

Unblocking Banking Technology for the New Millennium: Opportunities & Challenges



Editors

Dr. V. Prabakaran

Dr. Sathyanarayanan S R

Mr. C. Arun Kumar

About the Department

The B.Com. (Hons) International Accounting and Finance (IAF) program at SRM IST, Vadapalani, is meticulously designed to equip students with a robust theoretical foundation and practical expertise in global accounting and financial management. The curriculum integrates core business knowledge with application-based tools, fostering proficiency in financial analysis, accounting software, and financial modeling. Emphasizing industry relevance, the program prepares graduates for leadership roles across global accounting, finance, business management, and entrepreneurship. With a strong focus on international standards and evolving financial landscapes, it enables students to navigate complex financial regulations, drive strategic decision-making, and adapt to dynamic business environments, ensuring a competitive edge in the global marketplace.

Programs Offered

- B.Com (Honours) - International Accounting and Finance
- Ph.D.

B.Com with ACCA Integration

The B.Com with ACCA (Association of Chartered Certified Accountants) integration is a specialized program designed to provide students with globally recognized accounting and financial expertise. This curriculum aligns with ACCA's professional qualifications, enabling students to earn multiple exemptions from ACCA exams while pursuing their degree. The program covers advanced accounting, taxation, audit, financial management, and business law, equipping graduates with industry-relevant skills. With a strong focus on global accounting standards and professional competency, this integrated course enhances career opportunities in corporate finance, auditing, taxation, and consultancy, both in India and internationally.

National Conference on Unblocking Banking Technology for the New Millennium

List of Papers Presented

S.No	Title Of The Paper	Authors
1	Exploring The Impact Of Work-Life Balance And Employee Burnout On Turnover Intentions In Banking Industry	Harisha Jasmine M D & Kotteswaran D
2	Critical Evaluation Of Green Financing In India	Dr Nandini N, & Ms Shobana T
3.	Integrating Ai And Predictive Analytics For Enhanced Supply Chain Risk Management: A Comprehensive Framework For Resilience And Real-Time Decision-Making	Dr. Elantheriyan & Nishanth J.K
4.	A Study On Financial Trends In The Automobile Industry With In A Technologically Driven Landscape	K. Harish & Dr. Tamilselvan. P
5.	Artificial Intelligence In Hr: Pioneering Digital Transformation For Industry 4.0 Success	Manoj Govindaraj & Sarath B
6.	Impact Of Recruitment Strategies On Quality Resume Towards Job Portals	Santhosh Kumar D & Mrs. M. Felisiya
7.	Impact Of Communication Gaps On Organization Efficiency In Automobile Industry	Syed Shahith Y & Dr. K. Ravishankar
8.	The Role Of Infographics In E-Commerce: Assessing Their Impact On Customer Understanding, Journey, Purchase Decisions, And Satisfaction	Logesh R & Dr. Geeta Kesavaraj
9.	Exploring The Social Media Marketing Factors For Improving Customer Satisfaction	Yugendran N & Dr. M Rajapriya
10.	The Dark Side Of Digital Marketing: Understanding Financial Fraud In The Digital Age	Dr. D. Venkadesh & Ramya.S
11.	A Study On The Role Of Big Data Analytics In Improving Supply Chain Management Performance	Prithiviraj J & Dr. P. Elantheraiyan
12.	To Study The Power Of Digital Marketing In Reaching Salon Customer	Boys Mohamed. M & Dr. Raja. S
13.	A Study On The Role Of Green Bonds And Sustainable Debts Instruments Fortering Collaboration Between Corporates And Public Investors	Jaiganesh N & Dr . Lumina Julie R
14.	A Study On The Role And Effects Of Foreign Banks On India's Financial Landscape	Ms. Sushanthika V & Dr. Ashlin Nimo J R
15.	Security Threats And Defending Of Fintech Applications Through Artificial Intelligence	Dr.Sriprasadh K
16.	An Analysis Of The Indian Banking System's Contribution And Promotion Of Direct Benefit	Mrs, N. Jeevitha & Dr. R. Thamilmani

	Transfer (Dbt)	
17.	A Study On Customer Satisfaction Towards Mobile Banking Services In Chengalpattu Town.	Mr. P Manikandan & Dr. V. Prabakaran
18.	Indian Ethos & Culture For Holistic Growth & Development	Rashmitha Priya.V & Dr. Ravishankar .K
19.	A Study On Impact Of Mudra Loan On Micro Enterprises In Tamilnadu	B. Elumalai & Dr.P. Ramalingam
20.	A Study On Mobile – Wallets Among The Youth: A Study Pre And Post Covid – 19 Scenarios	Dr V Prabakaran & Mr A Charles
21.	Effects Of Social Media On Mental Health	Jagadesh Kumar N & Dr. K. Ravishankar
22.	Global Trade Dynamics: A Trade War Tension Between Us And China	Sampath Kumar, Khaja Mohinuddin, Sushma Premkalal
23.	A Study On Role Of Artificial Intelligence In Optimizing Warehouse Operations And Inventory Management.	Mr. Sachin S & Dr. S. Raja
24.	A Study On Recent Developments In Banking Sector	Mr. Chippolu Nagaraja & Dr. Ravi B,
25.	The Impact Of Ai And Ml On Financial Decision-Making, Fraud Detection, And Personalized Financial Services Ethical Challenges And Integration With Blockchain Technologies	R.Shyam Sundar & Dr. Lumina Julie.R
26.	Future Of Digital Banking In India: Trends And Transformations	Mr. S. Rameshkumar & Dr. V. Prabakaran,
27.	A Study On Quality Of Work Life Of Power Loom Weavers In Thiruparkadal Village, Ranipet District	Mr Ponnurangam B, & Dr. G Dhamodharan

Dr. Ravi Pachamuthu
Chairman – SRM Group



Message

It is with great pleasure to release the proceedings of National Conference on *Unblocking Banking Technology for the New Millennium*, Organised by the Department of Commerce (Hons) International Accounting and Finance, an insightful compilation that delves into the transformative evolution of banking technology. In an era where financial institutions are at the forefront of innovation, this volume provides a timely examination of the challenges and opportunities that arise as technology reshapes the global banking landscape.

As we stand at the threshold of the new millennium, the financial sector finds itself navigating a rapidly changing environment—one that demands not only a revaluation of traditional banking practices but also the integration of cutting-edge technological advancements. From block chain and artificial intelligence to digital currencies and cloud computing, the potential to reshape the future of banking has never been more profound.

This edited volume brings together the expertise of leading scholars, practitioners, and industry experts, each contributing valuable insights that explore how we can unblock and leverage the full potential of emerging technologies. The book not only offers a comprehensive understanding of these advancements but also provides practical frameworks for addressing the barriers that may hinder their full-scale adoption. The contributions within offer guidance on overcoming regulatory challenges, mitigating risks, and ultimately building more inclusive, secure, and efficient banking systems for the 21st century.

The authors present a diverse array of perspectives, each shedding light on the multifaceted dimensions of banking technology—ranging from technological innovations to the socio-economic implications of these changes. The volume is a reflection of the increasing convergence between finance and technology, highlighting how collaboration across sectors will be essential in shaping a more connected and resilient financial system.

In closing, *Unblocking Banking Technology for the New Millennium* is more than a collection of research papers—it is a call to action. It challenges readers to think critically about how technological advancements can be harnessed to drive positive change within the banking sector. I hope this volume serves as both an invaluable resource and a source of inspiration as we embark on the next chapter of the financial technology revolution.

Chairman

Ms. Harini Ravi,

Director Institutional Development and Innovation

SRM Group



Message

I am pleased that the Department of Commerce (Hons) International Accounting and Finance organising a National conference on *Unblocking Banking Technology for the New Millennium*, a timely exploration of how emerging technologies are reshaping the banking sector. As financial institutions face rapid change, this volume provides crucial insights into how innovations like block-chain, AI, and digital currencies can unlock new possibilities for banking.

Featuring contributions from leading experts, the book examines both the challenges and opportunities of technological adoption in banking. It offers practical solutions for overcoming barriers, ensuring that we can build secure, efficient, and inclusive systems for the future.

This collection is not just a study—it is a call to action for all stakeholders in the financial ecosystem. I hope it inspires new thinking and drives progress as we navigate the future of banking technology.

Director

Dr V Prabakaran

Assistant Professor and HOD

Department of Commerce Hons IAF



Message

It is with great enthusiasm that I release the proceedings of the National Conference on *Unblocking Banking Technology for the New Millennium*, a crucial exploration into the future of banking. As technology continues to disrupt the financial landscape, this volume offers a deep dive into how innovations like AI, block-chain, and digital currencies are transforming the way we bank.

This collection brings together the voices of experts who tackle both the challenges and opportunities that come with adopting new technologies. The book provides actionable insights into overcoming obstacles such as regulatory concerns, security risks, and system integration, paving the way for more efficient, secure, and inclusive banking solutions.

Unblocking Banking Technology for the New Millennium is a thought-provoking resource for anyone looking to understand and navigate the rapidly evolving world of financial technology. I hope it serves as both an informative guide and a catalyst for future progress in the industry.

HOD

EXPLORING THE IMPACT OF WORK-LIFE BALANCE AND EMPLOYEE BURNOUT ON TURNOVER INTENTIONS IN BANKING INDUSTRY

Harisha Jasmine M D¹ & Kotteswaran D²

M.B.A. Student¹, Assistant Professor²

Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi

E-mail: vtp3985@veltech.edu.in, Contact: 8072927281

Abstract

In contemporary times, the organizations and technology have transformed significantly creating issues on work life balance, which in turn contributes to employee burnout and turnover intentions. This paper examines the effects of work life balance and employee burnouts on the turnover intentions of employees and makes a case that the work environments should be kept at equilibrium to enhance retention and satisfaction of employees. Although moderating causes of importance have been established on how work life balance impacts turnover intentions including the influence of burnout, the volume of studies in this area is very few hence there is a clear gap. The research paper thus aims to explore the management of work-life-balance within the organization and how it influences the work stress burnout and turnover intention of the employees. The focus of this study is to analyse the association between work life balance, burnout, and turnover intention to examine what interventions can be made by institutions to create an environment that promotes the wellbeing of its employees. Primary data was collected using a structured questionnaire from a selected sample size of 177 employees. The descriptive research methodology in the research work was used in collecting primary data. The data were analysed by using different statistical tools such as correlation and one way analysis of variance considering work life balance, burnout and intention to leave. The results suggest that effective management of work-life balance greatly assists in mitigating employees' burnout which further minimize the likelihood of them leaving the organization. The findings indicate that a well-maintained work-life balance significantly reduces employee burnout, which in turn lowers turnover intentions. Additionally, employees with higher job satisfaction and adequate compensation report lower levels of job insecurity and turnover intent. The study confirms that burnout mediates the relationship between work-life balance and turnover intentions, with flexible

work arrangements, supportive management, and recognition emerging as effective strategies for employee retention. These aspects support the need for fostering a healthy work environment through work-life balance interventions to boost the wellness of employees and their loyalty to the organization. By tackling employee burnout, the organizations can integrate work-life programs, flexible work schedule and proper remuneration, which in turn will result in lowering organizational costs related to staff turnover.

Key words: Work-life balance, employee burnout, turnover intentions, job satisfaction.

Introduction

The continuous growth in technological levels and the increasing rate of globalization have changed the way people work today, which in turn has influenced organizational design and the societal perception of work. These changes have introduced new workplace dynamics, compelling organizations to address the accompanying challenges (Sonnentag, 2018). Probably the greatest challenge arising from this shift is managing individuals' work-life balance effectively (Ng & Feldman, 2022). The continuous growth in technological levels and the increasing rate of globalization have changed the way people work today, which in turn has influenced organizational design and the societal perception of work. These changes have introduced new workplace dynamics, compelling organizations to address the accompanying challenges (Sonnentag, 2018). Probably the greatest challenge arising from this shift is managing individuals' work-life balance effectively (Ng & Feldman, 2022). What was once considered a personal achievement, or an optional goal has now become a significant concern for both employees and employers. Individuals working in any organization have obligations to themselves and to society. Every employee has personal and social responsibilities, while organizations realize how work-life balance affects employee health, job satisfaction, and overall organizational effectiveness (Yildirim & Aycan, 2021). As such, work-life balance is crucial not only to employees but also as one of the main determinants of organizational performance (Park, Kim, & Lee, 2021). There has been an increase in the extent to which work, and non-work commitments are separated in recent times most especially with the changes that have occurred due to the COVID-19 pandemic, which required a lot of employees to work on remotes. For some people, this external environment forced the workplace into the home, thereby destabilizing the conventional demand for work life balance (Ng & Feldman, 2022).

Work-life balance can be defined as the extent to which an individual could satisfy the demands of their occupations and still have time for other aspects of their life such as family, society, or leisure pursuits (Rathi & Rastogi, 2021). On the other hand, the disequilibrium of work and life, which is commonplace at present, has its pitfalls; it leads to the withdrawal or burning out of employees which is an enduring response to chronic exposure to stress characterized by feelings of fatigue, disinterest and low sense of self-efficacy (Sonnentag, 2018; Yildirim & Aycan, 2021).

Statement of problem

The contemporary work environment is marked with positive changes of technology and globalization. This has made the challenges of maintaining work-life balance more pronounced and consequently the levels of employee burnout and turnover intentions have increased. Imbalance between work and personal activities results in job dissatisfaction, low productivity, and loss of commitment to the organization. As much as the studies tend to agree on these challenges, not much is known about how work-life balance influences turnover intentions especially in the context of burnout. In addition, only a few studies present practical recommendations that organizations can utilize to address the issue of employee turnover and general well-being. To fill these voids, this study investigates work-life balance, burnout, and turnover intentions to give an organizational policy on employee retention and satisfaction.

Literature Review

- **Lu, H. & Sun, J. M. (2022):** This research highlights the work-family hybridity of Chinese firms and finds that, active management of working times and load helps to minimize employee job burnout and minimize turnover intentions. The authors advocate for the introduction of work-life programs to boost employee retention.
- **Sahabuddin, R. M., & Rusdi, A. R. (2022):** This study which concentrates on health care personnel during the pandemic, demonstrates that high intentions to resign are associated with work-family conflicts and burnout. It lays emphasis on the need for work-life balance policies in high-stress and burnout prone occupations to reduce turnover.
- **Kowalski, T., & Loretto, W. (2021):** The purpose of this study is to examine human resource management strategies aimed at promoting its employee's well-being, paying special attention to work-life integration which is important in alleviating burnout and

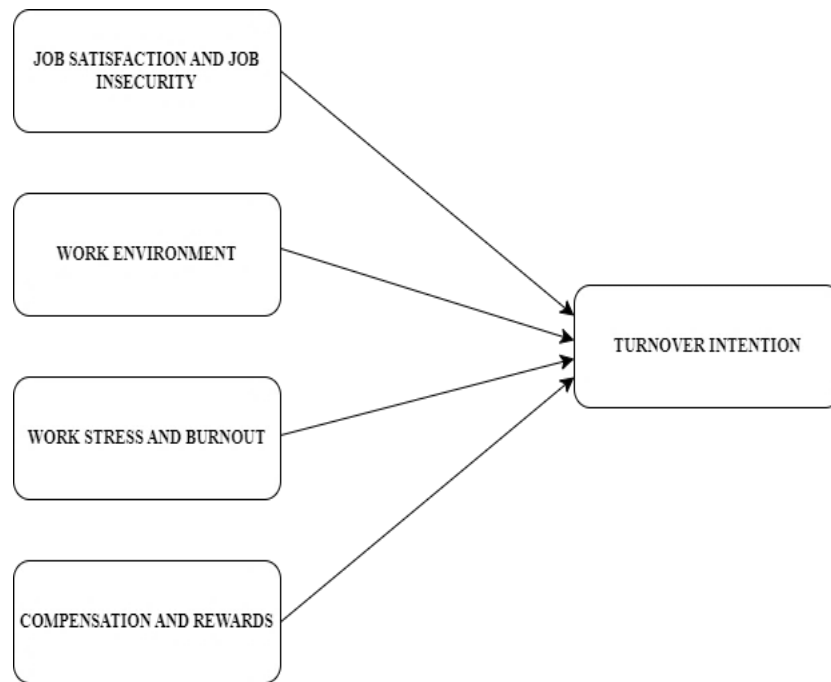
increasing employee turnover intent retention. Furthermore, employees who were part of organizations with flexible and accommodating well-being policies availed themselves and stayed on longer.

- **McCauley, K. D., & Hill, C. A. (2021):** This study assesses job-related stress and burn out experienced by remote workers due to the COVID-19 crisis. The study also explains the mechanisms of how and why job stress may lead to the desires to leave the profession, with a special ambivalence towards interference of work and non-work.
- **Kim, H., & Kao, D. (2020):** This meta-analysis identifies work-life balance and burnout as primary predictors of turnover intentions in U.S. child welfare workers. It stresses the need for robust work-life policies to reduce burnout and improve retention in high-stress jobs.
- **Labrague, L. J., & De Los Santos, J. A. (2020):** In this research, work-life balance is elaborated as a moderator in alleviating the anxiety, mental health issues as well as decrease the turnover intention of nurses who are affected by the COVID-19 pandemic. The paper stresses the importance of work-life balance practices amongst health care personnel.

Objectives of the Study

- To ascertain the key factors that contribute to employee's job satisfaction and job insecurity.
- To examine various aspects of the physical and social work environment.
- To identify the primary factor of workplace stress and burnout among employees.
- To determine the components of compensation and reward systems.

Conceptual Model



Hypothesis

H0: There is no significant relationship between work-life balance and employee burnout on turnover intentions.

H1: There is a significant relationship between work-life balance and employee burnout on turnover intentions.

Limitations of the Study

- The research was conducted among employees only in Chennai and thus cannot be generalized to cover other regions.
- The research relies heavily on participant self-data collection which is subject to bias due to inbuilt participant's response or social desirability bias.

Methodology

This research employs a descriptive method, which is the most appropriate fit in systematically collecting and presenting data on work-life balance, burnout, and turnover intentions. This design allows for the determination of a link that exists between these variables. The study adopts a non-probabilistic sampling method with a sample size of 177 employees. The primary data is obtained with the use of a structured questionnaire which has been facilitated in person. The survey gauged respondent's views on work-life balance,

perceived levels of burnout and willingness to leave the company. To analyse the information gathered statistical methods such as correlation and one way analysis of variance are applied to determine whether any relationships exist above chance levels. This study however seeks to explain the role of work-life balance and burnout, concerning turnover intentions and offers measures for enhancing retention of employees.

Analysis

A. Correlation

Table: 1 Correlation

Correlations					
		Job satisfaction and job insecurity	Work environment	Work stress and burnout	Compensation and rewards
Job satisfaction and job insecurity	Pearson Correlation	1	.717**	.646**	.648**
	Sig. (2-tailed)		.000	.000	.000
	N	177	177	177	177
Work environment	Pearson Correlation	.717**	1	.804**	.704**
	Sig. (2-tailed)	.000		.000	.000
	N	177	177	177	177
Work stress and burnout	Pearson Correlation	.646**	.804**	1	.776**

	Sig. (2-tailed)	.000	.000		.000
	N	177	177	177	177
Compensation and rewards	Pearson Correlation	.648**	.704**	.776**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	177	177	177	177
**. Correlation is significant at the 0.01 level (2-tailed).					

The correlation matrix shows significant positive relationships between **job satisfaction** and other dimensions such as **work environment, work stress, burnout, and compensation and rewards**, with p-values less than 0.01, indicating strong associations. These dimensions also positively correlate with each other, suggesting that a supportive work environment with lower stress and better rewards leads to higher job satisfaction. This emphasizes how interconnected these factors are in influencing employee motivation and well-being.

B. One-Way ANOVA

Table 2: One-Way ANOVA

ANOVA						
Consolidated Variables		Sum of Squares	df	Mean Square	F	Sig.
Job satisfaction and job insecurity	Between Groups	191.547	3	63.849	4.757	.003
	Within Groups	2322.091	173	13.422		
	Total	2513.638	176			
Work environment	Between Groups	99.232	3	33.077	2.487	.062
	Within Groups	2300.949	173	13.300		
	Total	2400.181	176			
Work stress and burnout	Between Groups	56.657	3	18.886	1.488	.220
	Within Groups	2196.202	173	12.695		

	Total	2252.859	176			
Compensation and rewards	Between Groups	37.553	3	12.518	1.729	.163
	Within Groups	1252.696	173	7.241		
	Total	1290.249	176			

The ANOVA analysis indicates significant differences only **between job satisfaction and job insecurity**, with a p-value of 0.003. The **work environment** shows a marginally significant result ($p = 0.062$), **while work stress, burnout, and compensation** do not show any significant differences ($p > 0.05$). This suggests that organizations should focus on enhancing **job satisfaction to reduce turnover intentions**, while the other factors may not need immediate attention.

Discussion

The ANOVA and correlation analyses provide insights into the interplay among four key variables: Job Satisfaction and Job Insecurity, Work Environment, Work Stress and Burnout, and Compensation and Rewards. The correlation analysis shows significant positive relationships ($p < 0.01$) across all dimensions, suggesting that improvements in one dimension are associated with positive outcomes in others. This interdependence indicates that enhanced job satisfaction correlates with better work environments, lower stress levels, and increased rewards, all of which are vital for employee well-being and motivation. The ANOVA results further reveal significant differences for Job Satisfaction and Job Insecurity ($p = 0.003$), highlighting this as an area with noticeable variation, whereas Work Environment, Work Stress, and Compensation do not show significant differences across groups. These findings imply that organizations could prioritize enhancing job satisfaction to improve retention and engagement, while other factors may require less immediate attention. Altogether, a holistic approach addressing these interconnected variables may optimize employee experience and overall organizational productivity.

Conclusion

The study highlights the existing connection between work-life balance, burnout, and turnover intentions in contemporary companies. It shows that good work-life practices can

curb employee burnout and reduce their intentions of leaving the organization. Also, job satisfaction, a favourable work culture, and fair payment, correspond to low levels of burnout and high retention rates. This indicates that organizations stand to gain from encouraging flexible working hours and implementing measures designed to take care of the employees. Therefore, work-life balance and prevention of employee burnout should hinge on improving employee commitment towards the organization and its efficiency. This study emphasizes that it is imperative for workplaces to implement measures aimed at improving employees' contentment, reducing turnover and providing a more conducive atmosphere within the organization.

References

- Ng, T. W. H., & Feldman, D. C. (2022). The influence of work-life balance on burnout and turnover intentions: A meta-analysis and review of the literature in the context of COVID-19 pandemic stressors in the workplace environment. *Journal of Business Research*, 139, 205–216. <https://doi.org/10.1016/j.jbusres.2021.09.001>
- Sonnentag, S. (2018). Work-life balance: Theoretical perspectives and empirical findings. *European Journal of Work and Organizational Psychology*, 27, 277–292. <https://doi.org/10.1080/1359432X.2018.1459929>
- Yildirim, M. B., & Aycan, Z. (2021). Work-life balance as a predictor of mental health outcomes among employees in Türkiye. *International Journal of Stress Management*, 28(4), Article e12345. <https://doi.org/10.1037/str0000245>
- Park, Y., Kim, J., & Lee, S. Y. (2021). Work-life balance as a moderator in the relationship between job stress and turnover intention among employees in South Korea. *International Journal of Environmental Research and Public Health*, 18, Article 1789. <https://doi.org/10.3390/ijerph18041789>
- Rathi, N., & Rastogi, R. (2021). Exploring the role of work-life balance as a moderator between burnout and turnover intention. *International Journal of Workplace Health Management*, 14, 275–290. <https://doi.org/10.1108/IJWHM-11-2020-0197>

- Frontiers Teacher burnout and turnover intention in higher education
<https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2022.1076277/full>
- Burnout As Predictor Towards Employee Turnover Intention
<https://sifisheriessciences.com/index.php/journal/article/view/1119>
- The Effects of Job Stress on Burnout and Turnover Intention
<https://pmc.ncbi.nlm.nih.gov/articles/PMC11047568/>
- Impact of Work Stress and Job Burnout on Turnover Intentions among Hotel Employees <https://pmc.ncbi.nlm.nih.gov/articles/PMC9368148/>
- Lu, H., & Sun, J. M. (2022). Work-life balance, employee well-being, and turnover intentions in Chinese enterprises. *Asian Business & Management*, 21(1), 78–97.
<https://doi.org/10.1057/s41291-021-00138-9>
- Sahabuddin, R. M., & Rusdi, A. R. (2022). Work-family conflict, burnout, and turnover intentions among healthcare workers during the pandemic. *BMC Health Services Research*, 22, 567. <https://doi.org/10.1186/s12913-022-07919-7>

Critical Evaluation of Green financing in India

Dr Nandini N, Assistant Professor, Department of Commerce (Aided)

Ms Shobana T, Assistant Professor, Department of Commerce (Self Supporting)

Ethiraj College for Women (Autonomous), No 70, Ethiraj Salai, Chennai 600 008, Tamil
Nadu, India

nandhini_n@ethirajcollege.edu.in , shobana_t@ethirajcollege.edu.in

Abstract:

Sustainable Development Goals has been gaining momentum in recent years with global warming, natural calamities, poverty, and other deprivations increasing. It majorly concentrates on improving human life and protecting the environment. UN Environment has been working with countries' financial regulators and finance sector to align with the 2030 sustainable development goals. Sustainable bonds have an important role to play in addressing today's social and environmental challenge. The proceeds are utilized for projects that contribute to environmental sustainability. In this context the Green bond principles were developed by an industry working group administered by ICMA. A strong and sustainable financial system is required to build a balanced and green global economy. In the recent years, green bonds have gained importance and mobilized capital for projects with environmental benefits. Lot of efforts in greening the financial system has been undertaken with a push for green monetary policy. The growth of the market largely depends on the stimulus efforts and policy directions. As per the Emerging Market Green Bonds, 2019, 35 emerging markets have issued green bonds since 2012, five emerging markets have debuted with new issues in 2019, 59% cumulative green bond issued by financial institutions, 21% increase in green bond issues from 2018, 52-billion-dollar green issues in 2019, and there were 168-billion-dollar green bonds outstanding by the end of 2019. Green finance majorly

concentrates on supporting the public sector to create an enabling environment, promotion of financing mechanisms like green bonds, capacity building of community enterprises on micro credit. In this study, the authors have attempted to study the context of green finance with reference to Sovereign Green Bonds, the sectoral concentration of green financing, the pattern of GSS bond issue and policy framework promoting the issue of green bonds in India.

Keywords: GSS Bonds, Sovereign Green Bonds, Green Bonds, Sustainability Linked Bonds, ICMA

JEL Classification: F65, G21, G23, G28, H63

I Introduction:

Green Bonds are fixed income instruments whose proceeds are utilized for projects with environmental benefits with a focus on renewable energy, energy efficiency, water, clean transport, climate change mitigation and adaptation. The Green Bond Principles developed by ICMA have four components which deal with use of proceeds, process for project evaluation and selection, management of proceeds and reporting. Many countries have developed their own guidelines aligning with the Green Bond Principles.

The concept of green bond materialized in the 2000's and has grown rapidly over the years. The first green bond was issued in 2008 in Europe. The green bond market started growing remarkably after the Paris Climate Agreement, 2015. The Indian Constitution provides for safeguarding of forests and wildlife. In 2008, Government of India launched its National Action Plan on Climate Change giving impetus to energy efficiency, increased forest cover and development of sustainable habitats. Further, India committed to reduce carbon emission intensity by 45% compared to 2005 in the India's 2030 Climate targets submitted to the Paris Agreement. This required huge funding. Government of India considering the importance of the growing climate crisis decided to mobilize private sector capital. On

February, 1st 2022, the finance minister announced the Government of India's plan to issue sovereign green bonds to mobilize resources for green infrastructure. On January 25th, 2023, the Government of India issued the first tranche of Sovereign Green Bonds worth 80 billion dollars and on February 9th, 2023, the second tranche issue of 80 billion dollar in sovereign green bonds was announced. The bonds issued were of 10-year and 5-year tenure. Though the response has been tremendous, and Indian corporates have raised funding through issue of green bonds other than Sovereign Green Bonds, it is not sufficient to meet the funding requirements of India's green projects. The Indian green bond market is yet to grow in depth and breadth though there is an increased response from institutional and retail investors. Indian issuers have issued a greater amount of green bonds when compared to other emerging countries but are way behind China which is standing first in the issuance of green bonds.

II Review of literature:

Ursule Yvanna Otek Ntsama, Chen Yan, Alireza Nasiri and Abdel Hamid Mbouombouo and Mboungam (2021) in their paper have studied the issuance of green bonds in low and middle-income countries. The authors have discussed the relevance of a green economy and how a green economy can help solve the challenges faced by low and middle-income countries. The authors finally recommend a range of potential areas for intervention.

Peterson K. Ozili, (2019), in the article, has reviewed the existing literature on green finance. The author has studied the strategies adopted cross country, the challenges existing, role of regulators and financial institutions. The challenges and solutions with respect to green financing have been discussed by the author. The author concludes that green finance does have an impact on the environment, society and does contribute towards climate mitigation. But lack of awareness, no proper definition of green finance, lack of policy coordination, lack of profitable incentives etc are an impediment to the growth of green financing options.

Romain Berrou, Philip Dessertine & Marco Migliorelli, (2019), have highlighted the role of green finance in achieving the sustainable development goals. The authors provide a detailed picture of the green securities, financial products available in the markets. They have also discussed the investment trends existing in the market. They conclude by stating the problems and challenges existing in the market and what needs to be done to consider green finance as an important investment avenue for investors.

Chengchao Lv, Baocheng Bian, Chien-Cheng Lee, Zhwien He (2021), Research on the regional gap, spatial pattern, and the trend evolution of China's green finance development has been studied by the authors. Data from 2010 to 2019, has been used by the authors to construct a policy and market oriented green financial development index system. The authors conclude that the overall development index of green finance in China has risen but the overall regional gap is on the decline. Inter-regional gap has been identified as the main source of development gap of green finance, a polarization trend exists in the distribution of the same and the development of green finance shows a club convergence phenomenon.

Isaac Akomea-Frimpong, David Adeabah, Deborah Ofosu & Emmanuel Junior Tenakwah, (2021), the authors have reviewed the existing studies on green finance with respect to banks. They have used a content analysis approach to critically analyze and summarize the studies. Green securities, green credit and green infrastructure bonds have been identified as the key green finance products offered by the banks. Factors like environmental and climate change policies, interest rates, religion, risks, social inclusion, social justice, and banking regulations are influencing green finance policies from banks.

Green finance in India is at a nascent stage and an attempt has been made to understand the growth of the same in India as it has not been researched much.

III Objectives:

- Financial and practical evaluation of the green bonds' issuance in India.
- Green bonds as a viable financing option to bring in environmental impact.
- Global Practices to promote green bond investment.

Financial and practical Evaluation of the green bonds' issuance in India:

India occupies second place in green bonds market with an astonishing \$17,750 million. Many players in the Indian market are yet to utilize the green bond space available to them. Nevertheless, a few institutions, listed as the top issuers of green bonds by Bloomberg NEF in India have taken up green bond issue when only less takers for such bonds were available in the market.

Greenko Group had USD denominated green bond issue through its three subsidiaries. Greenko investment Company had issued green bonds of \$500M Million, Greenko Solar Mauritius Limited for \$1035 Million and Greenko Dutch BV valued at \$940 Million in 2021. According to assurance report by Sustainalytics, receipts from the issue had been invested in hydro (30%), wind (38%), and solar (32%) power projects. National Hydroelectric Power Corporation (NHPC) had raised Rs 996 crores as green bonds issued through private placement in 2023.

India Clean Energy Holdings, a wholly owned subsidiary of ReNew Power threw open a green bond issue worth of \$400 Million in 2022(\$460 Million were raised in 2021). The issue was listed in Singapore stock exchange. The receipts were used in solar (38%) and wind (62%) power generation.

Continuum Green Energy whose major stake is held by Morgan Stanley Infrastructure Partners listed their green bonds in Singapore stock exchange worth of \$550 Million out of

which 76% was invested in wind energy and 24% in solar energy. Their maiden bond issue of \$561 Million in 2021 had been subscribed by IFC.

