ video messages, etc.

The Researcher thus concludes that Digital zakat, collective zakat, and digital platforms for zakat distribution to the poor and needy of the minority community can help in their upliftment, the community is the second largest population of India, and hence their financial, social, educational, regional upliftment will help to combat with the social evil of poverty, illiteracy, unemployment, and malnutrition. Their upliftment will help to achieve the goal of inclusive growth of all sectors of the economy. Thus zakat can be a tool for financial inclusion of the community for the overall growth of the country.

## 18. LIMITATIONS AND DISCUSSION FOR FUTURE WORK

The research basically analyses the impact of digitalization on zakat its management and disbursement. The study limits to a single digital payment platform Indiazakat.com, there are several other digital zakat payment platforms in India and around the globe. A comparative analysis could be done between the traditional mode of zakat payment and digital mode of payment or a collective impact of digital platforms on zakat collection and payment can be done in future.

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**Dr. Arceloni Neusa Volpato is Doctor and Masters in Psycholinguistics from UFSC, and graduated in Language Sciences from UFSC. Her interests are technology-oriented education, language acquisition, and learnings. At Unifacvest University Center, she coordinates the Transcultural Practices Masters and is Head of Foreign Affairs Office. She is President of the Latin American Association for Science, Technology and Innovation; Member of the Executive Council at FAI (India); Vice-President at Brazilian GEL and CWSIR chief ambassador for Latin America; as well as Advisor at Brazilian Ministry of Education (MEC), Santa Catarina State Research Foundation (FAPESC) and Pernambuco State Research Foundation (FAPESSE). She has been bestowed many awards and takes part in scientific committees apropos academic journals (Abralin, Holos (Brazil), SAYOD, JAPSS, JOHMAL (Turkey) and academic events. Dr. Volpato is an invited speaker at several programs and is also a promoter of diverse events. She has published books, chapters and papers in Brazil and abroad.**

**Dr. B. Balaji, is an acclaimed academician, global trainer and edupreneur. His expertise spans both corporate and academia backed by scholastic achievements. He graduated in Electronics and Communication Engineering; Masters in Business Administration as well as Corporate Secretaryship; Doctoral of Philosophy; and PG Diploma in Training and Development. He was awarded Gold Medal in the M.B.A. Program as well as All India First Rank and 2 Gold Medals in PG Dip. T & D. He is also certified by UGC via the NET exam. He is the recipient of several International and National Honours, has published 75 reputed ISSN papers and 4 patents. 14 research scholars have been awarded Ph.D. under his guidance. He is the Founder and CEO of SPECIAL MINDS. His expertise spans Human Resources Management and Development, Marketing, Training and Development, Research, Soft Skills, and Services.**

**Dr. S. Vasanthakumari is serving as Associate Professor in Pediatric Nursing in Institute of Health Sciences, Wollega University, Ethiopia. She has to her credit Ph.D. in Pediatric Nursing M.Sc. in Nursing and B.Sc. in Nursing with meritorious performance. Additionally, she has completed M.A. in Child Care and Education, P.G. Diploma in Educational Management and Supervision, Chief Emotional Intelligence Specialist and Certificate courses. She has over two decades of experience in teaching, clinical, research and administration. She serves as member of many professional organizations, has guided U.G. and P.G. students Research work, besides being an External Examiner. She has published 45 papers in Indexed Journals of repute, has organized and Chaired conferences, workshops, webinars, besides serving as Journal Reviewer. She has conducted 45 Research and Community Projects as Principal Investigator including funded projects. She has received many accolades that include Outstanding Contribution Award, Best Researcher Award, Best Professor Award, Best Research Scientist Award and Life Time Achievement Awards.**

**Dr. S. Karthikeyan, M.B.A., M.Phil., Ph.D., is a versatile telecom professional with 15 years of industry experience currently working as Senior Manager in leading IT/ITES organization in Chennai. Graduated in Business Analytics from IIM Trichy. He also delivers Guest Lectures at various B-Schools. He has published 10 research papers in referred International and National Journals. He has co-authored a book on “Service Quality of Management Education Institution”. Selected for “Performance Excellence Award” at 3rd International Academic and Research Excellence Award (IARE) 2021. He is a Member of All India Management Association (AIMA), lifetime member of the International Association of Commerce and Management (IACM) and Certified EUMMAS trainer (European Marketing and Management Association).**

**Dr. Divya R. Panjwani is an Assistant Professor in Department of Education, Integral University, Lucknow. She has completed her B.Ed., M.Ed., M.Com., MBA., MA (Sociology), MA (Economics) and Ph.D. (Educational Psychology). She has 9 Research Papers in National and International journals; 3 chapters in Edited Books as well as one edited book. Her expertise spans Information and Communication Technology, Statistical Analysis, Research, Teaching Methodology, Career counselling, Commerce and Accountancy. She has published an Academic Buoyancy Scale.**

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