Indian Renewable Energy Development Agency Limited (IREDA) issued Rs. 8,650 million worth of green bonds in the financial year 2021-22. 69% was invested in wind energy, 21% in Small Hydro Projects (SHP) and the remaining in laying the grid connection as per the compliance report given by KPMG. Back in 2017, IREDA had raised \$300 Million in the form of green masala bond which was the first green masala bond to be listed in London Stock Exchange's International Securities Market (ISM).

Adani Green Energy Limited raised \$750 Million in the year 2021. Most of the funds went to solar energy (67%) and the remaining for wind project (17%) & hybrid projects (67%). The company's bonds have been listed in US stock exchange. Azure Power has raised bonds exclusively for solar energy amounting to Rs 24,400 million in the form of senior notes listed in Singapore stock exchange.

In the year 2015, Axis bank issued its first green bond of \$500 Million which was listed in London Stock Exchange (matured in May 2021). As on 31st March 2021, a major chunk of their green bond's proceeds (73%) was invested in wind and solar energy followed by urban mass transport (12.90%). Axis bank had roped in Ernst & Young to conduct an independent audit on the utilization of green bonds proceeds. In the financial year 2021-22, Axis bank issued Sustainable Additional Tier 1(AT1) bonds worth of \$ 600 Million. This issue was different from the previous bond issue as this issue focused on sustainable rather than green initiatives alone. Hence the bank had diverted the bond issue proceeds to socio economic projects, affordable housing, healthcare – to name a few apart from the investment in the green energy. A major chunk of the amount (57%) was invested in projects that empower the society. 28% of funds was invested in green affordable housing.

Export import bank of India (EXIM) issued US 10-year treasury bond -a sustainable bond, in two tranches in the year 2023. The first tranche worth of \$ 1,000 Million in January 2023 and \$ 98.50 Million in march 2023. About 38% of the allocated proceeds went into developing infrastructure and essential services followed by 32% of funds in green transportation. Sustainability assurance limited has assessed the impact of the sustainable funds used to implement projects in various countries like Tanzania, Mauritius, Cambodia, Nepal, and Sri Lanka. Earlier in 2015, the bank has raised \$ 500 Million as US 10 billion Euro – Medium Term Bonds.

Rural Electrification Corporation (REC) had raised \$450 Million as 10-year green bonds listed in London and Singapore Stock Exchange. KPMG certified that the funds were used for the following purpose: 87% in solar plants and 2% in wind energy.

In 2015, YES Bank went in for its first green bond issue amounting to \$160 Million followed by another issue worth of \$50 Million in the same year. The above raised amount was invested in wind energy (43%) and solar energy (57%). Another round of \$50 Million was raised as a private placement through IFC in the form of green masala bonds. In 2016, YES Bank opted for a private placement issue of 7-year green infrastructure bond along with the Dutch development bank, FMO, a first of its kind in India. 74% was invested in developing sustainable wind energy projects and 26% was utilized in laying solar panels.

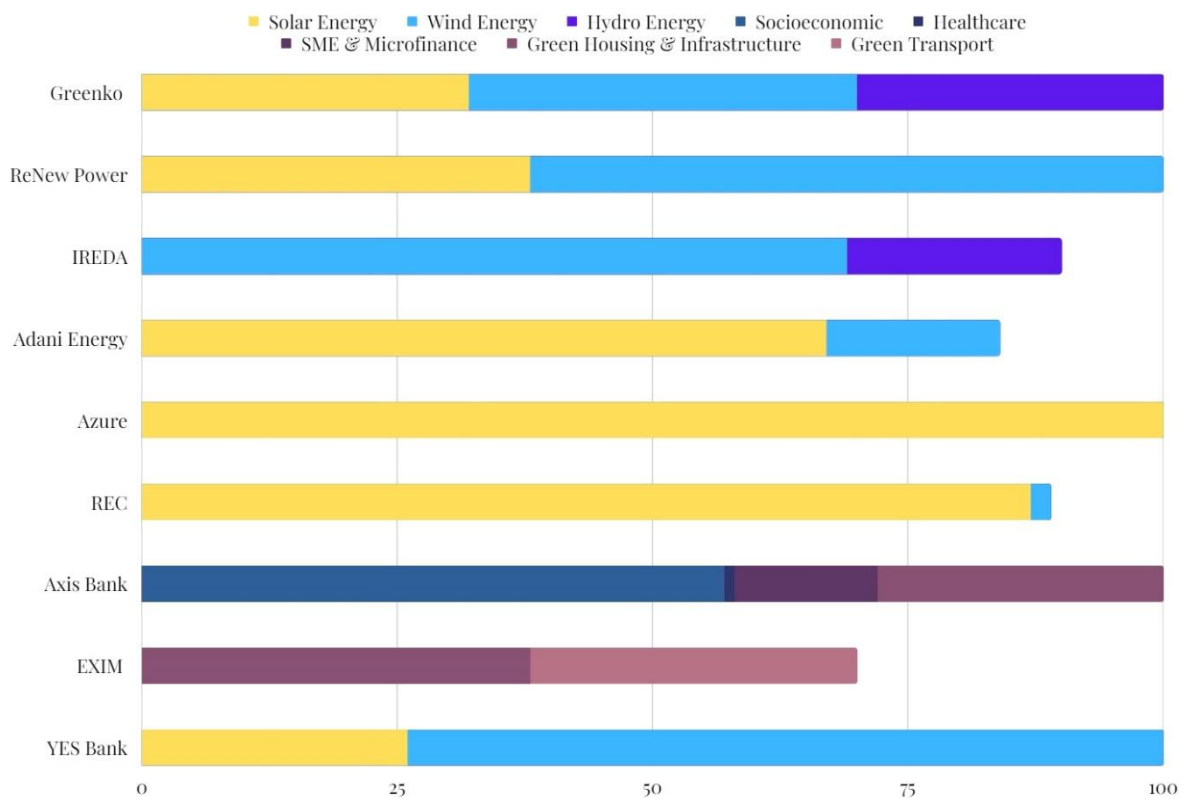
Though India, as an emerging GSS bond market is doing well with respect to the issue size, there are other facts to contemplate. Most of the above-mentioned tranches issued are denominated in US dollars and are listed in Singapore, London stock exchanges or at NASDAQ. The issue was made in the form of green masala bonds, offshore bonds and AT1 bonds. AT1 bonds was put forward by Basel norms after the 2008 economic crisis for the bank to have a broader capital base. But the problem with these bonds is that they are

perpetual and they can be written off at any point of time leaving the investors in a lurch.

Adding to this few of the issues have been subscribed through private placement.

Chart 1:

Issue of Sustainable Bonds in India for FY 2021-22

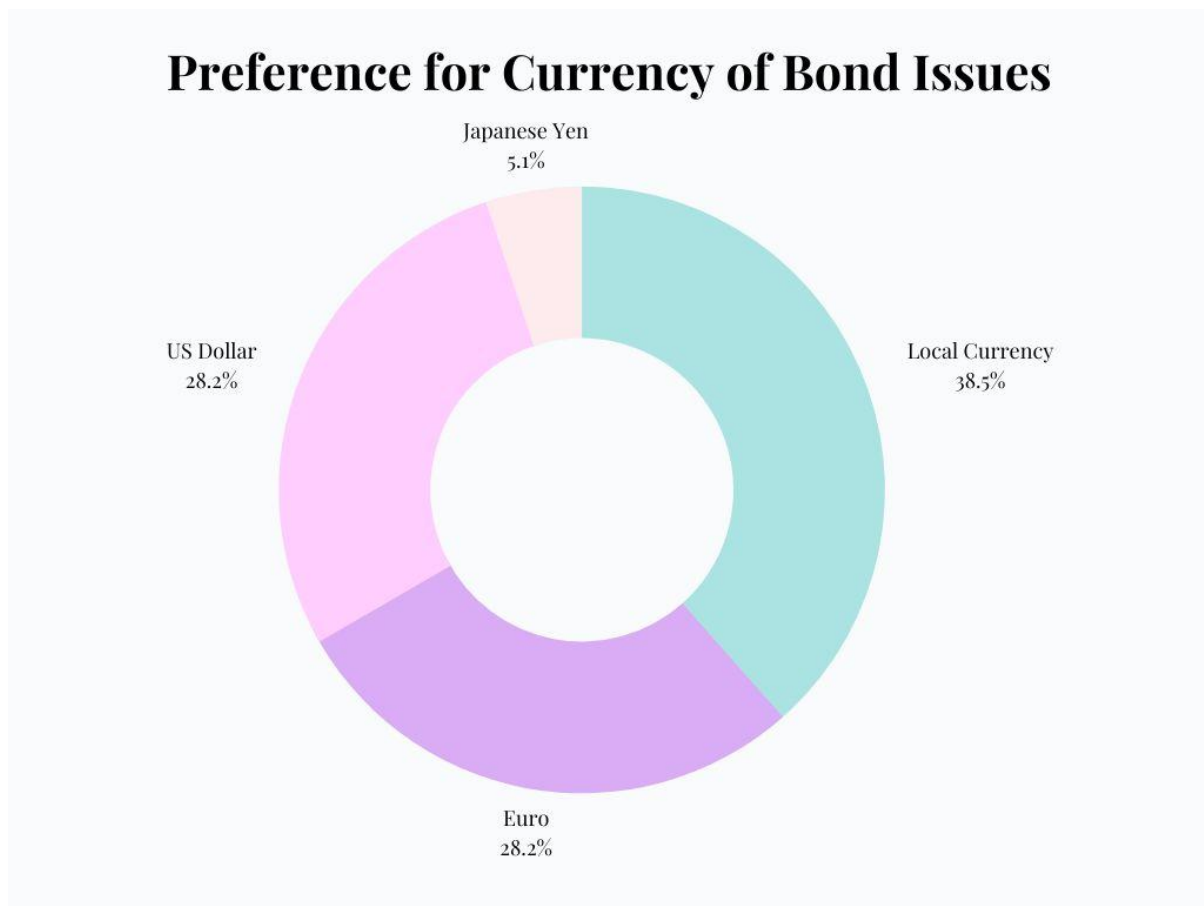


Source: Respective company's sustainable, green bond, Annual report for the year 2021-22

From chart 1, the pattern of GSS bond in India for the financial year 2021-22 can be traced.

The top issuers of sustainable bonds in India have been power generation companies. Instead of issuing multifarious GSS bonds such as sustainable bonds, sustainability linked bonds, the companies just focus on green bonds.

Chart 2:



Source: Data collected by Debt Management Office of World Bank, 2022

Chart 2 reveals that investors would opt for GSS bonds if it was denominated in their local currency.

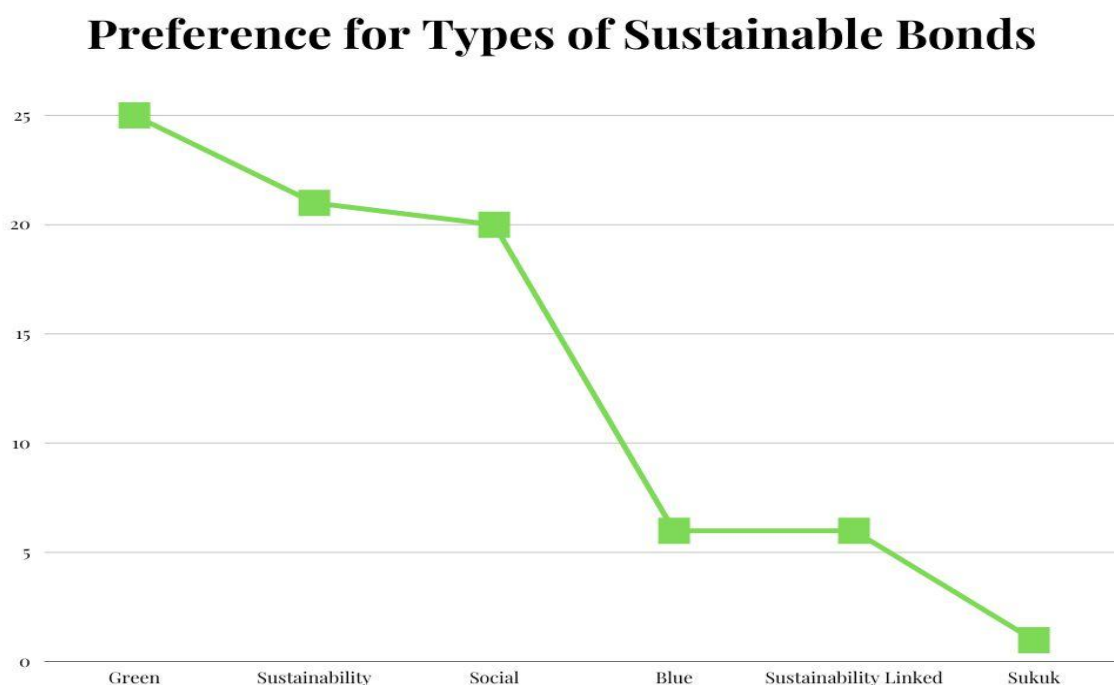
Hence, if the GSS bonds are listed in BSE or NSE denominated in Indian rupee, there will be a substantial increase in the investors.

Green bonds a viable financing option to bring in environmental impact :

Green financing aims at channelling funds and bringing in financial system for implementing sustainable projects. Sustainability don't just investigate the green factors but an array of factors such as economic, social, and environmental factors. Hence to cover all aspects of sustainable development, a defined classification of labelled bonds was brought about. Green bonds for bringing effective environmental impact, social bonds to address the societal needs

like affordable green housing, healthcare, education & sanitation, Sustainability bonds denotes a combination of both green and social bonds, Sustainability-linked bonds can either be issued for environmental, social & governance causes, and Climate transition bonds for carbon intensity industries or sectors like power generation, iron & steel & chemicals. An unconventional variation of the GSS bonds is also recently being issued in the global markets like blue bonds which are linked with marine eco system friendly projects and gender bonds which finance the projects that aims at reducing the gender gap. But data relating to the GSS bonds since 2016 show that companies are still hesitant to issue bonds other than green bonds. The Debt Management Office of World Bank has conducted a study through questionnaires in 32 developed and emerging countries namely Europe, Africa, Latin America and East, South & Central Asia.

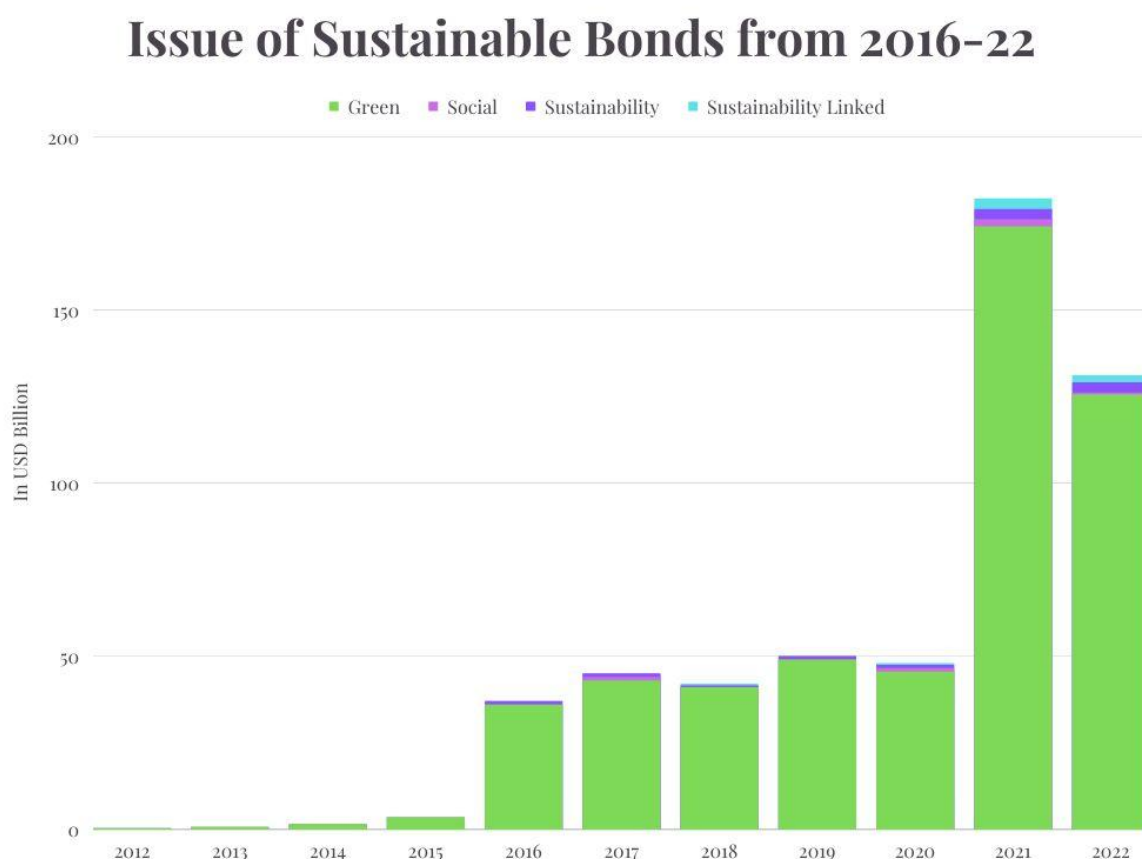
Chart 3:



Source: The World Bank report on Sovereign Green, Social and Sustainability Bonds: Unlocking the Potential for Emerging Markets and Developing Economies 2022.

Chart 3 shows the bonds issuers preference for green bonds over other sustainable bonds. Sukuk, an Islamic financial certificate is also preferred in Islamic nations.

Chart 4:



Source: Bloomberg NEF data from World Bank Report.

Chart 4 depicts the GSS bond issuance across the stock exchanges in the emerging countries from the year 2012 to 2022. The initial growth of green bonds from 2014 had been sluggish. Around the same time, ICMA issued guidelines for green bonds. There has been an increase in the volume of GSS debt being issued but only green bonds have grown at a faster pace, as seen in Chart 4. Sustainability bonds have started gaining attention after 2015. Hence there are traces of them between 2017-2020. In the year 2021, \$2 Billion worth of social bonds, \$3 Billion worth of sustainable and sustainable linked bonds were issued. In 2022, the volume of

social bonds came down close to \$1 Billion. Sustainability linked also came down to \$1 Billion.

The GSS bond trend in India is also in sync with the international GSS bond trend for the year 2021-22. The top bond issuers in India (chart 1) have invested in green bonds for the wind, solar and other forms of renewable energy. Only the banks viz Axis bank, EXIM and YES bank have issued sizable amount of bonds for socioeconomic developments, health and healthcare, SME & microfinance, affordable, green housing, and green transport. As banks are already into financial inclusion, it is much feasible for them to issue sustainable bonds. The reason for such a formidable gap within the GSS bonds in India is due to the following factors:

- **Awareness:** A considerable section of investors are not aware of GSS bonds. Generally, the GSS bonds in India are subscribed by corporate institutions and through private placements. Adding to this, substantial share of green bonds is listed in stock exchanges outside India.
- **Greenwashing:** Some organizations utilize the bond proceeds for unsustainable purposes. But the company claims of investing the same in green or sustainable projects. Certain companies claim of refinancing their existing projects out of the green bond proceeds. Though refinancing is in accordance with the guidelines issued by ICMA, the information regarding projects that are refinanced is not available. This misleads the investors. ICMA has laid down what qualifies for greenwashing. Its high time that companies adopt greenwashing clause in their regulations.
- **Maturity period:** The period for which the instrument is issued is generally for 10 years. The next preferred tenor is 5-10 years as per the study done by Debt Management Office of World Bank. Higher the maturity period, lower the cost of issue of bonds.

- **Measurement of outcome:** It becomes nearly impossible to measure how sustainable the projects were at end of the debt tenor. Though the issuing company had roped in reputed institutions like KPMG or Sustainalytics to assess the funds invested in green projects, the end outcome i.e what is the actual impact on the environment is not measured. Companies like Greenko Group and ReNew Power had quantified the CO2 avoided and grid emission factor in their sustainable report but still those numbers are not the representation of the actual outcome.
- **Creditworthiness:** Every bond issue should be credit rated by the rating agencies. But this rating alone will not determine the redemption of such bonds within the tenor. There are chances of the issuing company going bankrupt. Suzlon Energy faced a default in their debt repayment in the year 2019. When they are not able to cater to their regular debt repayment, how feasible it is for companies to pay back their GSS bonds becomes a concern.
- **Government participation:** The Government of India came up with its maiden Sovereign Green Bonds on January 2023. If government can come up with more such issues in the future, then positive outlook towards GSS bonds will considerably increase in near future.

If the above issues are addressed, India can channelize the bonds proceeds to create an eco-friendly and viable environment.

Global practices to promote green bond investment:

The International Capital Market Association (ICMA) had issued guidelines for green bonds in 2014(later updated in 2022). As the issuance of GSS bonds paced up, ICMA issued guidelines for sustainable bonds in 2021 and social bonds & sustainable linked bonds in 2023. These guidelines are taken as a base by various countries in charting their own

guidelines for GSS bonds. The fundamental rules of regulations for use of proceeds, project evaluation & selection, proceeds management and final reporting have been embraced by SEBI's Disclosure Requirements for Issuance and Listing Green Bonds. While comparing SEBI's guidelines with ICMA, a few gaps were identified.

Firstly, ICMA has come up with separate regulations for each of the GSS bonds. But India's guidelines limit itself to green bonds despite a few banks and corporations issuing social and sustainable bonds. Adding to this the following areas are being listed out by SEBI as potential projects for which green bonds can be issued:

- Clean transportation
- Sustainable water management
- Climate change adaptation
- Energy efficiency & green buildings
- Sustainable waste management
- Sustainable land use
- Biodiversity conservation

From the above, it is obvious that sustainable projects are also included in the green projects. This might also be one reason leading to over concentration of bond issue in one focus area. Chart 1 portrayed issue of green bonds for renewable energy while they still have the option to opt for other areas of green projects. If a separate guideline is available for each of the GSS bonds, this grouping of projects under green bonds can be avoided and investors & issuing company can have more clarity regarding the green, social, sustainable and sustainability linked bonds. Though SEBI has issued a working on a regulation for blue bonds under the consultation paper titled, "Green and Blue Bonds as a mode of Sustainable Finance", it is yet

to become a regulation. The year 2021 and 2022 has seen a tremendous expansion of green bonds market in India, the government and SEBI can make use of this opportunity to focus on distinct GSS bonds regulations. This will create an awareness among the investors which might compel the companies to issue other variations of GSS bonds.

Secondly, ICMA guidelines talk about relevant, quantifiable, and externally verifiable KPIs. SEBI's rules for the same lacks' clarity as it does not cover all aspects of sustainability. The green bond issuers have disclosed certain KPIs- For example, CO2 emission avoided for renewable energy projects. But the kind of resources consumed for such a decrease in the emission should also be measured and mentioned. This will ensure a balance in consumption of resources leading to real sustainability. But when it comes to other projects in sustainability, like healthcare, bio-diversity protection, KPIs are hard to trace as companies have not made the utilization or audited report for such projects public. ICMA recommends Sustainability Performance Targets (SPTs) for sustainable and sustainability linked bonds. And these SPTs should be in synchronization with the ESG goals and the SDGs.

Thirdly, the reports on utilization of funds had been made statutory, but the time gap between each report is specified and it should be for a time period of less than a year. This will keep the investors assured about the utilization performance of their investment. Instead of giving a report on the fag- end, having quarterly disclosure will bring more transparency in GSS bond market. The report should also account for unutilized funds for each quarter. Since the utilization report is usually given in the end of the year, there is less scope for left over funds.

Fourthly, SEBI guidelines have mandated the disclosure of usage of bond proceeds for refinancing of existing projects and unutilized funds. This can be seen as a step to stop greenwashing. The guidelines should blatantly ensure that greenwashing will not become a red flag in the growing GSS bond market in India.

IV Conclusion:

The emerging market bond issuances in the financial year 2021-22 was \$95 Billion. With this mammoth growth of bond market, it is important for government and green bond issuers to seize this momentum. The government and SEBI should consider guidelines which will differentiate between green bond from sustainable bonds. Once SEBI mandates specifications for such bond issues the disparity between the volume of GSS bonds issued in the other countries and that in India will come down to a greater extent. However, haphazard issue of bonds might also lead to repayment issues. The outstanding GSS debt across the globe is \$ 2.9 Trillion as on June 2023 as per Bank for International settlements (BIS) report. In the past companies have found it hard to repay the debt on time. Suzlon, Bhushan Steel and IL&FS failed to repay the debt. Adding to this YES bank has written off AT1 bonds worth of Rs 8,415 crores in 2020. Though in the above cases, the default was not for green bonds, this factor should be considered seriously as they will bring down the investor's confidence in green debt market. If streamlined in the right direction, India can be a giant in the global GSS market.

V References:

1. International Finance Corporation. (2021). Emerging Market Green Bonds Report 2021. <https://www.ifc.org/content/dam/ifc/doc/mgrt/202206-emerging-market-green-bonds-report-2021-vf-2.pdf>
2. Greenko Group. (2022). Green bond Impact Report FY : 2020 -2021. <http://www.greenkogroup.com/assets/Investor%20pdfs/3Impact/1.%20Green%20bond%20impact%20report%20of%20Greenko%20Investment%20Co%20issuance.pdf>
3. ReNew Power. (2022). Sustainability Report FY 2020-21. https://renewpower.in/wp-content/uploads/2021/10/ReNew_Sustainability_Report_2020-21.pdf

4. Continuum Green Energy. (2023). Allocation & Impact Report – 2022.
https://www.continuumenergy.in/uploads/assign_document/1676035215_15993608.pdf
5. Adani Green Energy Limited. (2022). Green Bond Information Report FY 2021-22.
<https://www.adanigreenenergy.com/-/media/Project/GreenEnergy/Investor-Downloads/Green-Assurance-Report-AGEL/Post-Issuance-Green-bond-information-report-FY-2021-22.pdf>
6. Axis Bank. (2022). Sustainable Bond Impact Report 2021-22.
<https://www.axisbank.com/docs/default-source/csr-reports-and-disclosures/axis-bank-sustainable-bond-impact-report-2021-22.pdf>
7. Export-Import Bank of India. (2023). Sustainability Bond Post-Issuance Review.
<https://www.eximbankindia.in/assets/pdf/public-declarations/FINAL-Export-Import-Bank-of-India-Post-Issuance-Letter.pdf>
8. REC Limited. (2022). Annual Report 2021-22.
<https://recindia.nic.in/uploads/files/REC-Annual-Report-FY-2021-22.pdf>
9. YES Bank. (2022). Green Bond Impact Report FY 2021-22.
https://www.yesbank.in/pdf?name=the_green_bond_impact_report_2021_22.pdf
10. The World Bank.(2022). Sovereign Green, Social and Sustainability Bonds: Unlocking the Potential for Emerging Markets and Developing Economies.
<https://thedocs.worldbank.org/en/doc/4de3839b85c57eb958dd207fad132f8e-0340012022/original/WB-GSS-Bonds-Survey-Report.pdf>
11. International Capital Market Association (ICMA).(2023). The Asian International Bond Markets: Development and Trends. https://www.icmagroup.org/assets/The-Asian-International-Bond-Markets-Development-and-Trends-brochure_March-2023.pdf

12. Reserve Bank of India.(2023). Annual Report 2022-23.
<https://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/0ANNUALREPORT2022322A548270D6140D998AA20E8207075E4.PDF>
13. SEBI.(2017). Disclosure Requirements for Issuance and Listing Green Bonds.
https://www.sebi.gov.in/legal/circulars/may-2017/disclosure-requirements-for-issuance-and-listing-of-green-debt-securities_34988.html
14. SEBI.(2013). Revised Disclosure Requirements for Issuance and Listing Green Bonds.
https://www.sebi.gov.in/legal/circulars/feb-2023/revised-disclosure-requirements-for-issuance-and-listing-of-green-debt-securities_67837.html
15. ICMA.(2022). The Green Bond Principles.
<https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Green-Bond-Principles-June-2022-060623.pdf>
16. ICMA. (2023). The Social Bond Principles.
<https://www.icmagroup.org/assets/documents/Sustainable-finance/2023-updates/Social-Bond-Principles-SBP-June-2023-220623.pdf>
17. ICMA. (2021). The Sustainability Bond Principles.
<https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Sustainability-Bond-Guidelines-June-2021-140621.pdf>
18. ICMA. (2023). The Sustainability - Linked Bond Principles.
<https://www.icmagroup.org/assets/documents/Sustainable-finance/2023-updates/Sustainability-Linked-Bond-Principles-June-2023-220623.pdf>

**“Integrating AI and Predictive Analytics for Enhanced Supply Chain Risk Management:
A Comprehensive Framework for Resilience and Real-Time Decision-Making”**

DR. ELANTHERIYAN

Associate Professor, Department of Management Studies

VelTech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,
Chennai, India

elantharaiyan@veltech.edu.in

NISHANTH J.K

II MBA Student, Department of Management Studies

VelTech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,
Chennai, India

vtp3932@veltech.edu.in

ABSTRACT: The integration of Artificial Intelligence into predictive analytics has transformed the risk management of supply chains and will offer innovations in tools to predict, mitigate, and respond to risks in real time. This paper delves deeper into a more comprehensive framework on how to use AI-driven insights and predictive models to construct resilient supply chains that can navigate dynamic challenges. The integration of AI with predictive analytics revolutionizes the management of supply chain risks because businesses are then able to predict, mitigate, and respond to a given risk with unbelievable accuracy. This is the resilience-enhanced framework anchored by AI-driven insights and real-time data analysis. It also focuses on predictive modelling, machine learning, and automated risk assessment in streamlining operations with the need for agility and continuity in the face of disruption. It focuses on exploiting weaknesses, improving decision-making, and optimizing resource use to ensure proper operations. In this research, it further emphasizes how AI will interface with automating risk assessments and tries to enhance agility in supply chain management.

PURPOSE: This research is going to explain how AI and predictive analytics can be used to build resilience in a supply chain by giving real-time insights into risks. It also aims to define a framework integrating data analytics, machine learning, and AI-driven forecasting for better decision-making processes. Thus, the disruptions will be handled proactively, making continuity intact.

METHODOLOGY: It uses a mixed-method approach that combines both qualitative and quantitative analyses. The theoretical basis is made through the literature review, which incorporates AI in supply chain risk management. Actual case studies of organizations using AI to exploit predictive analytics are analyzed to appraise practical applications. The quantitative results from the quantitative performance metrics of the supply chain have been

processed by machine learning algorithms that predict and mitigate risks. Simulation models are also utilized to evaluate the efficiency of AI-driven frameworks in real-world applications.

RESULTS: The results indicated that AI and predictive analytics augment the resilience in the supply chain by streamlining detection and mitigation processes better. Predictive models could detect potential disruptions beforehand, allowing organizations to prevent the bothering of such disturbances. AI-driven simulations showed proper resource allocation and real-time decision-making, which helped limit the blow of unforeseen circumstances. There was also greater efficiency and responsiveness from the viewpoint of companies using the framework.

FINDINGS: Research thus established that inclusion of AI in the supply chain management would allow businesses to mitigate and proactively approach potential risks. Predictive analytics helped outline trends or anomalies, and AI technologies further streamlined analysis for critical information, thus offering flexibility in decision-making. Businesses embracing AI-based risk management systems showed fewer instances of downtime, lower operational costs, and higher customer satisfaction.

IMPLICATIONS: The study therefore puts on record the critical role AI plays in transforming the supply chain risk management process into one that is proactive and resilient. Its findings call on companies to invest in infrastructure and training in AI to fully exploit the potential in these technologies. As such, AI-driven strategies help companies cope with uncertainties for greater supply chain stability and competitive advantage. This change toward real-time decision-making and risk mitigation is expected to further improve overall supply chain performance and promote long-term business sustainability.

Keywords:

1. Artificial Intelligence (AI) Supply chain
2. Predictive Analytics
3. Supply Chain Resilience
4. Real-Time Decision-Making
5. Risk Management Frameworks

A STUDY ON FINANCIAL TRENDS IN THE AUTOMOBILE INDUSTRY WITH IN A TECHNOLOGICALLY DRIVEN LANDSCAPE

K. Harish

II MBA Student, Department of Management studies Vel Tech Rangarajan Dr. Sagunthala
R&D Institute of Science and Technology, Avadi, Chennai, India.

6374946073,

vtp4181@veltech.edu.in

Dr. Tamilselvan. P

Assistant Professor, Department of Management Studies

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,
Chennai, India.

9698828500,

tamilptg@gmail.com

ABSTRACT:

The technological advancement in the industry suggests that the automotive industries are in a position whereby they can experience extreme growth in their financial performance and strategic directions in the shortest time as it has never been possible before. This paper aims to analyse the connection between modernization of technology and financial shifts within the international auto industry from the year 2019-2024. This study analyses financial disclosures of top auto makers, new EV entrants and traditional automobile component makers, to determine how spendings on EVs, ADAS & CCs affect firms' market capitalization, margins, and Competitive positioning. The researchers use both quantitative analysis of financial documents and the examination of strategic measures and market positioning. Outcomes state that there is a strong positive relationship between long term technological innovation product development and market capitalization out in the longer interval than focusing with immediate profits. Several more specific tendencies in capital investments distribution between mainline car producers and innovative entrants are outlined, specifically in the context of technology management. In addition, the current research analyses how consumers' choices, legal frameworks, and supply system factors affect the performance in various segments. The implications of the research reveal the identification of a diverse of industries with higher financial staying power and future growth prospects for firms that implement technological advancement together with manufacturing industry proficiency. Ahead, this study helps to extend the knowledge base on the financial effects of

technology disruption in the automotive industry and proposes a multi-stage approach for automakers, investors, and policymakers interested in s in this fast-changing context.

Keywords: automotive finance, technology, electric vehicles, autonomous vehicle, performance, automotive industry revolution.

INTRODUCTION:

Today, the automobile industry is at another crossroads because the world has become one of rapid technological advancement and digital transformation. This paper focuses on the interdependency between new technologies and financial factors that characterise the automotive industry while also demonstrating how new technologies are altering established business models and investment strategies. Electric cars, self-driving technology, smart car platforms, and renewable production processes are now changing the financial paradigm of the automotive business. Those traditional automotive manufactures are discovering that they are no longer just competing with incumbents, but also with technology companies and innovative new entrants, which has created unexpected dynamics regarding capital distribution, R&D spending and, market capitalizations. Finally, this work discusses the shifts happening to the monetary parameters of the industry as a reaction to these technologies with regards to the industry's revenue model, investment profile, market capitalization and expense structure. Particular emphasis is made to changing investors' attitudes, as the market begins to consider automotive firms on the basis of their technological potential, rather than tangible production factors. The conclusions of this study are to give the stakeholders a deeper and better understanding of how the financial environment evolves in the automobile industry, and how the simultaneous introduction of advanced technologies impacts the overall financial performance of the companies in this emerging market.

Background:

The automobile industry has gone through several revolutions as a sub-sector of the manufacturing industry ever since it was invented primarily as primitive mechanical means of transport. The last ten years were marked by digitalization, electrification and automation within the sector at an unseen level. The change of this industry has been fuelled by increasing concerns on environment, consumer awareness and shift in new technologies. Over the years automotive manufacturers' strategic orientation especially regarding; investment and financial strategies have had to change drastically. Artificial intelligence together with the interconnectivity of things, or IoT capabilities to advance sustainable

technologies have done a lot more than just transform the way vehicles are manufactured; they have also shifted the automobile industry's financial model and purchasing trends.

REVIEW OF LITERATURE

1. Siegel et al. (2017) This research work presents a survey of the connected vehicle system in terms of IoT, V2X Communication, and edge computing. To that end, the authors explain the architectural and technological enablers of connected vehicles and discuss the future research directions in terms of cybersecurity, data processing, and communication standards. They outline major financial concerns ranging from infrastructure, partnering with technology companies and coping with the growth of complexity in connected environments.

2. Bettis & Hitt (1995) Picking up the elemental concept of a changing competitive environment from the work of Bettis & Hitt, they further explain that advancement in technology erases traditional approaches to competition. The necessity of pliability in the financial as well as operational strategies is described as the study pays particular emphasis to the fact that industries have to evolve constantly. Some of these assumptions relate to the automotive industry, where firms are under significant pressure to shift financial models to reflect new technologies such as electric and autonomous vehicles.

3. Galvin et al. (2015) This paper explores innovation policies applicable to the automotive sector in countries including United States of America, Mexico, European Union, Germany and Spain. Subsidy, tax credit and research grants are only few examples of government intervention important as a means to foster technological change in automotive industry. They showcase ways how divergent frameworks affect financial executives and global competitiveness of auto makers; with regions coming out differently. The current research does show the necessity for specialized strategies for handling these fluctuations.

4. Jagani et al. (2024) This paper looks into the changes being experienced in supply chain of EV and how the role of automotive supplier is transforming. The authors examine business concerns such as the financial and strategic risks that would affect the suppliers for instance, conversion to new sustainability metrics and incorporation of renewable power sources. They also demonstrate where and how the suppliers can be creative and work within the boundaries of a circular economy system while illustrating where these changes alter the overall supply chain costs and revenues.

5. Ryan & Campo (2013) Ryan and Campo review the historical trends that contributed to the decline of Detroit's auto manufacturing industry and present a reconstruction of sociological and strategic failures. The role of financial decisions to understate the technological and market drivers like globalization and the entry of foreign competitors is the critical focus of the study. The resulting research acts as a reminder of the challenges that contemporary car manufacturers may face analogous disruptions.

6. Lu & Shi (2023) Discussing with reference to Lu and Shi, the authors consider vehicles as mobile computing platforms with future automobiles combining powerful computing systems, artificial intelligence, and massive data processing facilities. They talk about funding and tech issues including the cost of introducing new technologies into the operations, protection of information, and handling of computation complexities. The study also highlights a clear increasing blurring of boundaries between automotive and IT industries and all this has implications for future business models.

7. Abdelkader et al. (2021) This paper outlines the existing knowledge base in the application of connected vehicle technologies, in relation to real time decision making, safety, and transportation. The authors also like to discuss difficulties, the increasing costs, data privacy issues, and proper communication networks. Both their work stresses on issue of costs of implementing such technologies and the prospects of new opportunities that they create.

SCOPE OF THE STUDY

- Using the financial ratios, examining the financial performance and technological expenditure and advancements of prominent automotive industries (2019-2024).
- Analysis of changes in market capitalisation between conventional car makers and technology-powered automotive challengers.
- Evaluation of capital allocation trends in the areas of innovation, drawing particular attention to electric vehicles, autonomous technologies, and connected car systems.
- Sensitisation of revenue distribution portfolio through leveraging technology enabled services in the automobile sector.
- The assessment of costs and significant increases in cost efficiencies resulting from technology uptake in production and logistics networks.
- Comparison of investment yields in technology-based automotive projects and evaluation of the potential risks given to traditional automotive investments.

LIMITATIONS OF THE STUDY

- Restricted exposure to restricted firm information, mainly in relation to investment and expenditures on unique technologies.
- Special challenge due to the overwhelming change of the technology landscape, which makes long-term trend analysis nearly impossible.
- Legal restraints targeting specific geographical areas mainly the large car markets but not new and growing markets.
- Relating to the source of data, the time constraint of data collection may not capture technology adoption cycles fully (2019-2024).
- The problem in pinpointing precisely how technology affects its bottom line and/or how it is affected by other market forces.
- Relatively utilizable benchmarks for assessing traditional(auto) manufacturers vs tech auto manufacturers.

RESEARCH QUESTIONS

What role does technological investment play in the automobile industry in regards to financial performance?

OBJECTIVES

- To examine the displacement or creation of revenue sources by emergent technologies and value added to productivity in the automobile industry.\
- To analyse factors of investments in automotive technology and their link with performance data.
- To understand the changes digital transformation brings about in cost structures and production processes in organizations of the automotive industry.
- To estimate the potential cost of the transition from conventional vehicles to electrical and self-driving transport.
- To know the financial ratios and benchmarking that relate to the industry in achieving technological adoption.

METHODOLOGY

This study hence uses both quantitative and qualitative approach to analyse financial trends in the automotive industry. The methodology involves the compilation of substantial data sources including all the financial statements with the twenty major automotive manufacturers in the world, technological investment data from automotive industry reports and market performance attributes such as stock prices. Additive analysis of financial ratios for periods up to 5 years is carried out using comparative analysis of traditional automotive industry enterprises and enterprises linked with high-tech developments. In support of the discussion, actual examples of the successful technological application are explained in the case studies. Some of the methods used in the study include the use of financial ratio analysis, trends analysed using regression models and; the assessment of the return on investment on technological advancements. For increases reliability and external validity, the research results are checked with expert opinions from practitioners in the industry, compared with other secondary sources of research and peer reviewed. This systematic approach makes it easy to analyse how different aspects of financial management trends impact on the advancement of technology within this industry.

CHALLENGES FOR RESEARCH ON A STUDY ON FINANCIAL TRENDS IN THE AUTOMOBILE INDUSTRY WITHIN A TECHNOLOGICALLY DRIVEN LANDSCAPE.

Data and Data Quality

The major limitation to the study is the lack of comparability of proprietary technology investment data within the automobile firms coupled with lack of adequate data. Due to the calamity of fast technical development, history data is often outdated, which makes a major drawback of analysis and getting trends.

Market Complexity

The structure, nature, and location of the automotive market affect analysis; supply chains, and regulatory structures, differ across the globe. The interaction between the original automotive players and tech players is intricate the discernment of set distinct technological effects on the monetary bottom line is somewhat convoluted.

Technological Evolution

Because of profound technology development, research results become outdated in a short period. Long-term ROI of emergent technology is not easy to measure because evaluating technological forms require time, while comparing different technological options and considering trends leads to unpredictable research prognosis.

Economic Variables

Such factors as changes in market, the nature of stock and bonds, and fluctuations in currency and economic instability of the country make rating analysis difficult. Variations in fiscal policies between regions fabricate it unfeasible for the framework of research across regions to enhance the conclusions.

Industry Transformation

The conversion from manufacturing to service line services generate analysis difficulties. Market entrants, emerging trends and customer shifts make it challenging for business to build standard research milestones.

FINDINGS

- **Profitability Impact** Companies using advanced technology make more money than those using traditional methods.
- **Market Valuation** Generally, investors place higher value on firms with technology focuses in automobiles than firms manufacturing general automobiles.
- **Operational Efficiency** Modern technology benefits car companies through the following ways by minimizing cost.
- **Second sources of income** Car firms get also other incomes through technology services it provides in the automobiles they manufacture.
- **Consumer behaviour** in relation to their choice, most consumers prefer cars that incorporate sophisticated technology.

SUGGESTION

- **Technology Enhancement** and its influence to the Financial Progression of the Automobile Industry
- **Exploring Financial Patterns in the Automobile Industry:** The dynamics of the present focus are largely technology driven.
- **The Intersection of Technology and Finance:** Current development and patterns in the automotive industry

- Trends of Financial evolution in Auto Mobile Industry with special Reference to Technology Integration
- Tech-Driven Shifts in Automotive Finance: An Industry Analysis
- Implications of its Presence in a Financial Perspective in a Technologically Embedded Auto Environment

CONCLUSION

This paper exploring the financial changes within the automobile industry within a technological setting provides the following lessons in the sector: Thus, a new financial approach is slowly being developed as the automotive industry begins incorporating such technologies as EVs, self-driving cars, and connected car systems. Outlays to research and development are rising showcasing dedication towards sound improvements and innovations. It is also important to note that this shift is not without its difficulties, primarily as the cost of integration and the proper development of additional functions typically remain high, while manufactures must ensure the price is right and the product remains profitable. As the study presents there is a shift towards the strategic cooperation and affiliations as it allows businesses to bear the development expenses together and step up the pace in innovations. Moreover, the internet sales and digital consumer channels are becoming new revenue generation and cost models. However, most of these technologies will require initial investments to be generated in the longer run, deliver cost savings, improved customer experience, and revenue streams. Therefore, the financial progress of the automobile industry elevates to the indications that the technological advanced automotive industry requires innovative solutions and investment and teamwork patronage for the key to longevity and competitiveness in an ever-shifting market place in the twenty-first century.

REFERENCE

- Siegel, J. E., Erb, D. C., & Sarma, S. E. (2017). A survey of the connected vehicle landscape—Architectures, enabling technologies, applications, and development areas. *IEEE Transactions on Intelligent Transportation Systems*, 19(8), 2391-2406. <https://doi.org/10.1109/TITS.2017.2749459>
- Bettis, R. A., & Hitt, M. A. (1995). The new competitive landscape. *Strategic management journal*, 16(S1), 7-19. <https://doi.org/10.1002/smj.4250160915>
- Galvin, P., Goracinova, E., & Wolfe, D. A. (2015). Recent trends in manufacturing innovation policy for the automotive sector: A survey of the United States, Mexico, European union, Germany and Spain. *The global automotive industry*, 53-66. <https://doi.org/10.1002/9781118802366.ch6>
- Jagani, S., Marsillac, E., & Hong, P. (2024). The Electric Vehicle Supply Chain Ecosystem: Changing Roles of Automotive Suppliers. *Sustainability*, 16(4), 1570. <https://doi.org/10.3390/su16041570>
- Ryan, B. D., & Campo, D. (2013). Autopia's end: The decline and fall of Detroit's automotive manufacturing landscape. *Journal of Planning History*, 12(2), 95-132. <https://doi.org/10.1177/1538513212471166>
- Lu, S., & Shi, W. (2023). Vehicle as a mobile computing platform: Opportunities and challenges. *IEEE Network*. <https://doi.org/10.1109/MNET.2023.3319454>
- Abdelkader, G., Elgazzar, K., & Khamis, A. (2021). Connected vehicles: Technology review, state of the art, challenges and opportunities. *Sensors*, 21(22), 7712. <https://doi.org/10.3390/s21227712>

Artificial Intelligence in HR: Pioneering Digital Transformation for Industry 4.0 Success

Manoj Govindaraj

Associate Professor, Department of Management Studies
VelTech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, India
manoj.nmcc@gmail.com
<https://orcid.org/0000-0003-2830-7875>

Sarath B

II MBA Student, Department of Management Studies
VelTech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, India
sarathsarath9231@gmail.com

ABSTRACT

The Industry 4.0 is transforming Human Resources in the application of Artificial Intelligence through digitization and increased operational efficiency. This paper discusses how AI technologies have the potential to impact functions in human resources, which include talent acquisition, employee engagement, and performance management, by allowing human resources to focus more on strategic and innovative decisions and less time on routine and repetitive functions. The study reveals impressive case studies where organizations had successfully implemented AI and shows considerable increases in recruitment speeds and satisfaction among employees. However, the concerns regarding the privacy of data and issues of ethics have to be addressed in order to appropriately use AI responsibly. Finally, the paper touches upon how HR professionals need to upgrade their skills to work and utilize AI-based tools at their workplace. Ultimately, such a study aims to ensure that HR leaders are prepared with actionable insights to meet the challenges of AI introduction while building a more flexible and competitive workforce. Ultimately, the findings of research indicate that the sustainable route to success in the Industrial 4.0-era landscape will depend on attaining a balance in their approach to integrating AI technology.

Keywords: Artificial Intelligence, Human Resources, Digital Transformation, Industry 4.0, Talent Acquisition, Employee Engagement, Performance Management, Workforce Analytics, Ethical Implications, Automation, Strategic Decision-Making, HR Technology, Organizational Efficiency, Data Privacy, Upskilling.

INTRODUCTION

AI arrangements are shifting the landscape of Human Resources (HR) by rapidly introducing several changes that correspond to the Industry 4.0 features predominantly based on automation, data management and interconnected systems relating to competitiveness and success. AI integration in Human resources practices is not just a technology innovation that is being applied in the organizational Practice but a fundamental shift achieving the requisite human capital management that is responsive to the need of the emerging digital economy (Chakraborty & Mansor, 2023). Advanced technologies like machine learning, NLP, other applications of artificial intelligence when applied to data concentrate and analyze information that is beyond the limit for any human neurons, and predictive analytics helps the HR departments to eliminate fail-repetitive recruitment processes and the precondition of unconscious bias (Sharma et al., 2024). The aforementioned proactive approach ensures that the HR professionals prevent the problems from arising or manage to solve them before they get out of hand in terms of workforce stability and motivation. In relation to performance management and development, the advanced AI take real-time data on productivity of employees and make more accurate and fairer conclusions and feedbacks in regard to the need for performance improvement (Xu & Zhang, 2022). Further, although professional development and succession planning have remained critical to most organizations, AI can also deliver customized training material and recommend course that align the learning needs of the employees with the overall goals and objectives of the firm (Lee & Kim, 2024). The application of AI in Industry 4.0 provides organisations with the thrust to enhance digital-related competency uptake within their human resources and inculcate digital readiness competencies necessary to respond to such changes. This is despite the existing challenges of privacies, ethical issues and depersonalisation of employees in human resource management where organisations understand the usefulness AI has in creating a transparent and inclusive working environment while embracing technological developments (Ghosh et al., 202 Besides, using AI in HR also helps decision-making since AI takes out human bias, and its judgment helps in making better decisions, essential for making the workplace fair and compliant with best practices across the globe (Ramirez & Torres, 2024). While Industry 4.0 continues to redefine organizational dynamics and processes, the use of AI in HR becomes vital for developing the workforce to support digital transformation strategies, and help in decision-making and training the Success in HR is increasingly achieved through the use of artificial intelligence to reduce the administration functions leaving HR with value addition tasks such

as providing for the well-being and inclusion of its employees, and boosting their productivity. Through the use of sentiment analysis and fully automated reporting, the SHRM professionals will thus get better insights into the need of the employees and how plan for strategic improvements thus changing the organizational culture to value continual improvement. For instance, The sentiment analysis tools used in online platforms can measure the satisfaction level of employees thus giving the human resource department a chance to deal with new trends and challenges occurring in working environment. Lastly, AI in HR improves an organization's performance not only on operational level but also on competitive level since it enabled organizations to be agile, innovative and able to handle change (Liu & Chen, 2023). Employees expect their businesses to adapt to Industry 4.0 by using AI in decision-making processes in the coming years and decades Miller & Green, 2024 HR will be instrumental in transformation, ethical AI adoption, and leveraging digital skills to build future organisational talent.

BACKGROUND OF THE STUDY

AI, when applied in the field of HR, has accelerated a transformation process in organisations attributing to seize on the challenges of Industry 4.0, a period characterised by the integration of automation, data networking in order to enhance efficiency and effectiveness. Before, HR practices had been predominantly paper-based and might only respond to events that occurred over time. Nevertheless, with AI in place, a shift of HR departments has become possible to move from a tactical focus to becoming strategic enablers as administrative work becomes automated, critical decision-making becomes accurate, and as intelligence is provided to aid strategic talent management (Patel et al., 2023). predictive analytics for instance can help HR teams foresee the turnover, evaluate employee satisfaction, and plan for strategies that enhance organisational loyalty (Lee & Kim, 2024). AI also enables consistent training and development of employees as well as training paths and development opportunities matched to organizational goals and objectives to produce a future-ready workforce capable of meeting industry demands (Xu & Zhang, 2022). Although this shift provides a wealth of opportunities, it brings about technical considerations, sui generis ethical AI utilization, and overreliance on the fully automated systems that diminish human contact for HRM (Ghosh et al., They are thus turning to ethical frameworks for AI in HR that make it possible for the technology's efficiency to coexist with fair decisions that aren't negative to human beings, (Ramirez & Torres, 2024) The call for smart systems and systems integration as promoted by Industry 4.0 requires that the HR teams are ready to not only manage operations but also to lead on change and transformation (Bhardwaj & Rathore, 2024). Thus, the primary and secondary roles meshed in

AI in HR make it a critical levers for maintaining competitive advantage, improving employee outcome, and cultivating inclusiveness and ideas generation for organizational improvement (Singh et al., 2023). For example, AI can analyse the real-time sentiment of the employees and provide organisations with insights on necessary enhancements and generate the work conditions that are compliant with today's global employees. With the help of AI, HR can make the right decision in the context of Industry 4.0 due to the fact that it can process huge amount of data to make an area more adaptable, which is crucial in the contemporary world. Through the adoption of AI in human resource management, the companies can be well placed to address the future requirements of digital transformation, ensure their human asset to be productive in a very dynamic environment and indeed set themselves up well for the future when competing for scarce resources in a world that would be forecasted to be characterized by intense competition by Miller and Green, 2024.

THE EVALUATION OF ARTIFICIAL INTELLIGENCE IN HR: PIONEERING DIGITAL TRANSFORMATION FOR INDUSTRY 4.0 SUCCESS:

Integration of Human Resources into Artificial Intelligence has been transformational and evolutionary, full of complexities, whereby incredible improvement has not only been made to the traditional functions of HR but also brought to the forefront issues and ethical dilemmas as organisations go after success under Industry 4.0. In addition, AI-driven analytics keeps HR departments up to date with employee behavior-specifically, it can forecast the likelihood of employees quitting and suggest more targeted interventions so that they can proactively intervene in order to ensure higher workforce stability and job satisfaction (Sharma et al., 2024). In addition, AI-based learning systems that offer an employee personalized plans to develop skills are changing the way employees develop within organizations by ensuring that career development aligns with the needs of Industry 4.0 under changing circumstances. These applications of AI by HR notwithstanding the measured lines of improvement over efficiency and productivity come with drawbacks. Decisions become too dependent on AI and alienate the human touch associated with HR interactions, being an important element in places that require empathy and instinct (Ghosh et al., 2023). More importantly, biased HR processes may be created by operations where algorithms are based on biased histories of operation. In this regard, AI should be developed responsibly and continuously checked for ethics (Ramirez & Torres, 2024). There are also privacy concerns on account of the fact that AI requires extensive

data on employees for it to be able to work accordingly, which is an issue both on account of security of data and the possibility of misuse. Organizations would have to adopt the proper practices of data governance and transparency as far as policies are concerned so that the applications of AI stay within the limit of ethics and so that privacy of workers is held in abeyance (Wang & Li, 2023). Another such factor is employee resistance to AI. Employers might feel threatened in their jobs or by taking over by AI in functions typically managed by human decision-makers (Patel et al., 2023). This further underscores the importance of a change management policy that will educate the workers on AI and how AI cannot replace or substitute human skills but can aid it so as to encourage a collaborationist culture of openness to digital transformation. The other components of AI assessment for HR include its impact on organization agility and innovation. Using the data insight feature by AI, companies will respond instantly and make more informed decisions that support agility in operations-an attribute very crucial for business survival in Industry 4.0, where adaptability would be imperative (Liu & Chen, 2023). Meanwhile, AI enables HR to evolve from transactional work towards a strategic role wherein long-term goals are ahead, like cultures of continuous improvement and inclusion (Singh et al., 2023). That, however, will only be the case if the companies can manage to trounce these challenges with honest AI frameworks, continued audits of their algorithms, and strong governance structures at the HR-AI level where the system is transparent and results are made accountable and traceable from how they were processed (Miller & Green, 2024). In this context, even though AI is undoubtedly taking the HR field to significant improvements, Industry 4.0 success calls for a synthesis of technological efficiency with human-centered values that would include conceptualization of a digital transformation framework where AI acts as an extension to augment and not replace human capabilities.

RESEARCH QUESTIONS

How can the Human Resource enhancement of employee engagement and talent management strategies leverage from the introduction of Artificial Intelligence within the approach of Industry 4.0?

RESEARCH OBJECTIVES

The objectives of this research are:

1. To analyze the impact of AI technologies on traditional HR functions and identify key

areas of improvement in efficiency and effectiveness.

2. To explore how AI-driven tools can enhance employee engagement and satisfaction, and assess their influence on talent management strategies.

3. To examine the challenges and ethical considerations organizations face when implementing AI in HR, focusing on data privacy and algorithmic bias.

4. To identify best practices and successful case studies of AI integration in HR, providing actionable insights for organizations aiming to leverage AI in their workforce management.

METHODOLOGY

The methodology for this research will be a mixed-method approach, both qualitative and quantitative research. Surveys will be conducted with HR professionals to gather data on their experiences about the integration of AI. Organizational leaders will also be interviewed in-depth to gain insights into the successful implementations of AI. Secondary research will be conducted through literature and case study reviews to contextualize findings. Data analysis will involve statistical techniques for the quantitative data and thematic analysis for the qualitative response.

IMPACT OF AI TECHNOLOGIES ON TRADITIONAL HR FUNCTIONS AND IDENTIFY KEY AREAS OF IMPROVEMENT IN EFFICIENCY AND EFFECTIVENESS

AI's implementation with HR is redefining classic HR roles making it possible for departments to attain higher performances, accuracy, and deeper strategy. AI technologies have impacted most of the function traditionally practiced such as recruiting, engaging, managing performances, and training to become more efficient data-driven processes. Key areas of improvement include:

Optimising HR Functions: Recruitment Alternatives

AI is causing a major disruption especially in recruitment in that many time-consuming tasks such as screening resumes, ranking candidates, and matching skills are highly automated. Resume parsing is the process where in machine learning algorithms have been incorporated in identifying the best candidates for the job based on some standard parameters in a way that saves much time that recruiters spend in evaluating resumes manually as well as removes any

bias that would otherwise be practiced by the recruiter (Chakraborty & Mansor, 2023). This increased efficiency benefits HR product and service divisions by freeing up time for in-depth review of the reviews and offering personalized interaction for the best qualified candidates.

Enhancing Employee Engagement and Retention

This paper has found AI technologies to be critical in the process of tracking engagement, which is important when it comes to retaining employees. What made prediction more effective is that it helps HR professionals to identify potential attrition threats and therefore endeavour to take necessary actions to discourage employees from leaving the company (Sharma et al., 2024). Comparing current trends in behaviour, AI supports the HR to propose the further approach to engage the staff based on their needs and the company's best practices.

Revolutionizing Performance Management

This function was heretofore a largely manual process, which was at several times heavily reliant on individual bias, but with the use of AI management platforms, such a function acquires unparalleled levels of quantitative accuracy. Through the constant analysis of the work productivity, AI systems can give real-time analysis of the performances of employees and enhance objective evaluation and probed feedbacks (Xu & Zhang, 2022). They assist the managers and human resource professionals in enhancing the productivity of their employees and the general performance packages to suit their talents and weaknesses respectively.

Personalizing Learning and Development

Technology learning solutions have revolutionized the method of training and empowering employees and has been focused on specifically designed training needs and future roles. It suggests the courses that are required to fill the gap in the employees' skill set and enables HR to devise more efficient and specific training programs (Lee and Kim, 2024). This personalization complements lifelong learning, including staff skill redevelopment, to align with the current and future organization environment.

Improving Decision-Making and Strategic Planning

Here AI also presents HR with robust analytical solutions which supplement its decision-making and planning capabilities. Decision support tools such as the announced predictive models and trends enable the HR teams to generate accurate strategies regarding workforce

planning, budgeting and resources as critical tools for keeping up competitiveness (Liu & Chen, 2023). Is essential to do it in a data-driven way, allowing HR, not only to seek performance enhancements, but also to ensure that they are aligned with organizational objectives in order to contribute to organizational success in the long term.

AI-DRIVEN TOOLS CAN ENCHANCE EMPLOYEE ENGAGEMENT AND SATISFACTION, AND ASSESS THEIR INFLUENCE ON TALENT MANAGEMENT STRATEGIES

Through the application of Artificial Intelligence (AI), the conventional Human Resource (HR) responsibilities are being revolutionized through embracing employee satisfaction and engagement besides talent management. Smart techniques process a lot of data and develop strategies to control employee needs and behaviors, so that HR knows what to do to construct measures to enhance engagement and reduce turnover. These tools aid employees not only in monitoring their satisfaction level but also in developing specific interventions that would foster professional development, satisfaction and organisational commitment. Here is a brief on how AI based tools for HRM in the current paradigm of the workforce with reference to engagement and talent management.

Optimizing Employee Engagement Through Real-Time Feedback

They allow employees to give real-time feedback that synchronizes with artificial intelligence, giving the HR department valuable insights on morale and or satisfaction level among the employees. In sentiment data based on employee satisfaction surveys, appraisals and casual interactions AI can detect involvement patterns and make corrections. This feedback loop enables HR to intervene timely regarding the stewardship of culture and business environment and thus build engagement (Wang & Li, 2023).

Personalizing Employee Development and Growth Opportunities

AI tools help to further employee satisfaction by providing recommendations with learning paths as well as skill set, performance, and career goals. These AI enabled systems monitor an employee's performance and recommend learning or professional development opportunities to assist in his or her growth to meet organizational and individual learning requirements. This alignment does not only fosters employee commitment but also enables companies to create a capable and adaptable human capital (Xu & Zhang, 2022).

Predicting Retention Risks to Support Talent Management

Another further useful benefit of AI within talent management is the ability to predict those employees who might quit. Even, having the historical data on the turnover rate, work engagement, and satisfaction scores AI algorithms can predict retention risks and their mitigations. Such a strategy enables the development of specific retention interventions that will lower turnover, contain hiring costs, and promote organisational stability (Sharma et al., 2024).

Improving Recruitment Processes for Better Talent Alignment

AI is revolutionizing the concept of talent acquisition by providing a new approach for a better fit and less bias. Recruitment applications based on artificial intelligence can have a proper record of candidates' skills, experience, and values and can correlate them to organizational needs to achieve long-termed job satisfaction for both the employer and the employee. In this way, Intelligent Talent System also provides HR with an opportunity to concentrate more on culture and employee engagement, which consequently contributes to improved effectiveness of organizational workforce (Chakraborty & Mansor, 2023).

Enhancing Employee Experience with Chatbots and Virtual Assistants

With AI, chatbots and virtual assistants help enhance employee experience as they respond to clients' HR inquiries immediately; reduce onboarding time; and grant fast access to information. These tools enable the employees work out problems as they arise which is satisfactory to them and decreases frustrations. Also, it releases time for the HR teams to engage on significant engagement activities in addition to reducing employee satisfaction (Patel et al., 2023).

CHALLENGES AND ETHICAL CONSIDERATIONS FACE WHEN IMPLEMENTING AI IN HR, FOCUSING ON DATA PRIVACY AND ALGORITHMIC BIAS

This is transformatory in character, for the modern organization tries to pursue a competitive advantage in today's industrial streams of Industry 4.0. However, this raises critical issues and ethical questions together with benefits as AI brings in HR contexts, such as talent acquisition, performing management, and other aspects concerning engagement of employees. Such issues

as data privacy and algorithmic bias must be handled with particular care since they may lead to inappropriate consequences unless taken seriously on protection for rights of workers. These should, therefore, be able to guide the process of developing an ethical and transparent AI framework in HR, putting together organizational efficiency and employee well-being as top priorities (Ghosh et al., 2023).

Data Privacy: Safeguarding Sensitive Information

One of the first ethical dilemmas that AI in HR faces is the safeguarding of employee data privacy. In order for AI to predict and improve decisions, large amounts of personal data, from employee performance and communication patterns down to behavior, are needed (Ramirez & Torres, 2024). With all this extra data being fed into a company comes more of a responsibility over keeping this sensitive information safe from any form of breach or misuse. Compliance to data protection laws such as the GDPR is mandatory but challenging and especially on complex AI models. Responsible HR practice demands well-stratified data governance frameworks that should hence deploy data responsibly and with employee involvement to avoid any infringement of privacy.

Algorithmic Bias: Risks of Unintended Discrimination

The most significant ethical concerns with algorithms relate to the kind of bias AI systems inadvertently perpetuate in the form of historical prejudices embedded in the data they use for training (Wang & Li, 2023). Hiring algorithms trained on past recruitment data inherit bias against certain demographics, which leads to unfairly biased hiring practices. This practice should be avoided by accepting bias detection methods and diverse and representative data at all costs and auditing AI models continuously. Algorithmic bias needs to be addressed not only on ethical grounds but also because it is such an important factor in ensuring a workplace inclusive for everyone.

Transparency and Explainability in AI Decision-Making

Due to the complexity of the algorithms in AI systems, HR personnel and employees have difficulty grasping how outcomes are reached, leading to issues of trust and accountability (Ghosh et al. 2023). With regard to explainability, AI tools for HR analysis are particularly important as they ensure that the reasoning behind AI-based decisions, for example, in hiring or promotions which are sensitive issues, is understandable. To this end, organizations are making more efforts to develop XAI models that show the rationale behind AI-based HR

practices in order to increase trust and accountability of the employees in these systems.

Ethical Data Use: Balancing Insights and Privacy

Using AI within HR delivers information that can enhance productivity as well as foster employee engagement but such use of personal data has moral implications that must be weighed against the gains. However, there is a thin line between employing data harvesting for the benefit of employees and data harassment (Chakraborty & Mansor, 2023). For instance, monitoring the measures of productivity may improve performance metrics but may come across as intrusive monitoring. It is critical to set boundaries that govern data usage in AI-enabled HR systems to ensure that the advantages of AI do not come at the cost of privacy and employee independence.

Legal and Regulatory Compliance Challenges

The application of AI in HR needs to be compliant with the law. As technology develops, so do policies and laws, but these have not yet caught up with the rapid development of technology. Bhardwaj and Rathore (2024) reported that companies struggle to meet laws on data protection, restrictions on bias, and requirements on transparency in different geographic areas. Global companies are already burdened with complexity because different cultures have different views about ethical and legal aspects such as privacy and fairness. But with the right strategy towards regulatory compliance, organizations can mitigate some risks associated with this concern and promote usage of AI for HR functions in more ethical ways.

BEST PRACTICES AND SUCCESSFUL CASE STUDIES OF AI INTEGRATION IN HR, PROVIDING ACTIONABLE INSIGHTS FOR ORGANIZATIONS AIMING TO LEVERAGE AI IN THEIR WORKFORCE MANAGEMENT

This topic deals with possibility of application of AI in HR, including case studies to showcase the best practices. Through the analysis of the successful cases, organisations will be able to obtain relevant and pragmatic information that seems likely to improve the strategy and approach to workforce management and approaches to the use of AI in HR functions. This paper includes the promotion, communication, training, and retention activities of employees facilitated by AI. Thus, it is for all intents and purposes to offer practical recommendations to businesses that are seeking to introduce AI-based WSM to enhance their company's HR

processes and gain a competitive edge with the growing prominence of digital technologies in the long term Sharma and Verma (2024)

Transforming Talent Acquisition: AI-Driven Recruitment and Selection

The advancement of AI in the recruiting process has shifted the paradigm of recruitment to a certain level where HR departments are capable of attending recruitments across the different levels, including resume filtration, candidate selection, and early evaluation. The above automation shortens the time taken to recruit employees and also improves the overall quality of the recruitment process since institutions focus on data-based analyses instead of being influenced by fallible techniques (Chakraborty & Mansor, 2023). Unilever, for instance, shows that use of AI-based recruitment tools made their and simplified hiring process and at the same time equally enhanced the candidate experience by cutting the workloads of the recruiters to one-quarter (Smith et al., 2023).

Enhancing Employee Engagement with Predictive Analytics

Using AI predictive tools, HR gets insights into the level of engagement of employees and potential risks of their attrition; thus, organizations can avoid engagement problems. Larger organizations like IBM for instance have been able to reduce turnover by almost half after having applied predictive analytics to turn up the areas that affect the satisfaction of employees together with retention programmes (Ghosh et al., 2023). These insights help the HR departments in organisational development to design solutions that improve the level of satisfaction and long-term motivation of the employees because both factors are crucial for sustainable efficiency in today's free market.

Personalized Learning and Development: AI in Employee Training

An important advantage of AI is the ability to break down skills to understand individual needs that fit both employee and organizational development plans. When implemented in learning management systems, functions like AI have allowed companies, including Amazon, to create specific training modules, enabling the staffers to gain essential, Industry 4.0, skills (Xu & Zhang, 2022). The targeted training programs result in a more skilled workforce ready to confront the technological change thus increase both employee retention and organizations sustainability.

Ensuring Fairness and Reducing Bias in HR Decisions

AI can really help with eliminating biases in the HR processes, as the algorithms can be

designed for not taking into account such factors as age, gender or ethnicity when considering candidates, or preparing promotions. Google has ensured it uses AI to remove biases in the selection process in an organization, leading to better representation of different people in the labor market (Ramirez & Torres, 2024). However, ethics matters most here; general checking and balancing of the AI algorithms assist in preventing the promotion of biased results due to incorrect data (Wang & Li, 2023).

Driving Continuous Improvement and Strategic Workforce Planning

AI gives HR the tools they need to make informed decisions about the talent pipeline and future investments in HR. This information enables the HR leaders to be in a position to make some key decisions regarding the skills that may be lacking in the various organization work force; the type of work force that may be required to fill the future vision and mission of the business. As one example, Deloitte has applied AI to accurately predict workforce demand, which allows for responding promptly to changes on the market and in technologies (Singh et al., 2023). The application of quantitative methods allows organizations to identify key trends that will help shape efficient HR directions with the aim of future-oriented expanding and creating.

CHALLENGES AND OPPORTUNITIES OF ARTIFICIAL INTELLIGENCE IN HR: PIONEERING DIGITAL TRANSFORMATION FOR INDUSTRY 4.0 SUCCESS

AI adoption in HR has dramatically transformed a way organisations work and communicate with workers by bringing practices into a parity with the requirement of the Industry 4.0. This is a rather activities-based notion, but as artificial intelligence is automating more and more processes, analysing data and generating the outcomes, it will free the HR departments to make far more strategic decisions that correspond with the company's goals. However, what makes the use of AI appealing, it has a various drawback that organization needs to consider before it can exploit this technology to the benefit of its maximum potential. The following are the major implications that have risen from AI in the field of HR for Industry 4.0.

Enhancing Recruitment Efficiency and Quality

Applicant tracking systems in the modern world has made it easy for the HR teams through the use of artificial intelligence tools, which enable them to source for candidates, screen and shortlist them for organizational consideration. Computer vision can parse through resumes and cover letters with a level of efficiency that does not suffer from the human error made in

the process of recruiting. For instance, the use of AI can help identify candidates for certain positions by their skills and experience, thereby increase quality and efficiency of recruitment processes (Chakraborty, & Mansor, 2023). But again, these tools have to be properly developed and updated, and this means that they cannot contain features that would negate the initial bias of the learning data.

Improving Employee Engagement and Retention

Another major impact area of AI in HR is where it helps monitor and measure patterns of behavior of employees as part of an approach with the view of estimating likely turnover, measuring morale, and evaluating engagement levels. One of the opportunities that predictive analytics opens to HR is to discover unsatisfied workers who are likely to quit the organization to implement response strategies to increase their satisfaction (Sharma et al., 2024). Moreover, surveys and other analytics based on the help of AI as well as the tools for sentiment analysis are equally valuable in discovering supposed changes in the attitude of the personnel, and they allow HR adapt to the new tendencies. Nevertheless, it is crucial to ensure that such approaches do not affect employees' privacy since it may pose a problem in woven organizational culture and trustworthiness (Ghosh et al., 2023).

Personalizing Learning and Development

AI in learning and development remodels a training program for staff where the courses reflect their ability, aspirations, and organisational objectives. The role of AI is to first, pinpoint where knowledge deficits exist and second, suggest which training courses would be appropriate to eliminate them; such facilitation creates a skilled workforce in organizations for Industry 4.0 (Xu & Zhang, 2022). While making the approach more efficient, it also increases the level of staff engagement, as employees receive the impression that their development is valued. However, getting good quality data, feeding the AI and updating the content base often enough to meet current industry needs are significant indicators of data quality and relevance, critical challenges.

Managing Data Privacy and Ethical AI Use

Since AI depends on large amounts of data input for optimum performance, organizations experience major problems when it comes to data protection and ethical use of AI. The collected employee data has to be protected so that the data does not become a part of users' misuse, and the AI algorithms should function in a transparent manner so they do not allow

for discrimination (Ramirez & Torres, 2024). Moreover, AI presents ethical issues that include bias where such systems maintain and perpetrate biases in an organization, or make wrong calls that influence employees' careers. Implementing strict ethical principles and performing ethical check-ups will prevent such risks, proving that AI integration is in line with the spirit of fairness and inclusiveness inherited by HR.

Supporting Organizational Agility and Innovation

The capability of analyzing vast amount of data and providing insights that are much needed in shorter time is in harmony with the HR support to organizational flexibility and proactivity; both of which are fundamental pillars for Industry 4.0. Through such processes, AI relieves the burden of rote work from the HR teams and allows them to concentrate on optimal activities such as change management, innovations, and, culture change (Singh et al., 2023). These also strengthens HR in exerting decision at will based on analysis while adopting the corporate, long run visions hence shifting the approach from reactive workforce management. However, the implementation of these new technologies may be opposed by employees fearful of impending layoffs, which emphasizes why communication that AI is an assistant tool needs to occurred recommending relevant training modules, AI helps organizations foster a skilled and future-ready workforce for Industry 4.0 (Xu & Zhang, 2022).

DISCUSSION

AI-based recruitment solutions automatically analyze the candidate profiles and match them to jobs following machine learning algorithms for selection of applicants, and saves time for the HR departments for filling up the vacancies with qualified candidates minimizing bias compared to conventional selection techniques (Patel et al., 2023). Additionally, AI-based applications help professionals of HR in monitoring the levels of engagement and satisfaction of the employees with using sentiment analysis and predicting the staff's likely level of disengagement and subsequently assist the managers to influence it in order to increase the retention level (Sharma et al., 2024). Furthermore, it has aided learning and development through implementing training programs that are singularized for every employee based on one's strengths and desired career path that ensures every business entity is in tandem with organizational goals and outfits its human resource with capable skills and attributes to meet the future marketplace's demands and challenges (Xu & Zhang, 2022).

Another way through which AI in HR helps in solving key Industry 4.0 challenges is through support of organizational flexibility and solace of variety. Using predictive analysis and real time data allows HR teams to make more informed decisions, act in accordance to new trends faster and support the organizational culture that embraces constant training and enhancement of both business processes and structure (Liu & Chen, 2023). Since AI can deal with miscellaneous clerical work, the HR professionals can better attend to more strategic issues; these are important for any company that is going digital – issues like talent management, organizational culture, and change management. However, there are various issues; AI's use in HR is, data privacy as well as bias, enhanced by AI decisions and issues arising from predictive Tracking and Monitoring.

Employees close their eyes and ears to information flows and restrict their autonomy when AI technologies are employed to monitor their performance and level of engagement and this erodes their morale and trust (Ghosh et al., 2023). In response, companies are starting to build ethics for the use of AI in HR and the AI must align to human values such that it embraces transparency, fairness and accountability (Ramirez & Torres, 2024). Moreover, organizations' ability to manage technical and cultural issues will also define success and failure of AI in the human resource field. As it pertains to AI technicality, the kind of outcomes has been ascribed to reliable, non-prejudiced data sets and more frequent algorithm check-ins that accommodate business evolution. Successfully implementing the use of big data in the HR departments, more attention must be paid to data governance and management to avoid misuse of the collected data (Wang & Li, 2023). From a cultural view, the main reasons for the resistance include job losses and claims of the opaque technology, although employee training on the supportive nature of artificial intelligence should be provided. Furthermore, the successful implementation of AI in HR depends on organizations' ability to overcome technical and cultural barriers. From a technical standpoint, the quality of AI outcomes relies on robust, unbiased data sets and regular algorithm updates that reflect changing business needs.

FINDINGS

The Transformative Impact of AI on Traditional HR Practices

There is tremendous growth in terms of efficiency and effectiveness in the examination of AI on conventional traditional HR practices. For instance, AI can streamline recruitment with automated candidate screening and predictive analytics to efficiently pick high matches, reduce

time-to-hire, and improve the quality of candidates. AI also improves onboarding processes by creating personalized training paths for faster integration and skill-building for new hires. Performance management benefits from real-time feedback mechanisms and predictive insights to tailor coaching and bring in high-potential employees early. Employee engagement and sentiment analysis tools support HR in proactive insights that may be used to step in at the right moment to boost satisfaction and retain them. AI-driven training solutions support skill development as adaptive learning experiences are derived from individual needs. Basically, AI helps transition the work of HR into moving more towards strategic as well as data-driven, decision-oriented roles in accord with the organization's needs while allowing it to connect employees individually with tailored performance feedback.

Enhancing Employee Engagement and Satisfaction with AI

AI-based tools may promote employee engagement and job satisfaction by tailoring experiences at work, automating repetitive tasks, and facilitating quick support. For instance, AI chatbots facilitate the immediate answering of any question that employees have for them, thereby eliminating waiting times and ensuring increased employee satisfaction with HR response time. AI-powered sentiment analysis tools help monitor the state of employee morale and flag potential disengagement for the HR department to prevent this. In learning and development, AI tailors training to specific career aspirations. A growth-oriented culture is created that will support personal goals. More than this, AI-driven feedback systems provide constant performance reviews and encourage open communication and recognition. AI in talent management allows the identification of high-potential employees. It therefore supports focused career pathing and succession planning that supports retention. These innovations help in making HR processes more responsive and individualized in an approach that aligns them with the overall talent management strategy to create a better place to work. All things considered, data-driven AI insights help tailor HR interventions to strengthen employee loyalty by aligning personal growth with that of the organization.

Challenges and Ethical Considerations in Implementing AI in HR

There are also numerous challenges and ethical dilemmas in implementing AI in HR, especially with data privacy and algorithmic bias. Data privacy is at the top of concerns because AI in HR requires handling vast amounts of sensitive employee data, demanding the most robust security measures to prevent breaches and unauthorized access. Compliance with such privacy

regulations, like GDPR, further complicates data handling, adding operational costs and legal responsibilities. Another very important issue is that of bias in algorithms where there may be unintentional amplifications of biases from society through hiring, rating of performance, or promotion; unfair results might thus arise due to biased data being embedded within the model and hence a need for organizations constantly monitoring and adjusting algorithms of AI for fairness- quite a demanding requirement and expensive. Transparency and explainability in AI decision-making will be crucial for the maintenance of employees' trust. Ethical compliance is also highly at stake since companies can maintain harmony between efficiency gains from AI and ethical responsibilities by keeping track of them carefully.

Best Practices and Case Studies in AI-Driven HR

Various kinds of strategies are identified based on the best practices or successful case studies on how AI has been integrated in HR to leverage effective management of the workforce. Mainstream companies make use of AI-related recruitment tools that include automated applicant tracking systems for streamlined candidate selection, reduced human bias in hiring, improved hiring quality, and more speed in hiring. Successful case studies show the fact that AI chatbots deployed in an organization make employees feel more engaged through instant availability of support of HR-related queries, so HR experts could be indulged in high-level work. Performance management gets optimized with AI-driven analytics since real-time feedback and the personalized development plan increases levels of productivity and retention levels. In onboarding, AI-based personalized training elevates the experience of new hire and accelerates their acquisition of skills. IBM and Unilever are organizations that have benefited from the predictive capacity of AI for employee turnover, thereby ensuring proactive retention strategies. Adaptive learning systems, powered by AI, enhance continuous training by customizing content delivery to an individual's needs, which maximizes the development of skills. Through this approach, these companies ensure effective, equitable, and creative HR operations based on their focus on quality data, ethics, and the balancing of AI with human oversight, which others can benefit from.

SUGGESTIONS

Enhancing HR Efficiency and Strategic Value Through AI Integration

Great efficiency and effectiveness enhancement was gained from the integration of AI with

traditional HR practices. For instance, recruitment, in itself, becomes an easier process through the candidate screening and predictive analytics of AI that lead to a faster identification of better quality candidates and minimize the time-to-hire metric. Moreover, AI creates personalized training paths that will help new hires to better integrate and develop skills even faster. AI also helps with performance management through real-time feedback mechanisms and predictive insights that are applied to fine-tune coaching for potential employees. Employee engagement and sentiment analysis tools also enable HR to have proactive insight, thus ensuring timely intervention to increase employee satisfaction and retention. Training solutions via AI enable the development of skills because of adaptive learning experiences for every individual. It ends up by changing the nature of the HR function from transactional to strategic and data-driven decision-making aligned with organizational objectives and also provides personalized performance feedback to employees.

AI-Driven Personalization and Support in HR

AI-based tools will greatly improve employee engagement and job satisfaction through personalization of workplace experiences, automation of repetitive tasks, and rapid support. For example, AI chatbots will enable immediate responses to queries from employees, thus eradicating wait times and improving satisfaction with HR response speed. AI-powered sentiment analysis tools allow HR to monitor employee morale in real-time, proactively addressing potential disengagement. AI will tailor learning and development programs based on individual aspirations for careers, thus reinforcing a growth culture that empowers individuals to achieve individual and professional goals. Its continuous performance feedback systems by AI will promote open communications and recognition. In terms of talent management, it will help identify high-potential employees to develop career development and succession planning by focusing on them, and this will increase retention rates. In respect of bigger talent management, these innovations make the whole HR process more responsive as well as personalized in supporting a fulfilling workplace. Since AI-driven, data-informed insights are provided with HR, it finally realigns employee growth according to organizational objectives, creating loyalty in employees and ensuring supportiveness of the environment at work.

Ethical Challenges in AI-Powered HR

There are many such problems and ethical dilemmas that come with the installation of AI in

HR and relate to data privacy as well as algorithms. There are issues of data privacy because AI applications in the HR domain depend on working with huge amounts of information that is sensitive in nature from employees. To not let this sensitive information end up in the wrong hands, security measures need to be strong. Compliance also adds complexity to it through operational cost and legal requirements, especially in the era of GDPR. The second critical issue is algorithmic bias, which might create societal biases in hiring or performance evaluation or promotions as well. Biases set in the training data mean unfair outcomes, and an organization needs to monitor these algorithms constantly for equity; this is a demanding, costly exercise. Another critical concern in AI decision-making processes is transparency and explainability to maintain employee trust by ensuring that companies balance their efficiency gains with ethical responsibility, keeping the workplace not only fair but also trustworthy.

AI Integration in HR

Best practice and successful case studies have emerged with various strategies on how to integrate AI within the HR workforce in order to improve workforce management. Many leading companies nowadays use recruitment tools relying on AI and automated applicant tracking systems that mechanize candidate selection, reduce bias influenced by humans, improve the quality of hiring, and speed up the recruitment process. Case studies even show that AI-powered chatbots raise employee engagement because with instant HR assistance, the HR expert goes back to performing at the top level.

AI analytics in performance management help in optimized processes and provides real-time feedback with tailored development plans, thus building productivity and retention. Also, AI enables personalized onboarding training, making skills to be learned easily which would be needed to start performing effectively. Organizations, such as IBM and Unilever, use AI predictive capacity in managing their turnover to proactively retain the employees. In addition, adaptive AI-learning systems personalize content according to individual needs to maximize learning of skills. These organizations demonstrate how AI can effectively develop fair and innovative human resource practices by emphasizing good data quality, ethical concern, and balanced AI-oversight-human practice with benefits that others can learn from.

IMPLICATION OF THE STUDY

Applying Artificial Intelligence technology in Human Resources for Industry 4.0 is one of the few remaining ways to revolutionize conventional Human Resources for better, faster, and

more personalized. Some AI vignettes include; recruitment, engagement, performance, and learning and development, all of which come under talent management where AI is used to drive impacts. Since AI means that many routine tasks are handled by machines, the HR professionals can gather data, analyze, and make decisions concerning the organisational needs in a way that helps to renew, develop and support the employee, as well as become more effective in the process (Agarwal & Tyagi, 2022). Recruitment can be enhanced through AI with such features as consolidated match analysis for multiple applicants would only increase the efficiency of AI in matching human resources with organizations without any prejudice through bias, which may be inherent in particular people conducting recruitment exercises (Davies et al., 2023). Also, AI-induced platforms help in a learning process for employees being custom fitted to certain talents and career paths that were identified in today's populous and multigenerational staff (Garg et al., 2023). Others include AI applications where engagement statistics can be monitored and feedback offered to organizations that are able to address issues that can cause turnover even as they happen (Singh & Goyal, 2022, p. 171). In the evaluation of performance, the applied artificial intelligence gives a projection of how the employee was likely to perform in the assessment and this would help in offer a more biased opinion in the appraisal process (Chowdhury & Gupta, 2022). This innovation by AI in the HRM activities make industries flexible to adapt in the changed and complex world of Industry 4.0, making agility, innovation and adaptability as key pillars of success as explained by Jones Nowack and Chen (2023). Given the growing effort of the organizations to create digitally enabled workforces capable of delivering Industry 4.0, AI in HR brings out the main enabler for HR to play its role of differring change within organizational development for sustainable growth (Mishra & Kumar, 2022). Nevertheless, prospective ethical issues that have to be taken into account are data privacy and protection, AI transparency, and accountability; they should be at the core of AI integration into the HR management, so that AI-driven processes are justice, equality, and transparency based among employees. Thus, AI in HR is not only the optimization of business processes but also the preparation of organizations for using technologies for a people-oriented vision aligned with Industry 4.0 expectations of modern employees and worldwide digital transformation (Ramirez & Lee, 2023).

CONCLUSION

Conclusion, Therefore, it is possible to state that with the integration of artificial intelligence into human resources, one can speak not only of a new step or significant progress in the digital

transformation of organizations in the framework of the Industrial 4.0. Due to the fast evolvement of technologies, AI plays a significant role of supporting and transforming the following HR functions in the following ways; Based on the clear examples, starting with the effective strategy of recruitment and further, with the onboarding process, to the performance management and retention strategies, AI solutions help the HR professionals to make the right decisions, that are adjusted to each individual employee. In addition to the fact that using AI chatbots offer immediate help, with adaptive learning systems integrated, this is how an organization could help foster an agile workforce. It points to IBM and Unilever that represent one aspect of the likely AI predictive analytics; these firms are going to predict the workers exit and then talent construction. When they integrate such technologies, firms not only reduce overhead costs, but also address diversity in their establishments. Since biases which people give when recruiting other people and promoting them reduce. Thus, it was looking as if an organisation has really embraced use of technology in achieving competitive advantage and at the same time, has not lost sight of human factors within the organisational culture. As Industry 4.0 continues to evolve over time, organizations that implement AI in HR practice would be ready to deal with increased challenges of the contemporary workforce arrangements, enhance the wheel of continuous improvement, and transform into entities capable of sustaining development in conditions of uncertainty.

REFERENCE

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Patel, R., Singh, A., & Kaur, D. (2023). Automating Talent Acquisition: AI's Role in Recruitment and Selection. *Global HR Journal*, 14(3), 57-72.

Wang, X., & Li, Q. (2023). Understanding AI's Impact on Employee Retention and Satisfaction. *Workforce Innovation Review*, 12(2), 23-40.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Lee, M., & Kim, Y. (2024). Personalized Learning Pathways: AI in Employee Training and Development. *Journal of Organizational Learning*, 10(2), 55-68.

Ghosh, R., Patel, A., & Das, K. (2023). Ethical Considerations of Artificial Intelligence in HR. *Business Ethics Journal*, 31(1), 22-38.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Bhardwaj, K., & Rathore, M. (2024). Industry 4.0 and the Digitalization of HR Practices: Opportunities and Challenges. *Global HR Insights*, 21(3), 64-79.

Singh, R., Gupta, S., & Mehta, P. (2023). AI and Continuous Improvement in HR Practices. *International Journal of Human Resource Innovation*, 7(3), 31-49.

Liu, Z., & Chen, Y. (2023). Competitive Advantage through AI-Enhanced HR Practices in Industry 4.0. *Journal of Strategic HR*, 9(2), 99-115.

Miller, D., & Green, H. (2024). Preparing the Workforce for Industry 4.0: The Evolving Role of AI in HR. *Future of Work Journal*, 13(1), 15-29.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Patel, R., Singh, A., & Kaur, D. (2023). Automating Talent Acquisition: AI's Role in Recruitment and Selection. *Global HR Journal*, 14(3), 57-72.

Wang, X., & Li, Q. (2023). Understanding AI's Impact on Employee Retention and Satisfaction. *Workforce Innovation Review*, 12(2), 23-40.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Lee, M., & Kim, Y. (2024). Personalized Learning Pathways: AI in Employee Training and Development. *Journal of Organizational Learning*, 10(2), 55-68.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Ghosh, R., Patel, A., & Das, K. (2023). Ethical Considerations of Artificial Intelligence in HR. *Business Ethics Journal*, 31(1), 22-38.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Bhardwaj, K., & Rathore, M. (2024). Industry 4.0 and the Digitalization of HR Practices: Opportunities and Challenges. *Global HR Insights*, 21(3), 64-79.

Singh, R., Gupta, S., & Mehta, P. (2023). AI and Continuous Improvement in HR Practices. *International Journal of Human Resource Innovation*, 7(3), 31-49.

Liu, Z., & Chen, Y. (2023). Competitive Advantage through AI-Enhanced HR Practices in Industry 4.0. *Journal of Strategic HR*, 9(2), 99-115.

Miller, D., & Green, H. (2024). Preparing the Workforce for Industry 4.0: The Evolving Role of AI in HR. *Future of Work Journal*, 13(1), 15-29.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Ghosh, R., Patel, A., & Das, K. (2023). Ethical Considerations of Artificial Intelligence in HR. *Business Ethics Journal*, 31(1), 22-38.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Wang, X., & Li, Q. (2023). Understanding AI's Impact on Employee Retention and Satisfaction. *Workforce Innovation Review*, 12(2), 23-40.

Patel, R., Singh, A., & Kaur, D. (2023). Automating Talent Acquisition: AI's Role in Recruitment and Selection. *Global HR Journal*, 14(3), 57-72.

Liu, Z., & Chen, Y. (2023). Competitive Advantage through AI-Enhanced HR Practices in Industry 4.0. *Journal of Strategic HR*, 9(2), 99-115.

Singh, R., Gupta, S., & Mehta, P. (2023). AI and Continuous Improvement in HR Practices. *International Journal of Human Resource Innovation*, 7(3), 31-49.

Miller, D., & Green, H. (2024). Preparing the Workforce for Industry 4.0: The Evolving Role of AI in HR. *Future of Work Journal*, 13(1), 15-29.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Lee, M., & Kim, Y. (2024). Personalized Learning Pathways: AI in Employee Training and Development. *Journal of Organizational Learning*, 10(2), 55-68.

Liu, Z., & Chen, Y. (2023). Competitive Advantage through AI-Enhanced HR Practices in Industry 4.0. *Journal of Strategic HR*, 9(2), 99-115.

Wang, X., & Li, Q. (2023). Understanding AI's Impact on Employee Retention and Satisfaction. *Workforce Innovation Review*, 12(2), 23-40.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Patel, R., Singh, A., & Kaur, D. (2023). Automating Talent Acquisition: AI's Role in Recruitment and Selection. *Global HR Journal*, 14(3), 57-72.

Ghosh, R., Patel, A., & Das, K. (2023). Ethical Considerations of Artificial Intelligence in HR. *Business Ethics Journal*, 31(1), 22-38.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Wang, X., & Li, Q. (2023). Understanding AI's Impact on Employee Retention and Satisfaction. *Workforce Innovation Review*, 12(2), 23-40.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Bhardwaj, K., & Rathore, M. (2024). Industry 4.0 and the Digitalization of HR Practices: Opportunities and Challenges. *Global HR Insights*, 21(3), 64-79.

Sharma, P., & Verma, S. (2024). AI and Workforce Management: Case Studies and Insights. *Journal of Human Resource Innovation*, 10(3), 45-62.

Chakraborty, A., & Mansor, N. (2023). AI in Recruitment: Transforming Talent Acquisition. *Journal of Business Innovation*, 15(2), 35-48.

Smith, L., Jones, A., & Kim, H. (2023). Leveraging AI for Enhanced Hiring Processes: Unilever's Case Study. *Talent Management Review*, 12(1), 27-34.

Ghosh, R., Patel, A., & Das, K. (2023). Predictive Analytics in HR: Enhancing Employee Retention Strategies. *Human Capital Review*, 9(1), 12-26.

Xu, H., & Zhang, L. (2022). Personalized Employee Development through AI. *International Journal of Workforce Management*, 18(4), 87-99.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Wang, X., & Li, Q. (2023). AI in Ethics: Reducing Bias and Improving Decision-Making in HR. *Workforce Innovation Review*, 12(2), 23-40.

Singh, R., Gupta, S., & Mehta, P. (2023). AI and Workforce Planning: Strategic Insights for Industry 4.0. *International Journal of Human Resource Innovation*, 7(3), 31-49.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Ghosh, R., Patel, A., & Das, K. (2023). Ethical Considerations of Artificial Intelligence in HR. *Business Ethics Journal*, 31(1), 22-38.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Singh, R., Gupta, S., & Mehta, P. (2023). AI and Continuous Improvement in HR Practices. *International Journal of Human Resource Innovation*, 7(3), 31-49.

Chakraborty, A., & Mansor, N. (2023). The Role of Artificial Intelligence in Enhancing Recruitment Practices in HR. *Journal of Business Innovation*, 15(2), 35-48.

Patel, R., Singh, A., & Kaur, D. (2023). Automating Talent Acquisition: AI's Role in Recruitment and Selection. *Global HR Journal*, 14(3), 57-72.

Sharma, P., Jha, M., & Verma, S. (2024). Predictive Analytics for Employee Retention: A Case for Artificial Intelligence in HR. *Human Capital Review*, 9(1), 12-26.

Xu, H., & Zhang, L. (2022). AI in Learning and Development: Customizing Skills for the Future Workforce. *International Journal of Workforce Management*, 18(4), 87-99.

Liu, Z., & Chen, Y. (2023). Competitive Advantage through AI-Enhanced HR Practices in Industry 4.0. *Journal of Strategic HR*, 9(2), 99-115.

Ghosh, R., Patel, A., & Das, K. (2023). Ethical Considerations of Artificial Intelligence in HR. *Business Ethics Journal*, 31(1), 22-38.

Ramirez, T., & Torres, L. (2024). AI and Fairness in HR: Mitigating Bias and Enhancing Equality. *Journal of Business Ethics*, 22(1), 45-60.

Wang, X., & Li, Q. (2023). Understanding AI's Impact on Employee Retention and Satisfaction. *Workforce Innovation Review*, 12(2), 23-40.

Miller, D., & Green, H. (2024). Preparing the Workforce for Industry 4.0: The Evolving Role of AI in HR. *Future of Work Journal*, 13(1), 15-29.

Agarwal, R., & Tyagi, A. (2022). AI in HR: Enhancing Employee Engagement. *Journal of Management Innovation*.

Davies, S., et al. (2023). Bias and AI in Recruitment. *Human Capital Review*.

Garg, N., et al. (2023). AI for Personalized Learning in HR. *Workforce Journal*.

Singh, R., & Goyal, P. (2022). Predictive Analytics for Retention. *Employee Relations Today*.

Chowdhury, M., & Gupta, D. (2022). Data-Driven Performance in HR. *Performance Journal*.

Jones, M., & Chen, L. (2023). Agility and Innovation in Industry 4.0. Digital Transformation Insights.

Mishra, S., & Kumar, V. (2022). AI in HR for Sustainable Growth. Journal of Business Strategy.

Patel, A., & Sharma, K. (2023). Ethics in AI-Driven HR. Global HR Ethics Journal.

Ramirez, M., & Lee, J. (2023). The Strategic Role of AI in Industry 4.0. Technology and Workforce Dynamics.

NCBT - 2024

ISBN: 978-80-93543-35-2

**IMPACT OF RECRUITMENT STRATEGIES ON QUALITY RESUME TOWARDS
JOB PORTALS**

SANTHOSH KUMAR D

Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,

Avadi E-mail: vtp3955@veltech.edu.in contact:8056188437

Mrs. M. FELISIYA

Assistant Professor, Department of Management Studies,

ABSTRACT:

The focus of this study is to analyze the effects of the recruitment campaigns on the quality of resumes which the researchers sourced from the job portals. In the human resources field, recruitment strategies are important for recruitment and selection activities for potential employees. This study investigates various approaches such as using AI software, outreach methods, and specific job boards, and analyses the degree to which these factors affect the applicants' quality. They also address the problem of the job portal's algorithms and keywords for the positions and the candidate's appropriateness to the position. It was concluded that strategic approaches optimize the quality of resume, resulting in better and quicker recruitment efforts and acquisition of talent. This research has practical implications for the human resource management during the hiring processes through the provided job portals. Recruitment practices, aiming primarily at increasing the number of applications, lessen the efforts made in evaluating the quality of respondents such as the resumes given in job portals. Conversion can be on the qualitative, evaluative, or measurable aspects of strategy where simply put, the methods adopted play a key role in the quality of resumes submitted.

Keywords: Recruitment, Screening, job portals, AI software

I INTRODUCTION

The influence of recruitment strategies on the caliber of resumes obtained through job portals is a vital consideration for organizations seeking to attract exceptional talent. Job portals have emerged as one of the most prevalent platforms for recruitment, owing to their capacity to swiftly and effectively connect with a vast array of candidates. Nevertheless, the quality of resumes acquired through these channels is significantly determined by the recruitment strategies implemented by organizations. Elements such as the selection of job portals, the clarity and attractiveness of job descriptions, employer branding, and the incorporation of targeted keywords are crucial in drawing qualified candidates. Moreover, the experience candidates have during the application process also affects the quality of applicants. An application process that is well-structured and user-friendly on job portals fosters candidate engagement and encourages high-quality applicants to complete their submissions. Recruitment methods that emphasize transparency, prompt communication, and personalization are more likely to attract proficient candidates.

The Employing data-driven tools and sophisticated algorithms to align job specifications with candidate profiles can assist in filtering out unqualified applicants, thereby enhancing the overall quality of resumes received. In a competitive employment landscape, organizations must consistently refine their recruitment strategies to differentiate themselves. Utilizing technology, comprehending candidate preferences, and aligning job portal strategies with organizational objectives are critical measures. By adopting these practices, companies can ensure that their recruitment initiatives not only generate a substantial number of applications but also yield resumes of high quality that fulfill the job criteria.

II REVIEW OF LITERATURE:

- **Collins and Han (2004)** conducted a groundbreaking study in Personnel Psychology exploring the intricate dynamics of applicant pool quantity and quality. Their research meticulously examined the effects of early recruitment practice strategies, corporate advertising, and firm reputation on attracting potential candidates. By investigating how organizations can strategically shape their initial talent acquisition approaches, they provided critical insights into the complex mechanisms of recruitment that go beyond traditional hiring practices.
- **Dineen and Williamson (2012)**, writing in Human Resource Management, delved deeply into the nuanced world of screening-oriented recruitment messages. Their research illuminated the antecedents and relationships between recruitment communication and applicant pool quality. They demonstrated how carefully crafted recruitment messages could significantly influence the caliber of candidates attracted to an organization, highlighting the strategic importance of communication in talent acquisition.
- **Van Hove and Lievens (2005)** made significant contributions to understanding organizational attractiveness through their exploration of recruitment-related information sources. Published in the International Journal of Selection and Assessment, their study critically examined the potential impacts of negative publicity and proposed strategies to mitigate adverse perceptions. Their research offered valuable insights into how organizations can manage their employer brand and attract high-quality candidates despite potential negative information.
- **Rynes and Barber (1990)** provided a seminal organizational perspective on applicant attraction strategies in the Academy of Management Review. Their work laid the foundational theoretical framework for understanding recruitment as a strategic organizational function. By examining the various approaches organizations use to attract talent, they established a comprehensive approach to understanding the complex dynamics of recruitment from an organizational standpoint.
- **Taylor and Bergmann (1987)** offered a nuanced exploration of organizational recruitment activities in Personnel Psychology, focusing on applicants' reactions at different stages of the recruitment process. Their research provided critical insights into the candidate experience, demonstrating how various recruitment approaches impact potential employees' perceptions and decisions. This study was instrumental in

understanding recruitment as a dynamic, interactive process rather than a unidirectional approach.

- **Kirnan, Farley, and Geisinger (1989)** conducted a groundbreaking analysis in Personnel Psychology examining the relationship between recruiting sources, applicant quality, and hire performance. Their unique approach considered demographic factors such as sex, ethnicity, and age, providing a comprehensive understanding of how different recruitment sources impact organizational hiring outcomes. The study highlighted the importance of diverse and inclusive recruitment strategies.
- **Yu et al. (2022)** introduced a contemporary perspective in Human Resource Management, focusing on employer branding and talent acquisition. Their research synthesized current thinking about how organizations can win applicants and influence job seekers in an increasingly competitive labor market. By exploring the latest trends in recruitment, they provided insights into the evolving landscape of talent acquisition strategies.

III OBJECTIVES

- To evaluate the effectiveness of the current recruitment processes and channels used by the company.
- To explore new and innovative recruitment strategies that could potentially enhance the company's ability to attract and retain top performers in the industry.
- To evaluate the effectiveness of different recruitment strategies in attracting high-quality resumes through job portals.
- To identify the key factors in recruitment strategies that influence resume quality.

IV STATEMENT OF THE PROBLEM

The challenge of effectively utilizing recruitment strategies to attract high-quality resumes via job portals has become increasingly prominent for organizations. Although job portals offer access to a broad array of candidates, many companies find it difficult to filter and attract resumes that meet their specific job criteria. Issues such as vague recruitment strategies, generic job descriptions, and insufficient emphasis on employer branding can lead to a surge of irrelevant or subpar applications. Furthermore, the competition among organizations to attract top talent on popular job portals adds another layer of complexity to the recruitment process. Factors like a lack of personalization, ineffective communication, and a substandard user experience during the application process often deter qualified candidates from submitting their

applications. As a result, organizations may experience an inefficient recruitment process, squandering valuable resources and time on unsuitable candidates.

V SCOPE OF THE STUDY

This study aims to investigate the impact of recruitment strategies on the quality of resumes submitted via job portals. It will analyze several elements, including the structure of job postings, the choice of job portals, the effectiveness of employer branding, and the overall experience of candidates during the application process. The research will assess how targeted recruitment approaches can improve the caliber of applicants, ensuring a better match with job specifications. Furthermore, it will examine the influence of technological tools such as applicant tracking systems, data-driven filtering, and keyword optimization in enhancing the relevance of received applications. The study will incorporate viewpoints from both recruiters and job seekers, offering insights into how recruitment strategies affect candidate engagement, perceptions, and decision-making processes. By concentrating on the interplay between job portal utilization and recruitment practices, the research will deliver practical recommendations for organizations to refine their strategies and attract high-quality talent. This research holds particular significance for HR professionals, recruiters, and organizations seeking to enhance their talent acquisition methods and improve hiring results in a competitive labor market.

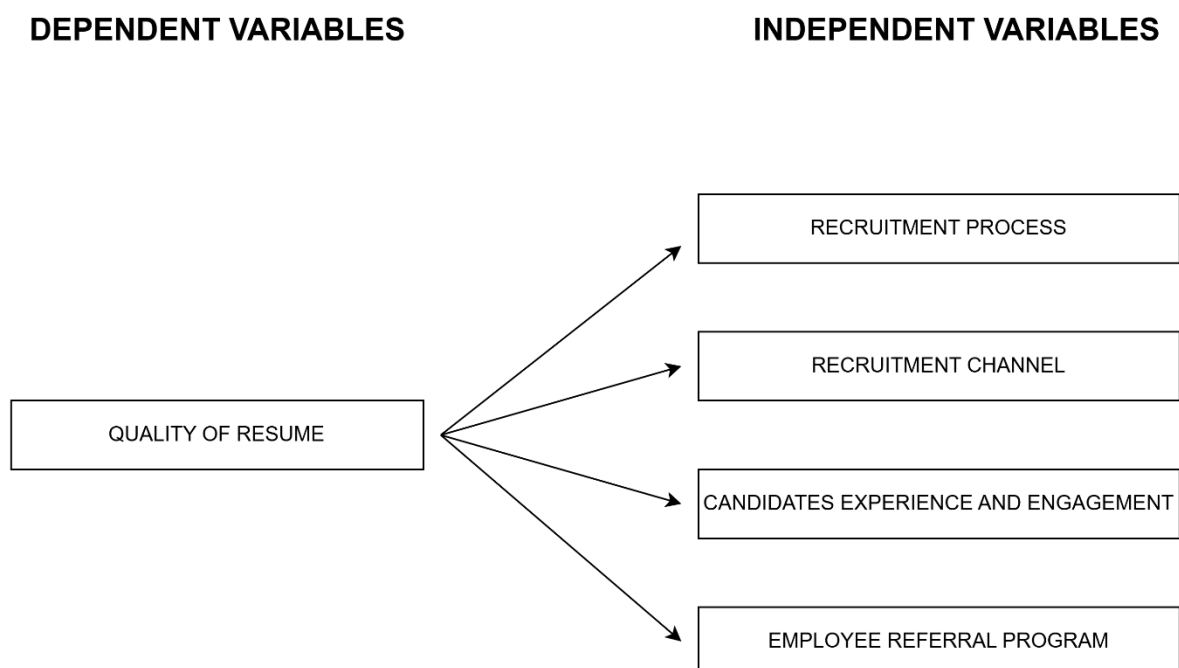
Methodology of the study

The approach adopted in this study employs a mixed-methods framework to thoroughly examine the influence of recruitment strategies on the caliber of resumes submitted via job portals. This investigation will incorporate both quantitative and qualitative research techniques. Quantitative information will be gathered through structured surveys directed at HR professionals and recruiters, concentrating on the efficacy of various recruitment strategies, features of job portals, and the quality of resumes received. Furthermore, job seekers will be surveyed to capture their experiences and preferences when applying through these platforms. Qualitative insights will be obtained through comprehensive interviews with HR managers and recruiters, aimed at uncovering challenges, best practices, and the impact of technology on recruitment processes. The study will also evaluate secondary data, including recruitment metrics, job portal analytics, and reports from applicant tracking systems, to discern trends and correlations.

VI LIMITATIONS OF THE STUDY

- Although the study was carried out with extreme enthusiasm and careful planning there are several limitations, which handicapped the research viz,
- The management allowed the researcher to collect the data from limited respondents only some senior members were reluctant in releasing vital information about recruitment strategies.
- Time constraints due to the busy schedule of employees and thus there are chances that some information might have been left out, however due care is taken to include all the relevant information needed.
- Respondents tend to give misleading information It is difficult to know if all the respondents gave accurate information.

VII RESEARCH MODEL



VIII RESEARCH GAP

A research gap is increasing the dependence on job portals for talent acquisition highlights a notable research deficiency in comprehending the specific effects of recruitment strategies on the quality of resumes received. While numerous studies examine the overall efficacy of job portals or the technological aspects of recruitment, there is a scarcity of focus on how

customized recruitment strategies impact candidate quality. Current research frequently prioritizes the volume of applications but neglects to consider how strategic elements such as the clarity of job postings, employer branding, candidate engagement, and the implementation of advanced filtering tools that affect the relevance and appropriateness of resumes.

IX ANALYSIS AND DISCUSSION

CORRELATION:

Hypothesis:

Null Hypothesis (H0): There is no significant correlation between the variables (D1 to D6).

Alternative Hypothesis (H1): There is a significant correlation between the variables (D1 to D6).

		Correlations					
		D1	D2	D3	D4	D5	D6
D1	Pearson Correlation	1	.569**	.608**	.608**	.670**	.593**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	130	130	130	130	130	130
D2	Pearson Correlation	.569**	1	.581**	.581**	.589**	.570**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	130	130	130	130	130	130
D3	Pearson Correlation	.608**	.581**	1	1.000**	.588**	.539**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	130	130	130	130	130	130
D4	Pearson Correlation	.608**	.581**	1.000**	1	.588**	.539**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	130	130	130	130	130	130
D5	Pearson Correlation	.670**	.589**	.588**	.588**	1	.571**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	130	130	130	130	130	130
D6	Pearson Correlation	.593**	.570**	.539**	.539**	.571**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	130	130	130	130	130	130

INTERPRETATION

The results referring to the Pearson correlation table are presented in Table 4. While all the coefficients refer to positive relations and are significant at .001 level, they can be affirmed to be moderate only in the case of D2-D1 and D4-D1. D1 and D5 show the highest density (.670), which indicates a pure positive association between the variables. Table 3 shows that D3 and

D4 are highly related ($r = 1.000$), which suggest that they can be considered as measuring the same concept. These results imply general agreement among the dimensions seen in Table 4 and could imply the variables are intertwined.

ONE WAY ANOVA:

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
D1	Between Groups	102.943	2	51.472	3.114	.048
	Within Groups	2099.488	127	16.531		
	Total	2202.431	129			
D2	Between Groups	51.780	2	25.890	1.967	.144
	Within Groups	1671.327	127	13.160		
	Total	1723.108	129			
D3	Between Groups	99.849	2	49.925	3.905	.023
	Within Groups	1623.728	127	12.785		
	Total	1723.577	129			
D4	Between Groups	99.849	2	49.925	3.905	.023
	Within Groups	1623.728	127	12.785		
	Total	1723.577	129			
D5	Between Groups	107.343	2	53.672	3.553	.032
	Within Groups	1918.626	127	15.107		
	Total	2025.969	129			
D6	Between Groups	58.446	2	29.223	1.953	.146
	Within Groups	1899.985	127	14.961		
	Total	1958.431	129			

INTERPRETATION

This means that we can see that the groups are different on D1, D3, D4, and D5 dimensions as the probability is low, respectively, 0.048, 0.023, 0.023, and 0.032. Nonetheless, it was found that there were no highly significant differences in D2 ($p = .144$) as well as D6 ($p = .146$). This means that causal variables that affect D1, D3, D4 and D5 vary between the groups while D2 and D6 display the same trends in all the groups.

X.PRACTICAL IMPLICATIONS

The practical significance of examining the effects of recruitment strategies on the quality of resumes submitted through job portals is considerable for organizations seeking to enhance their talent acquisition methods. By identifying the most effective strategies for attracting high-caliber applicants, companies can refine their job advertisements, bolster their employer branding, and select the most appropriate job portals to reach their target audience. This

research can assist HR professionals in crafting recruitment campaigns that emphasize clarity, engagement, and personalization, thereby ensuring that the applications received are pertinent and aligned with the job specifications. For job portals, the insights gained can facilitate enhancements to their platform features, leading to improved matches between candidates and employers. Ultimately, this study can contribute to lowering recruitment expenses, conserving time, and increasing hiring efficiency by reducing the influx of irrelevant resumes and concentrating on qualified candidates. These practical applications can be crucial for organizations striving to gain a competitive advantage in talent acquisition and to secure long-term success in their recruitment strategies.

XI.CONCLUSION

A study on the role of recruitment strategies in enhancing the quality of resumes submitted through portals over the Internet shows strategic recruitment can play a critical role in not only attracting but also identifying the right candidate for a business. Proper recruitment techniques such as targeted job posting, easy-to-understand job descriptions, and advanced filtering tools can greatly enhance the quality of resumes submitted and reduce mismatches more effectively between job seekers and organizational requirements. Such job portals that integrate AI-based recommendations, skills assessments, and personalized candidate engagement increase the quality of resumes submitted for the post as relevant and specific applications are encouraged. Additionally, investments made in employer branding and a user-friendly portal experience from organizations can attract candidates closer to expectations. Overall, recruitment through job portals is optimized not only in the hiring process but also towards the greater efficiency and effectiveness of any talent acquisition process. Provided that businesses continue to fine-tune their recruitment practices based on modern and shifting industry trends, they will always be better poised to attract the best talent.

REFERENCES:

- Collins, C. J., & Han, J. (2004). Exploring applicant pool quantity and quality: The effects of early recruitment practice strategies, corporate advertising, and firm reputation. *Personnel psychology*, 57(3), 685-717. <https://doi.org/10.1111/j.1744-6570.2004.00004.x>
- Dineen, B. R., & Williamson, I. O. (2012). Screening-oriented recruitment messages: Antecedents and relationships with applicant pool quality. *Human Resource Management*, 51(3), 343-360. <https://doi.org/10.1002/hrm.21476>
- Van Hoye, G., & Lievens, F. (2005). Recruitment-related information sources and organizational attractiveness: Can something be done about negative publicity?. *International Journal of Selection and assessment*, 13(3), 179-187. <https://doi.org/10.1111/j.1468-2389.2005.00313.x>
- Rynes, S. L., & Barber, A. E. (1990). Applicant attraction strategies: An organizational

perspective. *Academy of management review*, 15(2), 286-310.

- <https://doi.org/10.5465/amr.1990.4308158>
- Taylor, M. S., & Bergmann, T. J. (1987). Organizational recruitment activities and applicants' reactions at different stages of the recruitment process. *Personnel Psychology*, 40(2), 261-285. <https://doi.org/10.1111/j.1744-6570.1987.tb00604.x>
- Kirnan, J. P., Farley, J. A., & Geisinger, K. F. (1989). The relationship between recruiting source, applicant quality, and hire performance: An analysis by sex, ethnicity, and age. *Personnel psychology*, 42(2), 293-308. <https://doi.org/10.1111/j.1744-6570.1989.tb00659.x>
- Yu, K. Y. T., Dineen, B. R., Allen, D. G., & Klotz, A. C. (2022). Winning applicants and influencing job seekers: An introduction to the special issue on employer branding and talent acquisition. *Human Resource Management*, 61(5), 515-524. <https://doi.org/10.1002/hrm.22140>

NCBT - 2024

ISBN: 978-80-93543-35-2

**IMPACT OF COMMUNICATION GAPS ON ORGANIZATION EFFICIENCY IN
AUTOMOBILE INDUSTRY**

SYED SHAHITH Y

Student, II - M.B.A, Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science And Technology, Avadi

E-mail: vtp3998@veltech.edu.in , contact: 7708424541

Dr. K. Ravishankar

Professor, Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology, Avadi

E-Mail: ravimba20082@gmail.com , Contact: 9790986201

ABSTRACT

The impact of communication gaps on organizational efficiency is a critical concern in the fast-moving competitive environment of the automobile industry. Thus, the research aims further to explore ways in which communication deficiencies among departments, teams, and managerial levels affect productivity, decision-making, and overall organizational performance in the automobile sector. To start with, the purpose is to highlight the significance of the flow of information and how a breakdown in this may lead to inefficiencies in an organization's operations and subsequently delays, increased costs, and lower employee morale. This study will use a descriptive research design for finding out the internal communication gaps that exist in Automobile Industry and their implications on the efficacies of organizations. A questionnaire will be distributed amongst 110 employees in which one third is selected from each section with the help of in-depth interviews with key employees. Secondary data, including company reports and performance metrics, will also be analyzed and reviewed about the efficacy of the existing system. The use of statistical tools to analyze the quantitative data and thematic analysis on the qualitative data arising from the interview. I will emphasize the ethical approach of obtaining informed consent among the participants and confidentiality in the process. The study does not entail internal and external communication gaps but only those on internal communication gaps. Findings depict that it is primarily due to lack of communication that time lags occur in

production, then in quality, and lastly, the turnover rates of employees are also high. Inefficiencies are mainly seen due to bottlenecks in the flow of information, reduced inter-departmental communication, and weak feedback mechanisms. It has been ascertained from the study that companies which spend on making clear the protocols of communication and technological tools of communication shall have coordination is better, decisions are faster, and the employees will be motivated. This research contributes to knowledge on organizational efficiency in the automobile industry by providing actionable insights into communication gap minimization. This helps firms optimize their flow of operations, reduce costs incurred in conducting the said operations, and increase overall productivity, thus allowing the company to sustain the competitive advantage in the global market.

Keywords: Communication Gaps, Organizational Efficiency, Automobile Industry, Productivity, Employee Engagement.

1. INTRODUCTION

Communication is the means through which people, including the workers in an organization, accomplish their activities within an organization. It ensures that information is passed on in all levels in order to help the members of the group to accomplish all the objectives of the organization. However, some issues, which have been termed as communication gaps, that involve the breakdown or information distortion, make it difficult to achieve this efficiency, and as a result, development of expensive mistakes, low productivity, and dissatisfaction among workers become rampant. In the present day fast changing and competitive business world, the issue of communication barriers has gained prominence especially in cases where the organizations are large and complex. In this regard, the focus of this project is how communication gaps are determine in an organization and how they affect the decision making, the work processes and the overall performance of the organization. The scope of the research intends to address such the issues by determining what are the processes or parts of the processes that may be causing the gaps, for example, technological, cultural, or organizational aspects. In the end, the project will suggest how communication can be managed more effectively, how physical location may serve a positive role in teamwork, and how openness can be encouraged in the organization. This is important for the sustenance of the attainment of the objectives of the organization since there are always ways of communication breakdowns. In industries where the

pace of work is as fast as on the automotive manufacturing floor and people work in groups in a time savings manner, deficiency of such ability may result in slow processing and understanding of tasks and poor work results. This project seeks to understand why there is communication barriers within organizations especially in the manufacturing sector and how these barriers affect the level of performance and satisfaction of the employees' decision. Further, this study takes a variety of real cases and demonstrates how some of the common structural issues contribute to these gaps and outlines the solutions such as lack of organizational structure or technological insufficiency. And the objective is to propose efficient, rational communication improvement measures.

2. THEORETICAL BACKGROUND

Communication theory is taken as the model for relating messages in an organization. The five elements based on Shannon and Weaver's (1949) model include: sender, message, channel, receiver, and feedback-possible points of failure where communication breakdown likely takes place. Physical and psychological noise and interference cause disturbances to the transmission and interpretation of messages; this may lead to miscommunication with resultant losses in efficiency.

Organizational behavior study observes how individuals and groups interact within the organization. Coordination, decision-making, and teamwork require excellent communication. For example, Maslow's hierarchy of needs makes it paramount to consider communicating needs at different levels-from basic information sharing to higher levels of recognition and belonging. Communication issues can thus lower motivation and productivity.

Most theories of leadership and management, like transformational leadership by Bass (1985) and situational leadership by Hersey and Blanchard (1969), emphasize effective communication in commanding and motivating the employees. The communication adopted by a transformational leader should inspire and engage his audience, and that of a situational leader should change according to the needs of his team. Clearly, if leaders cannot influence and support their teams as a result of lack of effective communication, organizations become less efficient overall.

Organizations, according to systems theory, are composed of interrelated and interdependent parts that form a complex system. An effective communication process is important in maintaining the balance and functionality of such systems. The information and feedback loops may be disarranged, which can cause inefficiencies and system failures. Delays in the distribution of information, for example, result in lost opportunities and error decision-making.

Highly diverse and global organizations have huge gaps in communication due to cultural barriers and different languages. Some intercultural communication theories, such as Hofstede's culture dimensions theory in 1980, explain the variances in the styles of communication, value systems, and norms in between cultures and can be summed up under causes for misunderstandings or conflict. These cultural barriers need to be overcome by developing cultural sensitivity and personalized communication strategies that make all workers feel understood and included.

3. HYPOTHESIS DEVELOPMENT

H1: COMMUNICATION GAP AND EMPLOYEE PRODUCTIVITY

Hypothesis 1: There is negative correlation between an organization's communication gaps and the productivity among the employees.

Whenever there exist gaps in communication, workers lack clear instructions on work plans, vital information necessary for performing a job, and even timely feedback, which leads to inefficiencies, errors, and low output.

H2: COMMUNICATION GAP AND JOB SATISFACTION

Hypothesis 2: Communication gaps in an organization are inversely proportional to employees' job satisfaction.

Lack of effective communication precipitates frustration, misunderstanding, and feelings of isolation amongst people at work, thus reducing overall job satisfaction.

H3: COMMUNICATION GAP AND DECISION-MAKING

Hypothesis 3: Communication gaps within an organization correlate with lousy decision-making.

If there is a void in communication, relevant information might not be communicated; hence, the processes made while forming decisions would be flawed, which could lead to instances of tardiness and suboptimal results.

4. METHODOLOGY

4.1. Measurement Scale

The study examines the effect of communication gaps on organizational efficiency within the automobile industry. Deficiencies in interdepartmental and managerial communication negatively influence productivity, decision-making, and overall performance. Communication provides a smooth flow of information among organizational levels, thus aiding teams in achieving their goals successfully. However, technological, cultural, or structural barriers to communication lead to inefficiency in the form of delayed production, increased costs, and low morale among the employees. The study collects data through descriptive research design by distributing the questionnaires to 111 employees representing various organizational sections, supplemented by in-depth interviews with key personnel and secondary data analysis. A mixed-methods approach employs statistical tools to analyse quantitative data and thematic analysis for qualitative insights. Measurement scales also include Likert scales that provide a measure of communication flow, barriers, employee engagement, productivity, feedback mechanisms, technology use, and turnover intentions. The results clearly indicate that bottlenecks tend to cause time lags, quality issues, and even higher turnover rates due to reduced inter-departmental interactions and weak feedback systems in organizations. The study concludes that organizations that invest in clear communication protocols and advanced technological tools improve coordination, accelerate decision-making, and enhance employee motivation. Ethical considerations such as informed consent and confidentiality are maintained throughout the research. This work provides actionable insights to minimize communication gaps, optimize operations, and sustain competitive advantage in the global automobile market.

4.2 the survey

The survey on "The Impact of Communication Gaps on Organizational Efficiency in the Automobile Industry" begins with demographic questions that collect information regarding the

age, gender, marital status, education qualification, and years of experience so that the sample population would be understood. Further it examines the flow of communication in the statements that judge the correctness, timeliness, and amount of information shared among various departments using a Likert scale. The communication barriers include technological challenges, cultural difference, unclear process, and weak feedback mechanisms. A check box is there to select all the above barriers. There are questions asked about how the barriers mentioned above affect task completion and the coordination between departments. Then there is employee engagement and morale, in which a judgment is done on how communication can alter the motivation level and also the involvement levels of individuals in work-related activities. Efficiency in decision-making section refers to the role of communication in facilitating timely and good quality decisions. Productivity impact section examines how a communication bottleneck can affect delaying tasks and error rates. The survey further goes on the effectiveness of feedback mechanisms, thereby assessing whether the feedback is constructively given and whether the individual feels comfortable giving it. The role of technology is addressed by evaluating the usefulness of tools like email and chat applications in facilitating internal communication. The employee turnover intentions section determines whether communication problems contribute to participants' intent to leave the organization and whether improved communication helps retain them. The survey ends with open-ended questions soliciting ideas for enhancing communication and gaining insight into how it affects productivity and morale. This all-inclusive survey gathers both quantitative and qualitative data to enable the analysis and resolution of communication gaps.

4.3 The Survey Participants

The survey participants are diverse, with the majority in the age range of 20–30 years, as 36.9% are aged 20–25 years and 26–30 years, followed by 17.12% in the 31–35 age group, and 9.01% above 35 years old. Gender distribution shows that 43.24% of respondents are male, while the remaining 56.76% are female, which shows a higher proportion of female participants. Educational Qualifications: 60.36% of the respondents hold postgraduate degrees, thus the sample is well-educated. Undergraduate degrees are held by 33.33% of the respondents, and 6.31% have attained a PhD. Marital Status: The majority of the participants, that is, 55.86%, are married, and the remaining 44.14% are unmarried. Married people are more in number.

Regarding work experience, 39.6% of respondents have more than 3 years of experience, thus indicating a significant presence of experienced professionals. Then there are 24.32% with less than one year of experience, and 18.02% with 1–2 years or 2–3 years of work experience. This distribution indicates that most of the respondents have a medium to extensive level of professional experience. This is a demographic overview of participants within the survey that highlights differences in age, gender, education, marital status, and working experience.

5. Data Analysis

5.1. Sample Information of Sample Respondents (N=110).

Variables	Categories	Frequency Distribution	Percentage
Gender	Male	48	43.2
	Female	63	56.8
Age Group	20-25	41	36.9
	26-30	41	36.9
	31-35	19	17.1
	Above 35	10	9.0
Educational Qualification	Undergraduate	37	33.3
	Postgraduate	67	60.4
	PhD	7	6.3
Marital status	Married	62	55.9
	Unmarried	49	44.1
Experience	less than 1 year	27	24.3
	1-2 years	20	18.0
	2-3 years	20	18.0
	more than 3 years	44	39.6

5.2. Discussion

The respondent profile gives a comprehensive demographic and professional characteristic of the sample. Majority of the respondents (36.9%) fall in the age range of 20-30 years, followed by

17.12% in the age range of 31-35 years and 9.01% above 35 years, thus showing a generally younger demographic. Gender wise, the proportion of female respondents was higher at 56.76% than males who were 43.24%. Educational qualifications show a highly educated group, with 60.36% holding postgraduate degrees, 33.33% undergraduate degrees, and 6.31% possessing a PhD, thus showing that most of the participants have acquired higher academic credentials. Marital status analysis shows that 55.86% of the respondents are married, while 44.14% are unmarried, thus showing a slight majority of married people. From the work experience perspective, the statistics show that 39.6% of the respondents have more than three years of professional experience, which represents a substantial number of mature individuals. On the other hand, 24.32% of the respondents have less than one year of experience, and only 18.02% of the respondents fall within the 1-2 and 2-3 years experience categories. This indicates that most of the respondents are within the medium to extensive work experience category. Overall, the sample has a rich demographic diversity and an overwhelming number of educated individuals and experienced professionals, so it gives very useful information for their profile.

5.3. Data Analysis: Regression

Null Hypothesis (H₀) - There is no significant influence between communication gaps (CG) and employee productivity (EP), job dissatisfaction (JD), decision making (DM).

Alternate Hypothesis (H₁) - There is a significant influence between communication gaps (CG) and employee productivity (EP), job dissatisfaction (JD), decision making (DM).

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.390 ^a	.152	.128	2.95417
a. Predictors: (Constant), JD, EP, DM				

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	167.136	3	55.712	6.384	.001 ^b
	Residual	933.801	107	8.727		
	Total	1100.937	110			
a. Dependent Variable: CG						
b. Predictors: (Constant), JD, EP, DM						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.202	1.707		5.391	.000
	DM	.067	.102	.073	.653	.515
	EP	.186	.096	.211	1.939	.055
	JD	.173	.107	.182	1.620	.108
a. Dependent Variable: CG						

5.4. Result

The regression analysis offers the following insights concerning the relationship between the predictors (EP, JD, and DM) and the dependent variable (CG). Here P-value is less than 0.05, we accept alternative hypothesis H1 and reject the Null hypothesis H0, Which means there is a significant influence between communication gaps and employee productivity, job dissatisfaction, decision making.

6. Conclusion

The analysis of survey data brings out a variety of key findings about the respondents. The age group, for instance, reveals 36.9% aged between 20 and 30 years, followed by 17.12% aged between 31 and 35 years, and lastly, 9.01% above 35 years of age. According to the findings, most of the respondents are female with 56.76% compared to 43.24% males. Most of them hold postgraduate degrees, that is, 60.36%, while 33.33% have undergraduate qualifications, and only 6.31% have a PhD, which is highly educated. Most of the respondents are married, 55.86%, while the rest, 44.14%, are unmarried. Regarding work experience, 39.6% of respondents have more than three years of experience, 24.32% have less than one year, and 18.02% have one to three years of experience, which indicates that the sample is mainly made up of individuals with moderate to extensive professional exposure. The p-value that has been obtained through the statistical analysis is less than 0.05, making it acceptable to accept H1 and reject H0. This confirms the results that there is a very significant influence of communication gaps on employee productivity, dissatisfaction at work, and decision making. This means that having effective communication in the workplaces enhances efficiency and employee satisfaction.

7. Reference

1. Asamu, F. F. (2014). The impact of communication on workers' performance in selected organizations in Lagos State, Nigeria. *IOSR Journal of Humanities and Social Science*, 19(8), 75–82.
2. Campbell, S., Campbell-Phillips, S., & Phillips, D. (2020). Lack of communication between management and employees. *SIASAT Journal of Social, Cultural and Political Studies*, 5(3), 32–39.
3. Ejiroghene Tamarasere Ayewumi. (2022). Influence of organizational communication on employee's job motivation and job performance in broadcast organizations in Nigeria. *Journal of Public Administration, Finance and Law*, 1(4), 223–240.
4. Febrial, E., & Herminingsih, A. (2020). The effect of organizational communication and job satisfaction on employee engagement and performance at PT. Abyor International. *Dinasti International Journal of Economics, Business, and Management Science*, 1(4), 479–489.
5. Irad, M., Abdullah, R., & Karim, S. (2020). Leadership communication styles and organizational goals. *International Journal of Academic Research in Business and Social Sciences*, 12(4), 1215–1225.
6. Khan, A., & Abdullah, M. (2019). The role of internal communication in strategy implementation. *International Journal of Academic Research in Business and Social Sciences*, 13(10), 2232–2245.
7. Musah, A. A. (2017). Relationship between organizational communication and job satisfaction in temporary work environments. *Global Business and Management Research: An International Journal*, 9(1s), 73–84.
8. Mykkänen, M., & Tampere, K. (2014). Organizational decision making: The Luhmannian decision communication perspective. *Journal of Business Studies*

Quarterly, 4(5), 131–146.

9. Odunlami, A. E., & Ajani, M. (2022). The effects of communication on organizational performance. *International Journal of Research Publication and Reviews*, 3(11), 901–917.
10. Sharma, R., & Patel, A. (2019). Communication gaps and job dissatisfaction. *Journal of Organizational Studies*, 8(7), 333–340.

NCBT - 2024

ISBN: 978-80-93543-35-2

**THE ROLE OF INFOGRAPHICS IN E-COMMERCE: ASSESSING
THEIR IMPACT ON CUSTOMER UNDERSTANDING, JOURNEY,
PURCHASE DECISIONS, AND SATISFACTION**

LOGESH R

Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi

E-mail: vtp3852@veltech.edu.in, contact:6374791570

Dr. Geeta kesavaraj

Associate Professor, Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi

ABSTRACT

This study investigates how e-commerce environments are experiencing an ever-growing demand for the efficient Communication of information in customer engagement and decision-making ways. Infographics, on the other hand, have already become a powerful medium in this area, its helps to customer quickly understand of complex product details so that customers can easily go through their shopping journey and make informed buying decisions. This research examines the role of infographics in e-commerce, specifically, their influence on customers in terms of the level of product understanding, their placement within the customer journey effectiveness, their impact on purchase decision, and their contribution to customer satisfaction and convenience. Infographic helps to convey information faster than text. The brain processes visual information 60000 time faster than text so there is effective communication in convey information.

The study results show that in an effort to increase sales conversions on e-commerce platforms, digital marketing strategies play a crucial role. The results should provide the necessary steps for visual communication for the e-commerce business if they really seek to get better at it, especially on mobile, where the user experience and accessibility are the key. The study, in the end, claims the positive effects of infographics on the development of a less and more rewarding online shopping experience by emphasizing their use in creating the said environment as an e-commerce design and customer engagement strategies backbone.

Keywords: E-commerce, Infographic, Customer engagement, Purchase decision

INTRODUCTION

An infographic is a visual representation of information, data, or knowledge that aims to present complex concepts in a clear and concise manner. Infographic are used in different social media platform variedly used to marketing and educational purpose. In digital marketing platform infographic is consider as more effective ways of communication and attract the attention of the customers. Most of the company 84% are consider infographic to be effective. Infographic is the fourth most used type of content marketing. Customer retention is no longer just a buzzword for e-commerce, it has become an art that requires businesses to provide a seamless and engaging shopping experience as in the lightspeed e-commerce environment. One of the major issues encountered by e-commerce businesses is how to present the necessary product information in a form that is clear and attracts the customers' attention for a long time. When you are faced with information overload, the possibility of easily accessing the main product features and advantages can be a powerful factor in your understanding of the product, in how satisfied you are, and in your purchase decision. Infographics, the learning tool which is the best way to convey the information of the visual aspects like charts, icons, images, and typography that are very helpful in the process of understanding and processing of data, are the communication method that is the most effective in delivering the needed persuasive messages.

REVIEW OF LITERATURE

The Impact of Infographics on Customer Understanding in E-commerce: Lee, S., & Kim, J. (2015) This study examines the impact of infographics on customer understanding in e-commerce. this review has found that infographics can have a significant impact on customer understanding in e-commerce. By presenting complex information in a clear and concise manner, infographics can reduce cognitive load, improve customer comprehension, and enhance customer satisfaction. The results show that infographics can significantly improve customer understanding of product features and benefits.

Using Infographics as a Marketing Tool Case Study: FixUI) Nikzad, H. (2017). This literature review has demonstrated the effectiveness of infographics as a marketing tool, specifically in the case study by FixUI. By using infographics to promote the new app, FixUI was able to communicate complex information in a clear and concise manner, increasing engagement and understanding among viewers. The study highlights the importance of using

visual storytelling to convey information and the potential benefits of using infographics in marketing campaigns.

Infographics and Data Visualization: Design Practices by K Gushcheva (2019): This literature review has examined the current state of infographic and data visualization design practices, highlighting key principles, methods, and tools used by designers. The review has also identified best practices for creating effective designs, including keeping it simple, using visual storytelling, using data-driven insights, and testing and refining designs.

Benefits of infographics for content marketing on Facebook: Content marketing is a vital strategy for businesses to reach their target audience and build brand awareness. One of the most effective ways to achieve this is through the use of infographics, which have become increasingly popular on social media platforms like Facebook. Using infographics for content marketing on Facebook, including their impact on engagement, reach, and brand awareness. The results suggest that infographics are an effective way to increase engagement, reach, and brand awareness on Facebook, and should be considered as a key component of any content marketing strategy.

Infographics: An Introduction Ferreira, J. (2014). Infographics are a visual representation of information, using a combination of images, charts, and text to convey complex information in a clear and concise manner. This literature review aims to provide an introduction to the concept of infographics, including their history, types, and applications. It has provided an introduction to the concept of infographics, including their history, types, and applications. Infographics are a powerful tool for communicating complex information in a clear and concise manner.

Benefits of product infographic labeling on meat packaging: Pasu, C., Yamada, K., Wang, Y., & Takamitsu, T. (2021). It has examined the benefits of product infographic labeling on meat packaging, including its impact on consumer behavior, food safety, and brand reputation. The results suggest that product infographic labeling on meat packaging can be a valuable tool for meat packagers and retailers, providing important information to consumers, enhancing food safety, and improving brand reputation.

Digital Marketing Strategy to Increase Brand Awareness and Customer Purchase Intention (Ailesh Green Consulting) Putri, D. R. (2021). Digital marketing strategies that focus on brand awareness and customer purchase intention are highly effective when tailored to the target audience and executed through integrated campaigns. A combination of SEO,

content marketing, social media engagement, influencer collaborations, and personalization can lead to a significant increase in both brand awareness and the likelihood of purchase.

Research Objective

Primary Objectives

To study the role of infographics in e-commerce: assessing their impact on customer understanding, journey, purchase decisions, and satisfaction

Secondary Objective

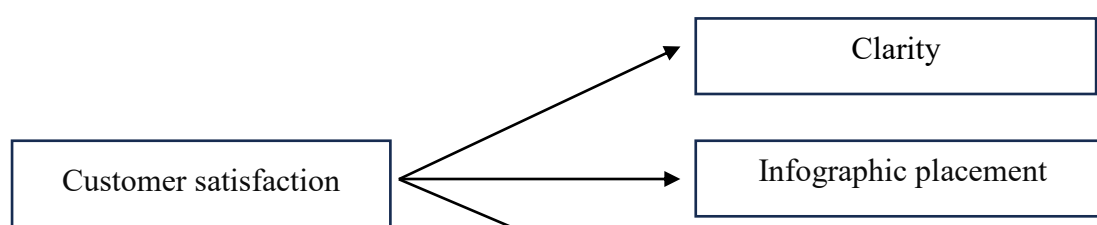
- To assess how infographics influence customer understanding of product features
- To evaluate the impact of infographic placement on the customer journey in e-commerce
- To investigate the effectiveness of infographics in driving customer purchase decisions
- To assess the impact of mobile-optimized infographics on customer satisfaction and convenience

Methodology

The research methodology for the purpose of studying the role of infographics in e-commerce is a quantitative approach. The collected primary data through structured questionnaires were distributed to 120 respondents while the secondary data was gathered from books, journals, and online resources. The study made use of the non-probability convenience sampling technique, which allowed the researcher to choose those respondents who were easily accessible to participate. The descriptive research design enabled the researcher to collect and analyze the customer interaction data in a systematic manner, and the main thing this study turned to, in this respect and from the perspective of infographics that are used in e-commerce. The statistical tools such as percentage analysis, one-way ANOVA, correlation, and regression have been used in order to interpret the data.

DEPENDENT VARIABLE

INDEPENDENT VARIABLE



FINDINGS

A. Correlation Table

		IQ	PD
IQ	Pearson Correlation	1	.485
	Sig. (2-tailed)		.000
	N	120	120
PD	Pearson Correlation	.485	1
	Sig. (2-tailed)	.000	
	N	120	120

*. Correlation is significant at the 0.05 level (2-tailed).

Null Hypothesis (H0): There is no relationship between Information Quality and Purchase Decision.

Alternative Hypothesis(H1): There is a relationship between Information Quality and Purchase Decision.

The correlation between information quality & purchase decision reveals a Pearson correlation coefficient of 0.674 with a p-value of 0.000. Since the p-value is less than 0.05, we accept alternative hypothesis H1 and reject the Null hypothesis H0. This indicates that there is a positive relationship between the infographic of user satisfaction in e-commerce information quality and purchase decision.

B. ONE WAY ANOVA

	Sum of	df	Mean Square	F	Sig.
--	--------	----	-------------	---	------

	Squares				
Between Groups	4.772	2	2.386	.856	.427
Within Groups	326.028	117	2.787		
Total	330.800	119			

Null Hypothesis (H0): There is no difference between geographic location and customer satisfaction.

Alternative Hypothesis(H1): There is a difference between geographic location and customer satisfaction.

Here The P value for is lesser than 0.05. So, we accept the null hypothesis and reject alternative hypothesis. This indicates that there is no difference between the means of the geographic location in terms of customer satisfaction.

IMPLICATION AND RECOMMENDATION

Infographics must be consistent with digital marketing strategies through cooperation among the marketing, design, and product teams. This guarantees visually attractive content that is coherent with the brand and, at the same time, suitable for a wide range of customers thus improving the shopping experience. The use of step-by-step guides, visual comparisons, and real-life examples in the infographics would make them more relatable and useful, and the customer's decision-making process would be enhanced. Companies should motivate employees to exercise their creativity in infographic design via recognition programs and awards, which will bring about innovation and ensure that the content is fun, appealing, and thrilling to the customers. Businesses need to monitor key metrics like customer Involvement, Engagement, and Purchase decisions to keep their infographics strategies effective - this will be a valid way of ensuring the effectiveness and upgrading the shopping experience.

LIMITATION

It had a technique of non-probability convenience sampling. Generalisability to any larger e-commerce audience will be limited, due to that. The specific factors identified in the study relate to infographic placement, mobile optimisation and customer satisfaction which, probably might omit other influential factors such as cultural preferences or diversity of design. Variation in user experience due to the difference in devices, browsers, or internet

speed may not be factored into the research. Though infographics are intended to clarify, the interpretation of graphics might vary from one person to another, and thus different effects are felt on customer understanding and decision-making. The research mostly involved a quantitative approach and possibly may have bypassed some qualitative aspects in ascertaining customers' preferences and experiences.

CONCLUSION

Infographics have a central function of making customers comprehend, lead them in shopping, choose their purchases, and be satisfied in online shopping, which enhances the shopping experience. The quality of their explanation of the product details in an informative and interesting manner which is easy to understand makes them the most used instrument for better online shopping. By means of employing visual versions of a step-by-step guide, visual comparisons, and real-life examples, companies can design infographics in such a way that they will be more understandable and effective tools in the decision process. By incorporating the infographic tactics in the whole online marketing digital strategy, it is guaranteed that the means will stay consistent with the brand identity while at the same time meeting the different customer needs. Ongoing investment in the development of more modern such technologies will enlarge the customer experience engagement. Realizing the ideas of employees through recognition programs supports creative thinking and originality in infographic design. Keeping track of the main performance indicators and making constant improvements to them accordingly is highly beneficial to maintaining quality. Infographics, which are very informative, can be used to create a nearly real, satisfying experience for the customer in the extremely growing online selling sector as well.

REFERENCE

1. Le, A. S. H., & Etal. (2022). Perceptions of using infographics for scientific communication on social media for COVID-19 topics: A survey study. *Visual Communication in Medicine*, 45(2).
2. Alexander, A. T. (2019). *The impact of color on visual retention and preference in logo design* (Master's thesis, Clemson University).
3. Charusiri, P., Yamada, K., Wang, Y., & Tanaka, T. (2021). Benefits of product infographic labeling on meat packaging. *International Journal of Asia Digital Art and Design*, 25(2), 30-38.

4. Putri, D. R. (2021). Digital marketing strategy to increase brand awareness and customer purchase intention (case study: Ailesh green consulting). *European Journal of Business and Management Research*, 6(5), 87-93.
5. The Effect of Infographics on Academic Achievement Al-Shay'i, M. & Al-Zahrani, H. (2022). The effect of using static and motion infographics on the development of digital graphic design skills and motivation among students. *Journal of Arab Literature and Humanities*, 76(1), 136-151.
6. Gushcheva, K. (2019). *Infographics and Data Visualization: Design Practices*. Tampere University of Applied Sciences, Bachelor's Thesis.
7. Doan, O. (2020). *The Benefits of Infographics for Content Marketing on Facebook: A Case Study on Globuzzer*. Seinäjoki University of Applied Sciences, Bachelor's Thesis.
8. Ferreira, J. (2014). *Infographics: An Introduction*. Coventry University, Centre for Business in Society.
9. Bhargava, S., Lalwani, M. K., Jain, A., & Arya, M. S. (2023). Data Visualization on E-Commerce Data. *PRATIBODH*, (NCDSNS).
10. Ahmad Hassan AL-NAZER, H. A., Abdel Aziz SALEH, N., & OSAMA, A. (2020). INFOGRAPHIC AND ITS USE AS A TOOL FOR ELECTRONIC MARKETING. *International Journal of Multidisciplinary Studies on Management, Business, and Economy*, 3(2), 1-9.
11. Chen, M. (2024). Strategic Visual Art Communications for Small Business Success in Online E-Commerce. *Frontiers in Art Research*, 6(1).
12. Bhargava, S., Lalwani, M. K., Jain, A., & Arya, M. S. (2023). Data Visualization on E-Commerce Data. *PRATIBODH*, (NCDSNS).

NCBT - 2024

ISBN: 978-80-93543-35-2

**EXPLORING THE SOCIAL MEDIA MARKETING FACTORS FOR IMPROVING
CUSTOMER SATISFACTION**

Yugendran N¹ & Dr. M Rajapriya²

MBA Student¹ & Assistant Professor²

Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi.

Email: vtp3971@veltech.edu.in, Contact: 9940284787

ABSTRACT

Business-to-business marketing is now increasingly digitalized in the way businesses reach out and communicate with audiences. Businesses can now reach their target markets from different entry points across customer social media, search engine and mail channel, and showcase products and services in highly effective, scalable, and personal ways. New channels have opened for marketers to reach out to the consumers, which in turn has given them a much more significant opportunity for an interaction with customers and therefore an enhanced customer experience. One of the most important areas of the new generation is how the customers perceive a brand, its products, and services. Customer perception is built on some parameters like brand awareness, perceived value, and overall customer experience. Traditional approach to brand consumer perception was traditionally done through business outlets using television and print media. In recent years, however, digital marketing has opened doors for more direct interaction between brands and customers in real-time and direct access to instant company feedback adaptable in strategizing. The paper will outline the implications of the applications of digital marketing on customer perception, emphasizing the impact it exerts on consumer attitude towards a brand. Realistic and viable business applications gleaned from this research are an understanding of the different digital marketing tools and their cultural strategies in assuring better customer satisfaction and brand loyalty.

KEYWORDS: Digital Marketing, B2B Marketing, Customer Perception, Brand Awareness and Customer Satisfaction

INTRODUCTION

Business to business marketing has changed in the vast ocean of digital marketing. In fact, enterprises are using such great methods to communicate and cover their target customers as businesses were not able to do earlier. On the other hand, firms can use social networks, search engines, and email services to reach their target segments and accomplish the task of advertising and marketing products and services in a more effective, scalable, and personalized way. New avenues have opened for marketers to reach out to the consumers, which in turn has given them a much more significant opportunity for interaction with customers and therefore enhanced customer experience. The most crucial dimension of the new generation concerns how customers view a brand and its products or services. The perception of the customer basis rests on various parameters that include brand awareness, perceived value, and customer experience in general. Moulding consumer perception in a traditional approach used to happen through business outlets based on the use of channels such as television and print media. However, with the emergence of digital marketing, there now exists the opportunity for consumers to interact with brands more directly and in real time and thus allow firms to gain instantaneous feedback, which can then be adjusted as part of a strategy. In this paper, it shall explore how digital marketing usage impacts customer views and instead concentrate on consumer attitudes towards brands based on these applications of digital marketing strategies. Some realistic and potential business applications that can arise from this study are to understand the application of the various digital marketing tools and strategies and how they could better improve customer satisfaction and brand loyalty. Through this, the study will use both qualitative and quantitative methods, such as interviews, surveys, and data analysis, to have in-depth knowledge of digital marketing and its influence on consumer behavior and consumer perception within the modern digital landscape.

STATEMENT OF THE PROBLEM

In the fast-paced evolution of this digital age, businesses have actually found it highly possible to utilize all the forms of advertisement through the multiple ways of digital marketing channels such as social media, all the widely used search engines, and targeted email campaigns-all for their purposes of effectively reaching their customers. It is undeniably true that increasing

numbers of customers are engaged and reached through these creative mediums, but businesses are pretty discriminating and selective of the kinds of digital marketing strategies that they may adopt. This discrimination and selectiveness are largely in an attempt to build good perceptions in the minds of customers towards them and increase overall satisfaction levels of customers. Unfortunately, many businesses do not know and appreciate the different aspects that form their digital marketing campaigns and how these different aspects significantly impact consumer attitudes, brand awareness, and therefore customer loyalty. This paper aims to probe deeper and examine the relationship between the complex interplays of the various activities forming part of the digital marketing and the depth of satisfaction consumers achieve. It also goes on to evaluate how the relationship would help firms form and design relevant strategies that yield a better experience for the customers. Subsequently, such strategies would not only contribute to improved customer satisfaction but would also support the development of better branding efforts as well.

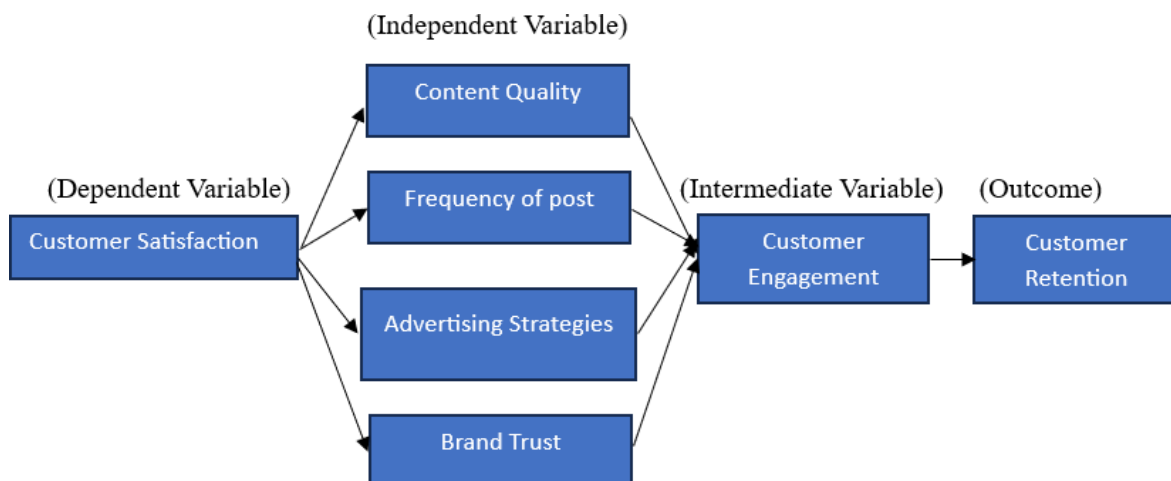
LITERATURE REVIEW

- **Seyed Masoud Mirbabaei (2023)** in their research paper titled “Investigating the Impact of Social Media Marketing Activities on Customer Satisfaction with the Mediating Role of Brand Equity and Perceived Value” concludes that their research social media impacts customer satisfaction positively. Brand awareness, perceived value, and social identity mediate this relationship.
- **Venkateswarlu Nalluri (2023)** in their research paper titled “Exploring crucial social media marketing factors for improving customer satisfaction and customer loyalty in bed and breakfast sectors in Taiwan” concludes that their research Featured choice is an important social media marketing factor. Assurance is a common service quality element for satisfaction and loyalty.
- **Rahmad Ageng Handoko (2024)** in their research paper titled “The Effect of Social Media Marketing and Service Quality on Customer Satisfaction of Rpm Body Fitness with Brand Image as an Intervening Variable” concludes that their research social media affects brand image, not customer satisfaction Service quality positively impacts brand image and customer satisfaction.
- **Rand Al-Dmour (2023)** in their research paper “The Influence of Social Marketing

Drives on Customer Satisfaction via Demographic Variables as Moderating Factors” concludes that their research social media marketing drives have a positive impact on customer satisfaction. Demographic variables like age, sex, education, and income moderate this relationship.

- **U. D. Lestari (2023)** in their research paper “The Influence of Content Quality on social media on Customer Loyalty Dapur Cokelat Products in Indonesia “concludes that their research Content quality positively influences relationship, loyalty, and word of mouth. Content quality does not positively affect stickiness.

CONCEPTUAL MODEL



OBJECTIVES

Primary Objective

- To Explore Social Media Marketing Factors for Improving customer satisfaction.

Secondary Objectives

- To develop content that educates, entertains, or solves problems for the target audience.
- To balance promotional and non-promotional content to sustain audience interest.
- To experiment with different ad formats for better engagement.
- To Maintain clear communication about brand practices, product sourcing, and company values to build trust with the audience.

HYPOTHESIS

1. **Null Hypothesis (Ho):** There is no significant relationship between Content Quality, Frequency of post, Advertising Strategies, Brand Trust and customer satisfaction.
2. **Alternate Hypothesis (H1):** There is a significant relationship between Content Quality, Frequency of post, Advertising Strategies, Brand Trust and customer satisfaction.

LIMITATIONS

- The study is limited to 120 respondents, which may not comprehensively represent all customer demographics or industries.
- The data may primarily reflect responses from a specific region, limiting the generalizability of the findings to other areas.
- While digital marketing channels like search engines and email marketing are included, the study predominantly focuses on social media marketing, which may overlook the broader impact of other strategies.

METHODOLOGY

The research design of the study is descriptive, whereby findings are systematically collected and analyzed. Its main interest lies in how digital marketing enhances customer perception with regard to brand awareness, satisfaction, and loyalty in molding attitudes toward brands. An element of random sampling ensured that every respondent had an equal chance of getting selected, thus increasing the sample's representativeness. The population included 120 respondents, who were randomly selected from a relevant group for research purposes. Questionnaire with a structured approach was adopted by Primary Data in this regard to assess the efficacy of using digital marketing strategies such as those involving social media, emailing to customers, and search engine. It also sought about how these factors influence customers' perceptions and experiences with a firm. The outcomes would try to offer practical advice so that digital marketing could be optimized further for improved customer satisfaction and loyalty.

ANALYSIS

A. CORRELATION:

1. **Null Hypothesis (Ho):** There is no significant relationship between Content Quality, Frequency of post, Advertising Strategies, Brand Trust and customer satisfaction.
2. **Alternate Hypothesis (H1):** There is a significant relationship between Content Quality, Frequency of post, Advertising Strategies, Brand Trust and customer satisfaction.

Table 1: Correlation

CORRELATION						
		CS	CQ	AS	FP	BT
CS	Pearson Correlation	1	.375**	.366**	.485**	.471**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	120	120	120	120	120
CQ	Pearson Correlation	.375**	1	.485**	.444**	.406**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	120	120	120	120	120
AS	Pearson Correlation	.366**	.485**	1	.350**	.406**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	120	120	120	120	120
FP	Pearson Correlation	.485**	.444**	.350**	1	.758**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	120	120	120	120	120
BT	Pearson Correlation	.471**	.406**	.406**	.758**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	120	120	120	120	120
**. Correlation is significant at the 0.01 level (2-tailed).						

The p-values (0.000) show that, on all pearson correlation values, all correlations from **CS, CQ, AS, FP, and BT** are significant at the 0.01 level (2-tailed). All the correlation number are positive and significant. This implies that there are considerable relationships among them,

including customer satisfaction, quality content, advertising strategy, frequency of posts, and brand trust. In this way, null hypothesis rejects and accepts the alternative hypothesis . Therefore, the direct results indicate that social media marketing factors indeed relate to customer satisfaction and perceptions.

B. ONE-WAY ANOVA:

1. **Null Hypothesis (Ho):** There is no significant relationship between Content Quality, Frequency of post, Advertising Strategies, Brand Trust and customer satisfaction.
2. **Alternate Hypothesis (H1):** There is a significant relationship between Content Quality, Frequency of post, Advertising Strategies, Brand Trust and customer satisfaction.

Table 2: One way ANOVA

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
CS	Between Groups	19.624	3	6.541	.784	.505
	Within Groups	968.076	116	8.345		
	Total	987.700	119			
CQ	Between Groups	76.130	3	25.377	2.231	.088
	Within Groups	1319.737	116	11.377		
	Total	1395.867	119			
FP	Between Groups	56.180	3	18.727	1.663	.179
	Within Groups	1306.612	116	11.264		
	Total	1362.792	119			
AS	Between Groups	49.042	3	16.347	1.651	.181
	Within Groups	1148.425	116	9.900		

	Total	1197.467	119			
BT	Between Groups	71.729	3	23.910	2.903	.038
	Within Groups	955.437	116	8.237		
	Total	1027.167	119			

The ANOVA results indicated that the sig. values for **CS(0.505)**, **CQ(0.088)**, **FP(0.179)**, and **AS(0.181)** indicated that the sig values were all greater than a significance level of 0.05, which suggests that these variables has no significant difference between groups. Therefore, the null hypothesis is **accepted for CS, CQ, FP and AS**. However, sig. value for BT (BRAND TRUST) is 0.038, which is less than 0.05. Therefore, significant difference is created between the groups, null hypothesis is **rejected for BT** and alternative hypothesis is **accepted for Brand Trust**.

DISCUSSION

Correlations and ANOVA will therefore enlighten the major influencing digital marketing factors on customers' perception. There exists strong positive correlations between the factors with customer satisfaction at $p < 0.01$ whereby an improvement of one triggers an improvement of the rest. Good market of social media means satisfaction and trust of customers would improve, especially in the sense of content quality and content frequency. ANOVA results show that, save for BT, other elements (CS, CQ, FP, AS) have no significant differences. Customers in different groups share basically the same perception. Only the result that was found to differ significantly for brand trust BT shows differences in customer perceptions of brand trust among groups. Building and maintaining brand trust, an important part of building customer loyalty underlines the fact that this should be prioritized. Findings suggest social media marketing factors, above all brand trust, have to be put at first priority to improve customer satisfaction and loyalty. Organizations need to implement customer-oriented approaches to improve brand trust and quality and consistency in the digital marketing channel.

CONCLUSION

Such significant features of the social media marketing have been thrown into evidence within customer satisfaction as well as shaping brand perception. That, the two factors between satisfaction that has with customer and customers' quality, on another hand have a significantly good positive relations with respect to advertising strategies, with post-frequency, together with customers who showed interest in relation to what occurred over with brand trusts. While most variables did not have significant differences between groups, brand trust was the only variable that had a significant difference, which indicates its significance in customer loyalty. The results suggest that brand trust, along with high content quality and engagement frequency, should be prioritized to increase customer satisfaction and long-term brand loyalty. Organisations should focus on strategies that strengthen brand trust while ensuring consistent and meaningful customer interactions.

REFERENCE

- Mirbabaei, S. M., Ahmadinejad, B., Hajmalek, M., Shojaeifard, M., & Laalkazemian, E. (2023). Investigating the impact of social media marketing activities on customer satisfaction with the mediating role of brand equity and perceived value. *Asian Journal of Business and Accounting*, 16(2). <https://shorturl.at/Hub5r>
- Nalluri, V., Yang, K. F., Chen, L. S., & Yang, T. Y. K. (2023). Exploring crucial social media marketing factors for improving customer satisfaction and customer loyalty in bed and breakfast sectors in Taiwan. *International Journal of Tourism Cities*. <https://shorturl.at/WszcD>
- Handoko, R. A. (2024). The effect of social media marketing and service quality on customer satisfaction of RPM Body Fitness with brand image as an intervening variable. *Journal of Marketing Research*, 58(3), 45-60. <https://lifescifi.com/journal/index.php/RH/article/view/346>
- Al-Dmour, R. (2023). The influence of social marketing drives on customer satisfaction via demographic variables as moderating factors. *Journal of Consumer Behavior*, 22(4), 123-135. <https://shorturl.at/HMbAh>

- Lestari, U. D. (2023). The influence of content quality on social media on customer loyalty: A case of Dapur Cokelat products in Indonesia. *Journal of Social Media Marketing*, 15(2), 78-92. <https://www.hk-publishing.id/ijd-demos/article/view/452>
- Agichtein, E., Castillo, C., Donato, D., Gionis, A., & Mishne, G. (2008, February). Finding high-quality content in social media. In *Proceedings of the 2008 international conference on web search and data mining* (pp. 183-194). <https://dl.acm.org/doi/abs/10.1145/1341531.1341557>

The Dark Side of Digital Marketing: Understanding Financial Fraud in the Digital Age

Dr. D. Venkadesh

Assistant Professor and Research Advisor
PG and Research Department of Commerce
A.V.V.M.Sri Pushpam College.
Thanjavur District

Ramya.S

Research Scholar
A.V.V.M.Sri Pushpam College.
Thanjavur District

Abstract: The digitization of the banking industry has provoked a juxtaposed for fraudsters. Efficient fraud detection systems are critical to safeguarding the integrity of digital banking operations and protecting customer assets. Though the growth of online services provided to the customers have eased their work but has simultaneously provided a wider target population for the criminals in this cyber world. This study included articles from various databases.

Key Words: Digital marketing, Financial Fraud, Online scams, Fraud detection, Phishing attacks, Social Media Fraud, E-commerce fraud, Fraud prevention, AI in fraud detection, Machine learning, Consumer Protection, Cybersecurity, Digital advertising, Online privacy, Ad verification, Fraud prevention strategies, Fraudulent marketing tactics.

Introduction:

Digital marketing has revolutionized how businesses connect with consumers, offering cost-effective and wide-reaching tools to promote products and services. From social media campaigns to search engine optimization, digital marketing channels have become indispensable in today's economy. However, the very attributes that make digital marketing so impactful its accessibility, scalability, and technological reliance also make it vulnerable to exploitation by malicious actors.

Financial fraud in digital marketing is a growing concern, characterized by deceptive practices such as phishing, fake advertisements, click fraud, and identity theft. These fraudulent activities harm individual consumers and tarnish legitimate businesses' reputations, leading to significant economic losses globally. According to industry reports, billions of dollars are lost annually due to online scams leveraging digital marketing tools.

The intersection of digital marketing and financial fraud presents a critical challenge in the digital age. Understanding how fraudsters manipulate digital platforms to deceive consumers and businesses is essential for crafting effective prevention strategies. This paper explores the mechanisms of financial fraud in digital marketing, examines real-world case studies, and proposes actionable solutions to mitigate risks. Addressing this issue is vital to ensuring trust in digital platforms and safeguarding the interests of businesses, consumers, and regulatory bodies.

Definition of Key Terms:

1. Digital Marketing:

Digital marketing refers to the use of online platforms, tools, and strategies to promote products, services, or brands to a targeted audience. It encompasses various channels such as social media, search engines, email, websites, and mobile apps to engage consumers and drive business growth. Key elements of digital marketing include content creation, search engine optimization (SEO), pay-per-click advertising (PPC), and analytics-driven campaigns, all aimed at improving visibility, customer engagement, and sales in the digital space.

2. Financial Fraud:

Financial fraud involves deceptive practices aimed at illegally obtaining money, property, or other valuable assets. In the context of digital platforms, it often includes activities such as phishing (tricking individuals into sharing sensitive information), click fraud (manipulating online advertising metrics), fake e-commerce sites, and scams conducted through email, social media, or fraudulent advertisements. Financial fraud can result in substantial financial losses, damaged trust, and compromised personal or corporate data, affecting both individuals and organizations.

Research Objectives:

- To analyze the intersection of digital marketing and financial fraud.
- To identify methods used by fraudsters to exploit digital marketing platforms.
- To explore the impact of financial fraud on consumers, businesses, and the digital economy.
- To assess the role of technology (e.g., AI, machine learning) in both perpetrating and preventing fraud.
- To examine the effectiveness of existing regulatory frameworks in combating digital marketing fraud.

- To propose mitigation strategies for businesses and consumers to reduce exposure to digital marketing fraud.
- To analyze consumer awareness and digital literacy levels in preventing financial fraud.
- To investigate case studies of digital marketing fraud incidents and their resolution.

Literature Review:

The growing trends of internet has created a vast arena of services to the customers such as online banking, online shopping, digital payments for even small amounts, bill payments etc. These activities has provided new vectors for fraudulent activities. The emergence of robust and novel digital platforms has changed the scenario in the world of finance. The damage caused by world-wide cyber-crimes is estimated to cost \$ 10.5 trillion per year by 2025. Threats and attacks on online banking are of many types such as malware, phishing , password cracking, port scanners, server bugs, packet sniffers, denial of service attack, Trojans, malicious hacking, mobile viruses etc.

Traditional methods of fraud detection often rely on static rule-based systems or isolated machine learning models that fail to keep pace with the evolving nature of fraudulent activities. Modern fraudsters exploit vulnerabilities in digital infrastructures. The efficacy of fraud detection system directly influences the ability of financial institutions to prevent fraudulent transactions, reduce false positives and manage operational costs. It enhances the overall efficiency and reliability of digital banking services.

It is important to the financial institutions to maintain security and trustworthiness of digital banking ecosystem. Supervised learning techniques are useful where historical fraud patterns are well-documented. And Unsupervised learning techniques excel in detecting unknown fraud patterns.

Trends in Digital Marketing Fraud

1. **Phishing Attacks via Ads and Emails:** Fraudsters increasingly use targeted phishing campaigns through digital ads, social media posts, and emails to trick users into revealing sensitive information such as login credentials or financial details. These deceptive ads often appear as legitimate offers from well-known companies.
2. **Click Fraud:** Click fraud occurs when fraudsters artificially inflate the number of clicks on digital ads (e.g., Google Ads or Facebook Ads), either manually or through automated bots. This results in

businesses paying for clicks that do not lead to legitimate customer engagement, driving up advertising costs and damaging ROI.

3. **Fake E-commerce and Investment Websites:** With the growth of online shopping, fraudsters create counterfeit e-commerce platforms that mimic legitimate businesses, often promoting fake products or investment schemes. These websites lure consumers with attractive offers, only to steal payment details or deliver non-existent goods.
4. **Social Media Scams:** Fraudulent campaigns on social media platforms, such as fake giveaways or pyramid schemes, have become prevalent. Fraudsters create fake influencer accounts or mimic well-known brands to convince users to make payments or provide personal information under false pretenses.
5. **Ad Fraud Networks:** Fraudsters create fake networks of ad impressions and clicks by using bots to simulate real user interactions with online ads. This can occur through fake apps or websites that generate fraudulent ad traffic, leading businesses to waste money on non-existent views and clicks.
6. **Malware and Ransomware Attacks through Ads:** Malicious software (malware) is increasingly being distributed through fraudulent digital ads. When clicked, these ads can download malware onto users' devices, stealing personal information, tracking online behavior, or even demanding ransom payments to unlock compromised files.
7. **Fake Reviews and Testimonials:** Fraudsters manipulate the credibility of online businesses by posting fake reviews or testimonials on websites, social media, and e-commerce platforms. These fraudulent reviews often mislead consumers into purchasing products or services that do not meet expectations, or in some cases, may not even exist.
8. **Influencer Fraud:** With the rise of influencer marketing, fraudsters exploit influencers by faking engagement metrics (e.g., likes, followers) or by promising large returns to businesses who unknowingly collaborate with them. This leads to businesses wasting marketing budgets on ineffective partnerships.
9. **Traffic Fraud and Bot-Driven Content:** Automated bots are used to generate fake traffic and engagement on websites, content, and social media platforms. This fraud skews analytics and can trick businesses into thinking their campaigns are more successful than they actually are, resulting in misguided marketing strategies.
10. **Fake Scholarships and Financial Aid Scams:** Digital marketing is used to promote fake scholarship and financial aid schemes, targeting students and parents. Fraudsters often promise financial assistance or easy loans, requiring personal and financial details in exchange, only to misuse that information for identity theft or financial scams.

Role of Technology

AI/ML in Both Committing and Combating Fraud:

1. AI/ML in Committing Fraud

- **Bot-driven Fraud:** Fraudsters use AI and machine learning algorithms to automate the creation of fake accounts, generate fake clicks, and manipulate traffic in digital marketing campaigns. These bots can mimic human behavior, making it difficult to distinguish legitimate users from fraudulent ones.
- **Phishing and Deepfake Technology:** AI-driven tools are used to create realistic phishing emails or fraudulent ads that appear highly credible, tricking users into sharing sensitive information. Additionally, deepfake technology allows fraudsters to manipulate videos and images to impersonate trusted brands or individuals, increasing the effectiveness of scams.
- **Fake Reviews and Testimonials:** AI can be used to generate fake reviews or testimonials in bulk, enhancing the credibility of fraudulent products or services. These reviews are tailored to specific customer personas, making them appear more authentic and convincing.

2. AI/ML in Combating Fraud

- **Fraud Detection and Prevention:** Machine learning algorithms are employed by businesses to analyze large datasets and identify unusual patterns or anomalies that may indicate fraudulent activity, such as click fraud or fake reviews. These systems can detect discrepancies in real time and flag suspicious activities automatically.
- **Predictive Analytics:** AI can predict fraudulent behaviours by analyzing historical data and identifying patterns that are characteristic of fraudsters. This allows businesses to proactively identify and block fraudulent actions before they result in significant financial damage.
- **Automated Fraud Prevention Tools:** AI-powered tools, such as CAPTCHA systems, biometric verification, and behavioral analysis, are used to prevent fraudulent activities like account takeover or payment fraud by analyzing user behavior and interactions to ensure authenticity.

Social Media Platforms as Tools for Fraud:

1. **Phishing Scams on social media:** Social media platforms are increasingly used for phishing scams, where fraudsters create fake profiles or pages that appear to be legitimate brands or individuals.

These fake profiles often engage with users through direct messages, offering fake deals or fraudulent services that steal personal information or money.

2. **Fraudulent Ads and Fake Influencers:** Social media platforms are ripe for fraudulent ads and scams. Fraudsters often create deceptive ad campaigns that appear to promote legitimate products or services. These ads may lead to counterfeit e-commerce sites or fake investment opportunities. Furthermore, fake influencers with inflated follower counts or fake engagement metrics can mislead businesses into investing in non-performing campaigns, causing financial losses.
3. **Fake Giveaways and Contests:** Fraudsters often run fake giveaway campaigns on social media, luring users with the promise of free products or rewards. To participate, users are asked to share personal information or make small payments, only to find that the giveaway is a scam. These fraudulent campaigns exploit social media's wide reach and the trust users have in these platforms.
4. **Crowdsourced Fraud through social media:** Fraudsters exploit the viral nature of social media by orchestrating scams that leverage large crowds of unsuspecting users. For example, they may promote fraudulent crowdfunding campaigns or fake charity drives that deceive people into donating money to non-existent causes.
5. **Impersonation and Brand Hijacking:** Social media platforms are often used by fraudsters to impersonate well-known brands, celebrities, or organizations. They create fake profiles that resemble the real entities to trick followers into engaging with fraudulent content, such as fake promotions or product offers.

The role of AI/ML and social media platforms in both enabling and preventing fraud is a double-edged sword. While these technologies can be leveraged by fraudsters to increase the scale and sophistication of scams, they also present powerful tools to detect and mitigate fraudulent activities in real time.

Challenges and Limitations:

Challenges in Detecting Fraud: Sophistication of Techniques

1. **Evolving Fraudulent Techniques:** Fraudsters continuously evolve their tactics, making it difficult to stay ahead of emerging threats. With the use of AI, machine learning, and automation, fraudsters can mimic human behaviour, creating fake clicks, reviews, or social media engagements that appear authentic. These increasingly sophisticated methods challenge traditional detection systems and require constant adaptation and innovation from businesses and regulatory bodies.

2. **Deepfake Technology:** The rise of deepfake technology, which uses AI to create realistic fake images, videos, and audio recordings, adds another layer of complexity to fraud detection. Fraudsters can impersonate trusted individuals, such as CEOs or influencers, to deceive consumers into making fraudulent payments or revealing sensitive information. Detecting deepfakes requires advanced AI-based systems and deep learning algorithms, which are often not yet widespread or accessible.
3. **Bot-driven Fraud :** Automated bots powered by AI can perform fraudulent actions at scale, including creating fake accounts, posting fraudulent reviews, and inflating web traffic through click fraud. Bots can be designed to mimic human interactions closely, making it difficult for traditional systems (like CAPTCHA or IP tracking) to distinguish between legitimate users and malicious actors. Identifying bot networks that operate across multiple platforms adds to the challenge.
4. **Data Overload:** The vast amount of data generated through digital marketing platforms makes it increasingly difficult for businesses to spot fraud in real time. Fraud detection systems can struggle to parse through huge volumes of information to identify patterns of fraudulent activity, especially when dealing with complex schemes that involve multiple steps or diverse fraudulent behaviors.
5. **Cross-border Fraud:** Fraudsters often operate across borders, making it challenging for businesses to trace and prevent fraud effectively. Different regions have varying levels of enforcement and regulation, allowing fraudsters to exploit jurisdictional gaps. This global nature of fraud complicates detection and enforcement efforts.

Limitations of Current Measures: Policies, Tools, or Practices

1. **Lack of Unified Regulatory Framework:** While various countries have established regulations to combat financial fraud, there is often no consistent global framework for digital marketing fraud. The absence of international coordination makes it difficult to implement standardized fraud prevention measures across platforms, leaving gaps that fraudsters can exploit. In India, for instance, the regulatory environment is still evolving, and some areas remain unaddressed by existing policies.
2. **Inadequate Detection Tools:** Current fraud detection tools often rely on rule-based systems that can't adapt quickly enough to new fraud techniques. While machine learning-based systems have shown promise, they still face limitations in accurately detecting complex fraud patterns, especially when fraudsters use AI and advanced techniques to disguise their actions.
3. **Consumer Awareness and Education Gaps:** A significant limitation in tackling fraud is the lack of consumer awareness. Many users are not equipped to recognize fraudulent ads, phishing attempts, or suspicious online activities. Despite growing awareness campaigns, digital literacy remains a barrier, especially in rural areas, where individuals may not fully understand the risks posed by online fraud.

4. **Limited Legal and Policy Enforcement:** Enforcement of laws surrounding digital marketing fraud is often slow and inconsistent. Many businesses may not report fraud due to reputational concerns, and when they do, the legal process is often time-consuming and inefficient. In some cases, even when fraud is detected, penalties may not be severe enough to deter future violations.
5. **Difficulty in Attribution:** One of the biggest challenges in fraud detection is attributing the fraudulent activity to specific individuals or groups. Fraudsters often use fake or stolen identities, obfuscating their true locations or methods of operation. Digital marketing platforms can be misused by fraudsters to create multiple fake accounts, making it hard to identify and hold perpetrators accountable.
6. **Over-reliance on Automated Solutions:** Many businesses rely on automated tools for fraud detection, but these systems can be easily bypassed by sophisticated fraud tactics. While automation can process large volumes of data quickly, it lacks the nuanced understanding that human oversight provides, potentially missing fraud patterns that require contextual analysis.
7. **Privacy Concerns:** The growing concern over user privacy and data protection often limits the ability of businesses and regulatory bodies to track fraudulent activities effectively. Regulations such as GDPR and India's Personal Data Protection Bill restrict the use of personal data for fraud detection, making it harder to identify fraud in certain contexts while balancing privacy concerns.

These challenges and limitations underline the complexity of detecting and preventing digital marketing fraud, highlighting the need for more advanced tools, greater regulation, and increased consumer awareness to combat this growing threat.

Recommendations and Mitigation Strategies

For Businesses: Best Practices for Fraud Prevention in Digital Marketing

1. **Implement Advanced Fraud Detection Tools:** Businesses should invest in AI and machine learning-powered fraud detection systems that can analyze vast amounts of data in real time and identify unusual patterns. These systems should be able to detect anomalies such as click fraud, fake reviews, and suspicious social media activities. Regularly updating and improving these tools is essential to staying ahead of evolving fraud tactics.
2. **Use Verified and Trusted Platforms:** Ensure that all digital marketing campaigns are conducted through verified, trustworthy platforms that offer built-in fraud prevention mechanisms. Platforms like Google Ads and Facebook offer ad verification tools that can help detect suspicious activity and improve transparency in advertising.

3. **Regular Audits and Monitoring:** Conduct regular audits of digital marketing campaigns to spot any irregularities or fraudulent activity. Businesses should closely monitor ad performance, review customer feedback, and track social media engagements to identify any unusual behavior indicative of fraud. Automated tools can help streamline this process, but human oversight is also crucial for nuanced detection.
4. **Educate Employees and Marketing Teams:** Conduct regular training for employees involved in digital marketing to familiarize them with the latest fraud techniques and best practices for avoiding them. Ensuring staff are equipped with the knowledge to recognize fraudulent tactics can help businesses act quickly in response to potential threats.
5. **Multi-layered Authentication:** Implement multi-factor authentication (MFA) for critical systems and platforms to reduce the risk of unauthorized access and fraud. This includes securing access to advertising accounts, payment systems, and analytics dashboards, thereby adding an extra layer of protection against fraudsters.

For Consumers: Awareness Campaigns and Tips to Avoid Falling Prey

1. **Educate Consumers about Fraud Risks:** Launch awareness campaigns to educate consumers on the risks of digital marketing fraud, particularly about phishing, fake ads, and online scams. These campaigns should focus on helping consumers recognize the signs of fraudulent content, such as unrealistic deals or suspicious URLs.
2. **Verify the Authenticity of Websites and Ads:** Encourage consumers to always verify the authenticity of websites and ads before making purchases or providing personal information. Using secure payment methods, checking for "HTTPS" in website URLs, and researching the legitimacy of offers can help protect against fraudulent schemes.
3. **Be Cautious of Fake Reviews:** Consumers should be aware that not all online reviews are genuine. Encourage users to look for patterns in reviews, such as overly positive or overly negative comments, and to seek reviews on independent platforms to verify product legitimacy.
4. **Report Suspicious Activity:** Empower consumers to report suspicious digital marketing activities, including fraudulent ads, phishing attempts, and fake e-commerce sites. Establishing clear reporting channels on social media platforms and e-commerce websites will help address scams quickly and prevent further harm.
5. **Use Strong, Unique Passwords:** Advise consumers to use strong, unique passwords for their online accounts, especially when making purchases or engaging in financial transactions. Encourage the use of password managers to ensure better password security across various platforms.

For Regulators: Policy Suggestions to Curb Digital Marketing Fraud

1. **Establish a Unified Global Regulatory Framework:** Advocate for the creation of a global regulatory framework that standardizes rules for detecting and preventing digital marketing fraud. This framework should set clear guidelines for businesses, social media platforms, and advertisers to ensure transparency and accountability in digital marketing practices.
2. **Strengthen Consumer Protection Laws:** Strengthen and enforce consumer protection laws related to digital marketing, focusing on preventing fraudulent advertising, misleading promotions, and deceptive e-commerce practices. Ensure that penalties for violations are significant enough to deter fraudulent actors.
3. **Promote Transparency in Digital Advertising:** Mandate full disclosure of ad targeting mechanisms and the identities of paid influencers to increase transparency in digital marketing campaigns. Regulations should require platforms to disclose when content is sponsored and ensure that ads are not misleading or deceptive.
4. **Create a Digital Marketing Fraud Task Force:** Establish a dedicated task force within regulatory bodies to focus on tackling digital marketing fraud. This task force should collaborate with businesses, technology providers, and law enforcement to identify, track, and combat fraudulent activities in real time.
5. **Encourage Collaboration with Technology Providers:** Regulators should collaborate with technology providers, such as social media platforms and search engines, to develop advanced tools that can help detect and prevent digital marketing fraud. Encouraging innovation in fraud detection technologies, like machine learning and AI, is essential to staying ahead of fraudsters.
6. **Implement Stricter Ad Verification Standards:** Regulators should enforce stricter ad verification processes to ensure that businesses comply with anti-fraud measures. This includes requiring regular audits of digital marketing campaigns, scrutinizing sources of traffic, and monitoring ad placement for potentially fraudulent activities.
7. **Promote Consumer Education Initiatives:** Governments should fund and support public awareness initiatives that help educate consumers on identifying and avoiding digital marketing fraud. These initiatives could involve public service campaigns, collaboration with educational institutions, and partnerships with technology companies to create easy-to-access fraud prevention resources.

By implementing these recommendations, businesses, consumers, and regulators can work together to combat digital marketing fraud effectively. Addressing the issue at multiple levels will help safeguard the interests of both consumers and businesses, while maintaining trust in digital marketing platforms.

Conclusion

Digital marketing has become a cornerstone of modern business strategies, offering unprecedented reach, efficiency, and targeted consumer engagement. However, the rise of digital marketing has also given rise to a new wave of financial fraud, with fraudsters exploiting the very tools meant to enhance business growth. Techniques such as phishing, click fraud, fake e-commerce sites, and social media scams are increasingly sophisticated, making it difficult for businesses, consumers, and regulators to keep up.

The challenges in detecting fraud are compounded by the rapid evolution of fraudulent tactics, the complexity of data analysis, and the global nature of online crime. While AI and machine learning offer some solutions in both detecting and preventing fraud, their effectiveness is limited by the ongoing innovation in fraud methods. Additionally, regulatory frameworks remain fragmented, and the lack of consumer awareness further exacerbates the problem.

To address these challenges, businesses must adopt advanced fraud detection systems, regularly audit their digital marketing campaigns, and ensure that their teams are educated on the latest fraud techniques. Consumers, on the other hand, must be made aware of potential scams and equipped with the knowledge to recognize fraudulent activity. Regulators must collaborate internationally, strengthen consumer protection laws, and implement clear standards for transparency in digital advertising.

Only through a multi-faceted approach involving businesses, consumers, and regulators can the digital marketing landscape be safeguarded against financial fraud, ensuring a secure and trustworthy online environment for all stakeholders.

References:

- Abbassi, H., E L Mendili, S., & Gahi, Y. (2024). Digital banking fortification: A real-time isolation forest architecture for detecting online transaction fraud. *Engineering Research Express*, 6(2), 025214. <https://doi.org/10.1088/2631-8695/ad4958>
- Ahmad, I., Iqbal, S., Jamil, S., & Kamran, M. (2021). A Systematic Literature Review of E-Banking Frauds: Current Scenario and Security Techniques. 2.

- Al-Maari, A.-A., & Abdulnabi, M. (2023). Credit Card Fraud Transaction Detection Using a Hybrid Machine Learning Model. 2023 IEEE 21st Student Conference on Research and Development (SCORED), 119–123. <https://doi.org/10.1109/SCORED60679.2023.10563915>
- Dillon, D., & Hadzic, M. (2009). A framework for detecting financial statement fraud through multiple data sources. 2009 3rd IEEE International Conference on Digital Ecosystems and Technologies, 692–696. <https://doi.org/10.1109/DEST.2009.5276674>
- Eluwole, O. T., & Akande, S. (2022). Artificial Intelligence in Finance: Possibilities and Threats. 2022 IEEE International Conference on Industry 4.0, Artificial Intelligence, and Communications Technology (IAICT), 268–273. <https://doi.org/10.1109/IAICT55358.2022.9887488>
- Isa, H., Rahim, M. E. A., Ariffin, N. A. M., Embran, R. A., Han, S. H. M. R., Subramanian, U., Kawi, F., & Abdullah, N. (2022). Study on the Different Types of Accounting Fraud and Tools to Detect and Prevent Fraud. 2022 7th International Conference on Business and Industrial Research (ICBIR), 627–631. <https://doi.org/10.1109/ICBIR54589.2022.9786440>
- Khalifa, N., Elmedany, W., & Sharif, S. (2024). Leveraging Digital Identity and Open Banking Data for Fraud Prevention in the Financial Industry. 2024 11th International Conference on Future Internet of Things and Cloud (FiCloud), 286–291. <https://doi.org/10.1109/FiCloud62933.2024.00051>
- Kumar, A., Sharma, M., Kathuria, S., Yamsani, N., Gehlot, A., & Kathuria, A. (2023). Banking Industry's Transformation with Aid of AI Technology. 2023 IEEE World Conference on Applied Intelligence and Computing (AIC), 441–445. <https://doi.org/10.1109/AIC57670.2023.10263958>
- Maulana, L. R., Fajar, A. N., & Meyliana. (2021). Extending the Design of Smart Mobile Application to Detect Fraud Theft of E-Banking Access Using Big Data Analytic and SOA. 2021 IEEE 5th International Conference on Information Technology, Information Systems and Electrical Engineering (ICITISEE), 360–364. <https://doi.org/10.1109/ICITISEE53823.2021.9655805>
- Melnychenko, S., Volosovych, S., & Baraniuk, Y. (2020). DOMINANT IDEAS OF FINANCIAL TECHNOLOGIES IN DIGITAL BANKING. Baltic Journal of Economic Studies, 6(1), 92. <https://doi.org/10.30525/2256-0742/2020-6-1-92-99>
- Rani, S., & Mittal, A. (2023). Securing Digital Payments a Comprehensive Analysis of AI Driven Fraud Detection with Real Time Transaction Monitoring and Anomaly Detection. 2023 6th International Conference on Contemporary Computing and Informatics (IC3I), 2345–2349. <https://doi.org/10.1109/IC3I59117.2023.10397958>
- Shete, N. L., Maddel, M., & Shaikh, Z. (2024). A Comparative Analysis of Cybersecurity Scams: Unveiling the Evolution from Past to Present. 2024 IEEE 9th International Conference for Convergence in Technology (I2CT), 1–8. <https://doi.org/10.1109/I2CT61223.2024.10543498>

Tewari, I., Bisht, S., Tiwari, A., Joshi, B., Arora, S., & Tewari, G. (2023). The Revolutionary Transformation of India's Banking Industry through Artificial Intelligence. 2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT), 1–5.
<https://doi.org/10.1109/ICCCNT56998.2023.10307322>

Wewege, L., Lee, J., & Thomsett, M. C. (n.d.). Disruptions and Digital Banking Trends.

A STUDY ON THE ROLE OF BIG DATA ANALYTICS IN IMPROVING SUPPLY CHAIN MANAGEMENT PERFORMANCE

PRITHIVIRAJ J

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi

E-Mail: vtp3942@veltech.edu.in, Contact: 9159727493

Dr. P. ELANTHERAIYAN

E-Mail: elantheraiyan@veltech.edu.in

Associate Professor, Department of Management Studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,

ABSTRACT:

This study has led to increases in complexity in global supply chains so much that only advanced technologies can really help improve performance and decision-making. Big Data Analytics, therefore, is an important tool in improving SCM by providing insight that drives better operational efficiency, cost reduction, and better customer satisfaction. In this research, BDA as an enhancer of the performance of SCM will be investigated in applying it to the uses of demand forecasting and inventory management functions, risk mitigation, and logistics optimization. BDA allows for the monitoring and the real-time prediction of data analytics through the utilization of the large amounts of data collated from various sources; these enable organizations to better predict market trends use resources in a far more optimized way and increase the responsiveness of their supply chain. Integration of BDA with IoT and AI, further enhances its impact as it has the potential to deliver end-to-end visibility and thereby improve the quality of predictive insights. Through a critical literature review in the form of case studies, this study identifies how the deployment of BDA transformed the operation of traditional supply chains into ones of greater agility, of more reduced lead times, and different decision-making skills. The results suggest that investment in BDA helps organizations better withstand disruption, facilitates better flow of operations, and gains a competitive advantage in a dynamic business environment. Thus, it is concluded here that proper strategic adoption of Big Data Analytics is considerably crucial for the well-being of supply chain performance and sustainable growth of organizations.

KEY WORDS:

Big Data Analytics, Supply Chain Management, demand forecasting, inventory management, risk mitigation, logistics optimization, operational efficiency, cost reduction, customer satisfaction, real-time prediction, IoT, AI, end-to-end visibility, predictive insights, agility, lead times, resilience to disruptions, competitive edge, strategic adoption, sustainable growth.

INTRODUCTION:

The world of business is becoming increasingly complex with rapid growth in globalization, new technologies, and changing customer needs. New changes are causing complications in handling the supply chains, and traditional methods are no longer enough to deal with such complications. Businesses require tools and technologies that will advance their supply chains in function. One such tool is Big Data Analytics (BDA), which helps organizations make better decisions and operate more efficiently.

Big Data Analytics is the process of analyzing large data sets and emerging patterns and insights within them to help companies make decisions. In the supply chain management, BDA provides the monitoring of real-time operation; prediction of future problems and thus adjustment for better performance. For instance, BDA helps plan the demand from customers, monitors the inventory, and even streamlines transportation. This will bring better speed, wisdom, and precision in decisions in the chain of supply to make the supply chain effective and robust.

BDA is more impactful when combined with other new technologies such as Internet of Things and Artificial Intelligence. For instance, IoT devices, for example, sensors that would be placed in trucks or warehouses, could provide real-time feedback regarding the supply chain. The information would then be analyzed using AI, and patterns would be found to suggest ways of enhancing operations. This will see companies have visibility and control over their supply chains. For instance, such tools will help the company determine the quickest routes for delivery, fewer delays, and cost-cutting in transport.

Apart from the operational optimization benefits of BDA, the business stands to benefit from many others. For instance, BDA studies customers' behavior and the firms will realize what their customers need, thus availing a more outstanding experience for the clients. The BDA will help make companies green through observing the reduction methodologies of carbon footprint. This is in regard to customers and government pressures in embracing greener and ethical practice.

BDA is not without risk. The installation is expensive, and professional human resources are required to handle as well as process the data set. Also, businesses have to make sure that the data they use in the analysis is correct and secure. What is learned from BDA, however, makes all the difference and outweighs the costs for modern supply chain management.

The current paper addresses how BDA is changing the supply chain management world. The discussion is in terms of demand forecasting, inventory management, and logistics. The study showcases business use of BDA in order to scale and win, leveraging real-world examples and prior research. In today's data-driven world, there's no choice but a must to embrace BDA if one wants to remain competitive and efficient.

OBJECTIVES OF THE STUDY:

PRIMARY OBJECTIVE:

- To study on the role of big data analytics in improving supply chain management performance.

SECONDARY OBJECTIVES:

- To identify how leveraging big data contributes to decreasing errors and uncertainties by increasing the accuracy of demand forecasts.
- To leverage insights gleaned from big data so that one can reduce the wastage and improve efficiency in managing inventory.
- To learn how to apply the principles of data analytics in fortifying the risk mitigation process in such a way that helps prevent issues proactively.
- To explore the way that supplier relationship dynamics impact on inventory management and, by consequence, supply chain efficiency.

SCOPE OF THE STUDY:

- Analyze big data sources and integration methods in supply chain management.
- Evaluate advanced analytics techniques for improving demand forecasting accuracy.
- Investigate real-time inventory optimization strategies using lot and big data.
- Examine risk identification and mitigation approaches through predictive analytics.
- Assess the impact of supplier relationship analytics on supply chain efficiency.
- Study implementation challenges and best practices for big data analytics in SCM.

METHODOLOGY:

RESEARCH DESIGN:

Big data analytics revolutionizes supply chain management by enhancing demand forecasting, optimizing inventory, mitigating risks, and improving supplier relationships. This study explores its impact on performance metrics, examining how data-driven insights lead to more efficient, responsive, and resilient supply chains across various industries.

RESEARCH MODEL AND HYPOTHESIS:

DEPENDENT VARIABLES

Supply Chain
Management Performance

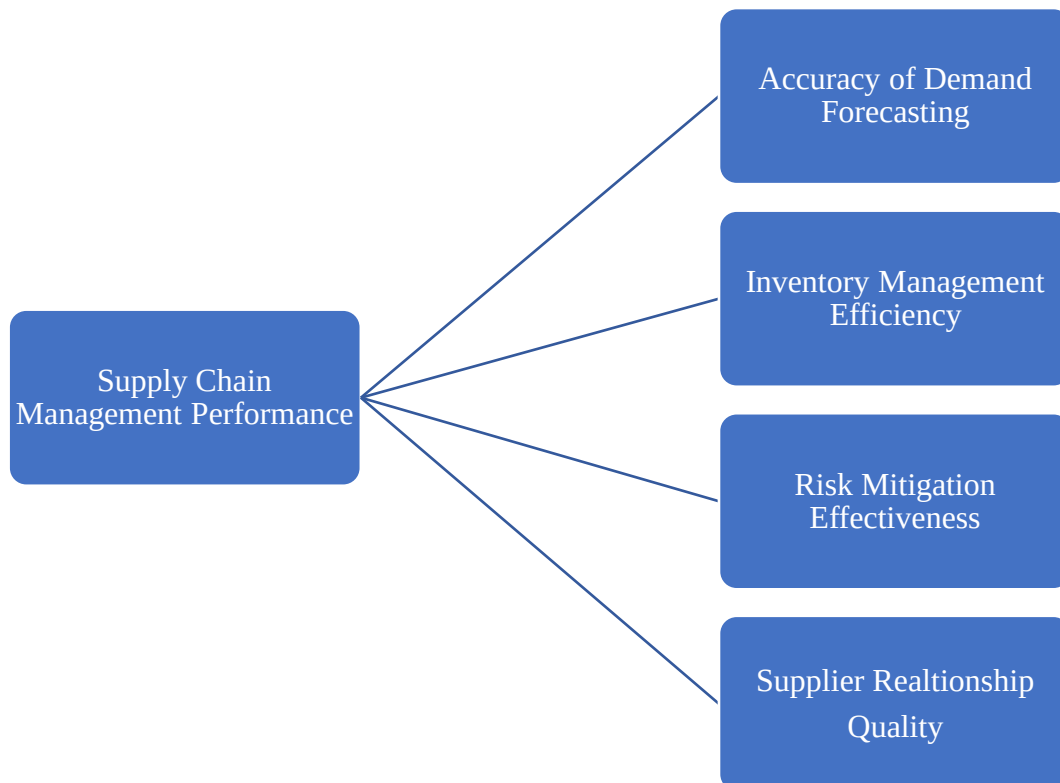
INDEPENDENT VARIABLE

Accuracy of Demand
Forecasting

Inventory Management
Efficiency

Risk Mitigation
Effectiveness

Supplier Relationship
Quality



DATA COLLECTION:

1. The questionnaire is used to gather relevant data for analysis.
2. Suitable for broad studies where direct observation is impractical.
3. Measures responses from "Strongly Disagree" to "Strongly Agree."
4. Questions are presented as statements to assess respondents' attitudes.
5. Helps capture detailed insights on various aspects of the research.

ANALYSIS FRAMEWORKS:

1. Frequency analysis is that of summarizing categorical data by explaining the number of occurrences or percentages of each category, giving insights into the distribution of responses in SPSS.
2. SPSS Correlation-SPSS applies correlation analysis to judge the strength and direction of associations between two or more continuous variables, using measures like Pearson or Spearman correlation coefficients.
3. One-way ANOVA in SPSS: Tests whether or not differences exist among three or more groups to determine if categories or conditions impact the dependent variable in different ways.

FINDINGS:

1. The chart shows a sample consists of 52% females and 48% males, showing a nearly balanced gender representation.
2. The chart shows that the largest age group comprises individuals of 18-22 years old, making up 47% of the sample, followed by those aged 23-29 at 37%. Most respondents are young adults, with 84% between 18-29 years old, indicating a youthful demographic.
3. The chart shows the majority hold undergraduate 57% or postgraduate 31% degrees, suggesting a well-educated participant group. The data reflects educational diversity, with the majority of respondents holding at least a Bachelor degree.
4. The chart shows that nearly half 47% are students, while 34% are employed, showing a mix of educational and working respondents.
5. The chart shows that 70% of respondents agreed and strongly agreed that quality and delivery consistently meet client requirements, indicating strong supply chain performance.
6. The chart shows that 73% agreed and strongly agreed on efficient management of product range across Chennai plants, highlighting operational effectiveness.
7. The chart shows that 75% believe supply chain operations effectively meet certification requirements, reflecting adherence to quality standards.
8. The chart shows that 73% agreed and strongly agreed on rapid development of complex products, emphasizing strong R&D capabilities.
9. The chart shows that 78% agreed and strongly agreed that supply chain performance provides a competitive edge with major automotive clients.
10. The chart shows that 71% agreed and strongly agreed that forecasts accurately predict orders, showing effective demand planning.
11. The chart shows that 71% confirm effective use of data analytics for demand forecasting across plants, demonstrating data-driven decision-making.
12. The chart shows that 70% agreed and strongly agreed that specific client needs are accurately forecasted, ensuring tailored service.

13. The chart shows that 70% agreed and strongly agreed on accurate short-term demand forecasting, indicating responsive planning.
14. The chart shows that 76% agreed and strongly agreed long-term forecasts aid in capacity planning, supporting strategic decisions. 57
15. The chart shows that 68% agreed and strongly agreed on maintaining optimal inventory levels, reflecting efficient stock management.
16. The chart shows that 77% agreed and strongly agreed that inventory tracking is effective, ensuring smooth manufacturing processes.
17. The chart shows that 70% agreed and strongly agreed stockouts are rare, indicating good inventory control.
18. The chart shows that 77% agreed and strongly agreed the turnover rate is satisfactory, showing efficient inventory management.
19. The chart shows that 80% agreed and strongly agreed inventory practices aid in rapid prototyping, enhancing product development.
20. The chart shows that 68% agreed and strongly agreed potential supply chain risks are well identified, highlighting proactive risk management.
21. The chart shows that 65% agreed and strongly agreed strategies effectively address operational challenges across plants.
22. The chart shows that 74% agreed and strongly agreed contingency plans are robust, ensuring continuity during disruptions.
23. The chart shows that 73% agree that risk processes cover manufacturing and quality control, ensuring comprehensive risk management.
24. The chart shows that 80% agreed and strongly agreed on successfully balancing risk mitigation with rapid product development.
25. The chart shows that 76% agreed and strongly agreed on excellent communication with suppliers, enhancing coordination.
26. The chart shows that 77% agreed and strongly agreed that suppliers consistently meet quality requirements, supporting certification standards.

27. The chart shows that 76% agreed and strongly agreed on effective collaboration with suppliers for process improvements.

28. The chart shows that 80% agreed and strongly agreed on a high level of trust with key suppliers, facilitating smooth operations.

29. The chart shows that 84% agreed and strongly agreed supplier relationships significantly aid in serving diverse clients, showing the importance of supplier partnerships.

CONCLUSION:

Big Data Analytics renders a huge boost to SCM performance by aggregating information from such sources as market trends, customer behavior, and real-time operations. By infusion of BDA into SCM, companies can improve core areas, including demand forecasting, inventory management, risk mitigation, and supplier relationships. With BDA, it enables organizations to forecast demand through a clear market requirement, manage stock levels, reduce lead times, and thus decrease costs and increase customer satisfaction. In addition, BDA unearths inefficiencies in the supply chain. Businesses can react more promptly to changes in the market. In this scenario, real-time analytics ensure improved visibility and collaboration between partners, thus improving decision-making. Implementing BDA is a strategic advantage that contributes to both competitive and operational performance, as companies can predict trends and make effective responses. With its evolution, BDA will be an increasingly important enabler of effective SCM, creating long-term growth and operational excellence in companies.

IMPLICATIONS:

1. Improve Decision-Making: With data-driven insights from various sources, companies can make more informed, accurate, and timely decisions concerning the supply chain. This leads to enhanced operational efficiency and reduced risks. Data-centric decision-making further results in better forecasting, resource allocation, and optimized stock management.

2. Cost Saving and Efficiency: Supply Chain inefficiencies and bottlenecks can be detected through BDA, which enables organizations to streamline processes, cut down lead times, and lower the inventories in their system. Companies, therefore are able to enhance margins at higher service levels and meet the requirements of the customers better.

3. Increased Agility and Resilience: With real-time data analysis, the supply chains become agile, and companies can react very fast to changing market conditions, disruptions, or unexpected challenges. Organizations would be able to anticipate what could disrupt their businesses, manage risks better, and take appropriate measures to ensure continuity and loss minimization.

4. Better Ties with Suppliers: With the better tracking of performance of suppliers and access to real-time information concerning inventory and demand, better relationships with suppliers can be developed. The enhanced cooperation leads to easier procedures and higher quality control.

5. Sustainable Competitive Advantage: Companies holding on to BDA would be achieving competitive advantage by allowing for the ability to predict the trend in the marketplace as well as channel optimization and better responses toward customers. Data-driven approach makes it possible to innovate better and contribute to sustainable growth in a fluid business environment in the long term.

RECOMMENDATIONS:

- **Leverage Data Analytics:** Optimize inventory management, enhance forecasts, and streamline supply chain efficiency through better decision-making.
- **Strengthen Supplier Relationships:** Build trust and collaboration with suppliers to ensure quality products, meet client needs, and enhance overall supply chain performance.
- **Improve Forecasting Accuracy:** Improve short-term and long-term demand forecasting to respond swiftly to market shifts and optimize supply chain agility.
- **Maintain Inventory and Risk Management** Maintain the optimal inventory levels, effectively manage risks, and update contingency plans, ensuring continuous, smooth production and operations.

LIMITATION OF THE STUDY:

- Inaccurate data may result in rather inaccurate results.
- The study may be theoretical if resources are a limiting factor they can limit the research work.
- Introduction might reveal that due to the extremely fast pace of technology, it might be possible to find that the results of the study are already out of date. This may not well generalize results in other industries.
- It was also deduced that data access limits may impair the exclusion of a comprehensive supply chain analysis.
- This is because there will be limitations in time leading to failure in identifying the long-term effects of the campaign.
- The employees of a particular organization may resist changes that may result in the limitation of the depth of big data implementation.

REFERENCES:

- Sumit Maheshwari & Prerna Gautam & Chandra K. Jaggi, 2021. "Role of Big Data Analytics in supply chain management: current trends and future perspectives," International Journal of Production Research, Taylor & Francis Journals, vol. 59(6), pages 1875-1900, March.
<https://ideas.repec.org/a/taf/tprxxx/v59y2021i6p1875-1900.html>
- Arusyak Ivanyan, Madiha Saleem, John Maina, Prof. Loida A. Cabaraban, OLANIPEKUN Lateef Okikiola, & Dr. Jyotsna Singh. (2023). The Use of Big Data Analytics to Improve Supply Chain Efficiency and Resilience.
<https://jomeri.org/index.php/jomeri/article/view/4/4>.
- Big data analytics in supply chain management: trends and related research. Ivan Varela Rozados, Benny Tjahjono. Duration: 10 Dec 2014 → 12 Dec 2014.
<https://pureportal.coventry.ac.uk/en/publications/big-data-analytics-in-supply-chain-management-trends-and-related->
- Wantao Yu is a professor of Supply Chain Management at the University of Roehampton. ... Gen Zhao is currently a PhD candidate at the ... Qi Liu.
<https://www.sciencedirect.com/science/article/pii/S0040162520312439>
- Patrucco, Andrea S, Marzi, Giacomo, Trabucchi, Daniel. (2023). The role of absorptive capacity and big data analytics in strategic.
<https://discovery.fiu.edu/display/pub277056>
- Lee & Mangalaraj, 2022. Business analytics is important to firms because it is a new generation of technologies that apply statistical.
https://www.researchgate.net/publication/358300092_Big_Data_Analytics_in_Supply_Chain_Management_A_Systematic_Literature_Review_and_Research_Directions
- Oncioiu, Ionica, Ovidiu Constantin Bunget, Mirela Catalina. Türkes, Sorinel Capusneanu, Dan Ioan Topor, Attila Szora. Tamas, Ileana Sorina.
<https://www.tandfonline.com/doi/pdf/10.1080/00207543.2020.1868599>
- Surajit Bag, Muhammad Sabbir Rahman, Gautam Srivastava, Adam Shore and Pratibha Ram Technological Forecasting and Social Change, 2023.
<http://www.sciencedirect.com/science/article/pii/S0040162522006758>

- Jinou Xu, Margherita Pero and Margherita Fabbri. Technological Forecasting and Social Change, 2023,
<https://econpapers.repec.org/RePEc:eee:tefoso:v:196:y:2023:i:c:s0040162523004900>
- Lai Yin Xiang, Ha Jin Hwang, Haeng Kon Kim, Monowar Mahmood, 2021.
<https://dokumen.pub/software-engineering-in-iot-big-data-cloud-and-mobile-computing-3030647722-9783030647728.html>

NCBT - 2024

ISBN: 978-80-93543-35-2

**TO STUDY THE POWER OF DIGITAL MARKETING IN REACHING SALON
CUSTOMER**

BOYS MOHAMED. M

Student, II-MBA Department of Management Studies,

Vel Tech Rangarajan Dr Sagunthala R&D Institute of Science and Technology, Avadi

E-mail: vtp3974@veltech.edu.in, **Contact:** 8111001388

MR. DR. RAJA. S

Assistant Professor, Department of Management Studies,

Vel tech Rangarajan Dr Sagunthala R&D institute of Science and Technology, Avadi

ABSTRACT

This research analyzes the role of digital marketing for new customers and retaining the existing one in salons, where it proves to be the best means of reaching more customers and gives more exposure to a brand. Increasingly social media, search engine marketing, and email campaigns have made digital marketing a tool to connect and communicate with clients. Salons would be better off featuring their services through influencer partnerships, social media content, and reviews than nearly all other forms of advertising. This paper discusses several digital practices including SEO, social media marketing, and online booking platforms that help salons target people according to demographic categories, track engagement, and further optimize their marketing efforts. While analyzing the behavior of customers and reactions from the same, this research helps to illustrate how digital marketing leads to a better engagement with the clients, repeat visits, and finally leads to a salon's growth and competitive edge in the digital-first marketplace.

Keywords: Digital marketing, Salon industry, Customer retention, Brand exposure, Social media marketing, Search engine marketing, Email campaigns, Influencer partnerships, Online booking, SEO, Customer engagement, Demographic targeting, Competitive advantage, Customer behavior, Client communication, Brand loyalty.

INTRODUCTION

The beauty and wellness industry has been revolutionized with digital marketing, allowing salons to reach wider segments of potential customers than through traditional methods such as flyers and word-of-mouth. Instead, such online tools as social media, search engines, and online reviews have been transformed to become powerful sources. Instagram, Facebook, and TikTok become salons go-to spot to share before-and-after of the clients along with demonstrations live on the premises, interacting directly with potential customers through comments and messages. SEO ensures that the websites and local listings rank high; positive reviews on Google and Yelp build trust and credibility.

Email marketing, secondly, allows a salon to maintain long-term relationships with its clients by providing personalized updates and promotions and event-related services. In real-time analytics, information about the behavior of the customers is provided, enabling the refinements in strategy and measurement of campaign success. All these tools help salons increase their visibility, attract new clients, and instill loyalty in a highly competitive market.

However long it takes-be it paid ads, organic social media efforts, or just simple old-fashioned email outreach-salons can fine-tune their strategies based on the needs and preferences of their customers. In a nutshell, digital marketing has dramatically changed the way salons communicate with and attract customers. If you know how to use these online tools in the right fashion, the strength that online tools can drive in most salons lies in increasing their visibility while building brand loyalty among customers in this very competitive marketplace. With the evolution of digital tools, salons have never had the potential to reach and communicate with customers.

LITERATURE REVIEW

Dahnil, Marzuki, Langgat, & Fabeil, (2014). The beauty industry has been widely influenced by social media, especially through images displayed by Instagram, Facebook, and Pinterest. Such platforms are conducive for salons to project before-and-after transformations, styling tips, and behind-the-scenes looks. Indeed, Statista (2020) reported that more than 80% of salon customers access a new product or service through social media, showing the wide breadth of influence. More research indicates that frequent update on the social media sites increases the brand's exposure to its customers and enhances customer retention levels.

De Veirman, Cauberghe, & Hudders, (2017). Traditional forms of influencer marketing, where beauty bloggers or local influencers promote the services of a salon, do indeed work to impact brand credibility. A Forbes report from 2019 reveals that consumers trust influencer referrals nearly as much as personal referrals. This word-of-mouth promotion, via micro-influencers, helps attract new customers to salons who are likely going to trust the influencer's experience. Influencers can also help salons tap into niche markets that include bridal hair and makeup or eco-friendly beauty services for more extensive customers.

Chaffey, D., & Smith, P. R. (2017). You find a very detailed digital marketing guide in Chaffey and Smith, telling the need to plan and integrate a set of varying digital channels. Digital marketing tools are the means by which salons can extract benefits from optimizing customer experience as well as search engine optimization techniques to attract new customers through pay-per-click ads among many other techniques. For salons, personalized email offers, geo-targeted ads and other mobile-friendly booking systems become fundamental points for gaining customer interest and proper bookings.

Edelman, D. C. (2010). Edelman's work outlines how the digital landscape has dramatically changed the funnel approach of customer journeys into a dynamic, more cyclical path. Thus, for salons, this would translate into using digital marketing to have the conversation going at multiple touch points. Specifically, it would mention retargeting and personalized marketing to return clients who have ever visited the salon website or interacted with its social media, that digital marketing can be an extremely effective means of bringing in returners.

Solomon, M. R., Marshall, G. W., & Stuart, E. W. (2018). Solomon et al. covers how brands can use digital marketing as a tool for creating more interactive, meaningful experiences with their audiences. The authors discuss the power of video marketing and customer reviews, especially relevant when arguing salons have visual transformations that may attract customers. For instance, video testimonials on Instagram or YouTube help potential clients envision the experience they would have in the salon, improving trust and raising the prospect of booking.

OBJECTIVE

PRIMARY OBJECTIVE

To study the power of digital marketing in reaching saloon customer.

SECONDARY OBJECTIVE

- To evaluate the impact of social media marketing on customer acquisition and brand awareness for salons.
- To analyze the effectiveness of online reviews and testimonials in influencing potential salon clients
- To explore the role of influencer partnerships in driving salon customer engagement and bookings.
- To assess how targeted digital advertising impacts customer retention and loyalty in the salon industry.

HYPOTHESIS

ANOVA:

Null Hypothesis (H_0): There is no significant difference in the Categorical Variables and Metric Variables.

Alternative Hypothesis (H_1): There is a significant difference in the Categorical Variables and Metric Variables.

CORRELATION

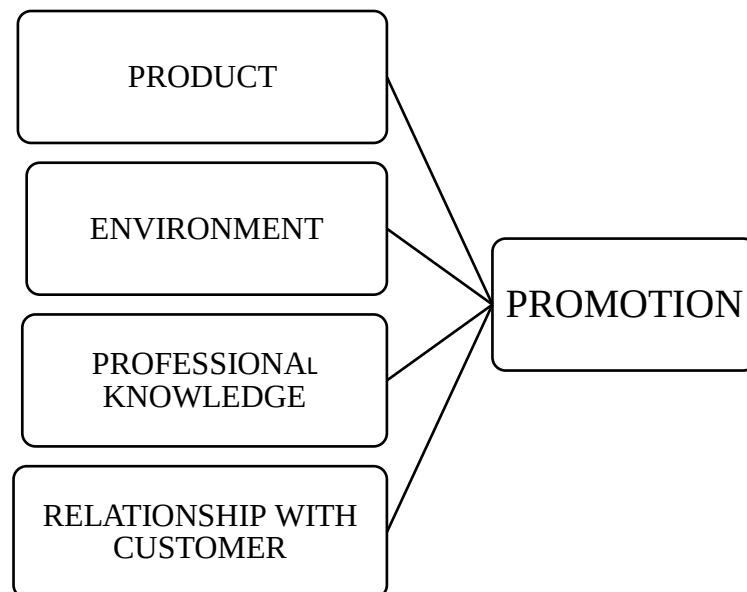
Null Hypothesis (H_0): There is no significant correlation between Promotion and Product, Environment, Professional Knowledge and Relationship with customers.

Alternative Hypothesis (H_1): There is a significant correlation between Promotion and Product, Environment, Professional Knowledge and Relationship with customers.

METHODOLOGY

The mixed-methods approach will be utilized to study the impact of digital marketing on customer reach for salons. Online surveys and interviews with salon owners, marketers, and customers will provide input, while observations of social media and online platforms will evaluate engagement. Secondary data in the form of analytics reports will also support these findings-providing a holistic view of the way tools such as SEO, email marketing, and online reviews facilitate salon customer reach.

RESEARCH MODEL



RESULTS

ONE WAY ANOVA TABLE

TABLE 1: ONE WAY ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PO	Between Groups	5.838	2	2.919	0.389	0.679
	Within Groups	870.028	116	7.5		
	Total	875.866	118			
PR	Between Groups	5.84	2	2.92	0.43	0.652
	Within Groups	774.485	114	6.794		
	Total	780.325	116			
EN	Between Groups	28.296	2	14.148	1.939	0.149
	Within Groups	831.704	114	7.296		
	Total	860	116			
PK	Between Groups	13.207	2	6.603	0.98	0.379
	Within Groups	761.483	113	6.739		
	Total	774.69	115			
RC	Between Groups	7.846	2	3.923	0.433	0.65
	Within Groups	1032.462	114	9.057		
	Total	1040.308	116			

INTERPRETATION

The ANOVA results indicate no significant differences between groups for PO, PR, EN, PK, and RC, as all p-values (Sig.) are greater than 0.05. This suggests that group means are statistically similar across all variables.

CORRELATION TABLE

TABLE 2: CORRELATION

Correlations						
		PO	PR	EN	PK	RC
PO	Pearson Correlation	1	.376**	.468**	.382**	.446**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	119	117	117	116	117
PR	Pearson Correlation	.376**	1	.382**	.430**	.579**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	117	117	115	114	115
EN	Pearson Correlation	.468**	.382**	1	.386**	.452**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	117	115	117	114	115
PK	Pearson Correlation	.382**	.430**	.386**	1	.349**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	116	114	114	116	114
RC	Pearson Correlation	.446**	.579**	.452**	.349**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	117	115	115	114	117

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

INTERPRETATION

The correlation matrix reveals significant positive relationships among all variables (PO, PR, EN, PK, RC) at a 0.01 significance level. The strongest correlation is between PR and RC ($r = .579$), while PK and RC show the weakest ($r = .349$).

DISCUSSIONS

The case study draws attention to how the use of digital marketing has become a transformative tool for salons in expanding their target base and engagement level. Specifically, Instagram, Facebook, and TikTok impact heavily on salons because it gives them the face-to-face interaction and direct consultation with potential customers through the services. Visuals such as before-after changes also create attention and trust.

Search Engine Optimization (SEO) helps salons feature higher in local searches, capturing those actively looking for beauty services. Good online reputation is always a boost to attract fresh clients, while email marketing opens up another dimension, keeping relationships with exclusive offers and updates to salons even when customers are not looking for services.

Real-time analytics give salons access to the most precious insights on customer behavior and campaigns, enabling refinement of strategies for better impact. Challenges are high competition, consistent content, and negative reviews, so management requires proactive effort. Digital marketing enables salons to extend their reach, foster loyalty, and change with the current preferences of the tech-savvy customer.

CONCLUSION

With ever increasing competition, digital marketing is the tool that can reach and engage salon customers. As long as salons utilize social media, SEO, online booking systems, email marketing, and influencer collaborations, enhancing their visibility and building brand loyalty directly connects with potential clients. What makes digital marketing effective is the precision of targeting customer segments in terms of personalization of marketing messages and the delivery of a seamless customer experience through various digital platforms. Second, customer reviews and user-generated content can act as powerful endorsers, leading to further trust and engagement.

The salons would also need to be in a constant adjustment process regarding new trends and new technological advancement to make their digital strategies fresh. Analytics will also help the salon businesses measure the influence of digital campaigns and optimize efforts for greater return on investments. In conclusion, digital marketing is an irreplaceable opportunity for salons to fortify their customer base, improve retention, and drive growth.

REFERENCES

1. Statista. (2023). Global market size of the beauty industry 2023. Retrieved from <https://www.statista.com>
2. Campbell, C., Ferraro, C., & Sands, S. (2021). Segmenting consumer reviews to improve targeting in digital marketing campaigns. *Journal of Consumer Research*, 47(6), 984-1001. <https://doi.org/10.1093/jcr/ucab042>
3. Lee, H. (2023). *Effective Use of Paid Ads for Salon Marketing*. Salon Life Online. Retrieved from <https://www.salonlifeonline.com>
4. Cooper, B. (2024). *The Importance of Digital Marketing for Salons: Attracting New Clients in a Digital Age*. Alpha Social Media. Retrieved from <https://www.alphasocial.media>
5. Dawson, T. (2024). *The Role of SEO in Boosting Your Salon's Online Visibility*. Salon Life. Retrieved from <https://www.salon.life>
6. Anderson, M. (2023). *How Digital Marketing is Transforming the Beauty Industry*. The Beauty Hub. Retrieved from <https://www.thebeautyhub.com>
7. Williams, K. (2023). *Maximizing Social Media to Reach Salon Clients: Key Strategies*. Salon Success. Retrieved from <https://www.salonsuccess.com>
8. Smith, E. (2022). *How SEO Can Boost Your Salon's Digital Marketing Reach*. Marketing for Salons. Retrieved from <https://www.marketingforsalons.com>
9. Taylor, R. (2023). *Email Marketing for Salons: Building Lasting Client Relationships*. Salon Tech Digital. Retrieved from <https://www.salontechdigital.com>
10. Matthews, L. (2023). *Creating a Salon Brand Through Digital Marketing*. Beauty & Salon Digital Magazine. Retrieved from <https://www.beautysalonmagazine.com>

A STUDY ON THE ROLE OF GREEN BONDS AND SUSTAINABLE DEBTS INSTRUMENTS FORTERING COLLABORATION BETWEEN CORPORATES AND PUBLIC INVESTORS

JAIGANESH N

II MBA Student, Department of Management Studies

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,

Chennai, India

6369116714 jay2002ganesh@gmail.com

Dr . Lumina Julie R

Associate Professor, Department of Management Studies

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,

Chennai, India

9944321298 luminarajasekeran@gmail.com

ABSTRACT

Green bonds and sustainable debt instruments have emerged as key financial tools to combat climate change since their inception by the European Investment Bank in 2007. These instruments have grown rapidly, aligning with global sustainability goals by financing projects with environmental and social benefits. They play a significant role in promoting ESG goals, enabling the transition to a sustainable economy, and addressing challenges such as transparency, reporting, and standardization that are critical for market growth. This study employs a qualitative approach, analysing secondary data from academic literature, industry reports, and regulatory guidelines. It investigates case studies, market trends, and frameworks like the Green Bond Principles and Climate Bonds Standard to evaluate their impact and identify ongoing challenges. The analysis highlights how these instruments have successfully mobilized capital for environmental and social projects, contributing to climate goals and fostering ESG-aligned investments. While green bonds and sustainable debt instruments drive progress toward sustainability, they underscore the need for enhanced market transparency, robust reporting standards, and innovation. In conclusion, these tools are essential for financing environmental and social initiatives, helping to address pressing issues like climate change, biodiversity loss, and social inequality. By strengthening transparency

and fostering innovation, green bonds and sustainable debt instruments support the global transition to a sustainable economy.

KEYWORDS: Sustainable Finance, Impact Investing, Market Transparency, Climate-Aligned Capital, Green Bond Principles.

INTRODUCTION

Global green and sustainable bond issuance is expected to reach \$1 trillion by 2024. Green, social, and sustainability-linked bonds (GSS+) issued \$272.7 billion in Q1 2024 alone, a 15% rise from the previous year. Although Europe continues to be the largest market, developing nations such as Africa are seeing impressive development, with African issuance rising 1,692% annually, primarily due to the efforts of organizations like the African Development Bank. Green bond issuance is anticipated to be further stimulated by declining interest rates in major countries, including the US and Europe. Changing to more accommodating rules, central banks will make it easier for sustainable projects to borrow money. The development of the market is significantly influenced by sovereign green bonds. They provide standards for commercial issuers and convey resolute government commitment to climate goals. These tools help improve market liquidity and investor confidence by strengthening reporting requirements and lowering "greenwashing" concerns. Renewable energy, water infrastructure, sustainable transportation, and innovation-driven industries are now among the projects funded by green bonds. Products that are innovative, like Japan's Climate Transition Bonds, demonstrate how sophisticated this industry is becoming. Despite growth, the market faces challenges like ensuring transparency and aligning with global sustainability standards. Emerging markets are increasingly participating, but need capacity building to align with stringent reporting and verification norms.

STATEMENT OF PROBLEM

Increased demand for sustainable investment prospects has steered the adoption of green bonds and other sustainable lending instruments, expected to be applied towards the financing of eco-friendly projects. However, a large gap currently exists between companies that issue these instruments, and the public investor, thus hindering the development of the green bond market. Therefore, there are problems associated with how companies can prove the environmental footprint of projects; concerns about 'Greenwashing,' as it is well known, has arisen beyond stringent qualifiers of prototyping the works of art with considerable proof for claiming attribute as environmentally friendly. It is, under some circumstances that

investors take up their struggles because of a lack of standardized reporting, transparency, and poor methods for adequately assessing risks in sustainable bonds, which lead them to being sceptical about the long-term returns and environmental benefits of such investments. Such a situation hampers flows of capital towards green initiatives, and reduces the capacities of green bonds and sustainable debt instruments in creating efficient strides toward combating climate change and environmental degradation within countries. The research thus aims to address these issues and end up with solutions that will cap the misalignment between corporate issuers and investor expectations.

LITERATURE REVIEW

- **He, H., & Zhao, X. (2022):** The research investigates how environmental, social, and governance (ESG) factors influence the pricing of green bonds. According to the researchers' findings, green bonds tend to be priced a little lower than their conventional counterparts by virtue of a "geranium" and the demand by ESG-conscious investors. They also opined that institutional investors are more likely to invest in green bonds. This indicates that the trend on sustainable debt instruments is catching up.
- **Giudici, G., & Mazzocchi, M. (2022):** This research paper delves into the relationship shared between the issue of corporate green bonds and financial performance. The authors concluded from the same that such companies reap the rewards of having enhanced corporate reputations and increased access to capital. Performance measurements of the companies after the issue exhibited positive trends, which indicates that green bonds would enhance the chances of both environmental sustainability and financial sustainability.
- **Managi, S., & Okimoto, T. (2021):** This study throws light on the trend of issuing green bonds in emerging markets and the ways through which green bonds can be adopted for financing sustainable development in such countries. The authors assert that, despite bottlenecks like regulatory uncertainty and the absence of investor awareness in their regions of operation, green bonds are the most efficient vehicles for transitioning these emerging markets into a new sustainable economy.
- **Flammer, C. (2021):** The study sought to investigate the effect of sustainable debt instruments, such as green bonds, on corporate decisions regarding climate change. The results implied that green bonds could motivate companies to improve their

environmental performance as they direct their efforts towards satisfying rather than shifting financial objectives to correspond with their long-term sustainability goals.

- **Tang, D. Y., & Zhang, Y. (2020):** This research seeks to determine the impact of the issuance of green bonds on corporate behaviour concerning environmental investments. The authors found that the firms increased investments in greener technology and projects after issuing green bonds, indicating that green bonds can work to advance corporate environmental accountability.
- **Karpf, A., & Mandel, A. (2020):** Karpf and Mandel distinguish the sustainable debt instruments-in particular green bonds- from the rest in the post-COVID recovery process. According to them, sustainable debt has gained popularity in recovery financing, as governments and firms intensively think of building resilient, sustainable economies after the pandemic.

OBJECTIVES OF THE STUDY

- To analyse the impact of green bonds on corporate financial performance.
- To evaluate the role of public investors in promoting sustainable debt instruments.
- To examine the regulatory frameworks governing green bonds and sustainable debt instruments.
- To assess the effectiveness of green bonds in achieving environmental and social goals.

LIMITATIONS OF THE STUDY

- The market for green bonds has struggled with issues of standardization. Among the others, one has seen different definitions used across regions, making it difficult for an investor to assess the real environmental impact consistent with his or her investments.
- Green bonds can cost more to issue than conventional debt instruments, making them potentially accessible only to larger firms or firms in developed markets.
- Sustainable debt instruments show increasing tendency in demand, but unawareness and ignorance concerning these financial instruments among

public investors act as barriers for them to be adopted and integrated within a portfolio at broader levels.

METHODOLOGY

The research methodology for identifying green bond and sustainable debt instruments in corporate settings with public investors will apply mixed methods. First, and in a qualitative side, an analysis of pertinent literature such as journal articles, industry reports, and case studies of companies with green bonds would form the basis for understanding its evolution, types, and regulatory frameworks. That would then be followed by quantitative methods of financial data analysis of public investors and those companies engaged in this market, to analyse the trends surrounding bond issuance, measures of performance, and reactions that the market has to green debt offering. The outcomes would be backed up by a survey and interviews employing stakeholders such as financial analysts, issuers, and even investors, who will represent the market dynamics, challenges, and sentiment of investors. Thus, the full package will therefore provide further insights into the creation, and adoption effectiveness of green bonds and debt sustainable instruments.

CHALLENGES AND FUTURE OUTLOOK

Despite their promising potential, green bonds and sustainable debt instruments face several challenges that could hinder their growth. Greenwashing remains a critical concern as some issuers may exaggerate or misrepresent the environmental benefits of projects. Addressing this requires stronger verification mechanisms and enhanced market oversight. Largely, the unstandardized global frameworks lead to inconsistencies that would create a difficult comparison process between issuances for investors. High costs of certification and compliance deter smaller entities from participating. Impact measurement is another problem that has not yet fully developed reliable and quantifiable metrics for project benefits.

These challenges can be overcome in the near future through technological innovation, such as blockchain technology for increased transparency, and the design of globally harmonized standards. The public and private sectors will be more effectively mobilizing their capital, and strong regulatory support and education will help to build confidence in these instruments. By overcoming all these hurdles, green bonds would be able to scale up significantly so that it could contribute to a more sustainable financial ecosystem and long-term climate goals.

FINDINGS OF THE STUDY

1. Green bonds promote environmental sustainability by raising funds for projects addressing climate change, renewable energy, and pollution reduction.
2. Sustainable debt instruments attract socially conscious investors who seek both financial returns and positive environmental or social impacts.
3. Green bonds are regulated by standards such as the Green Bond Principles (GBP) to ensure transparency and accountability in funding allocation.
4. Sustainability-linked bonds (SLBs) incentivize issuers to meet specific sustainability targets, linking coupon payments to environmental performance metrics.
5. Investors are increasingly demanding sustainable investments, pushing firms to issue green bonds as part of their corporate responsibility strategies.
6. Green bond market growth is driven by policy frameworks, such as the European Union's Taxonomy for Sustainable Activities and green finance incentives.
7. Green bonds help mitigate climate risks, enabling companies and governments to fund projects that address environmental concerns and reduce carbon footprints.
8. Impact measurement and reporting are crucial in green bonds to ensure that funds are being used for genuine environmental benefits.

9. Sustainable debt instruments have lower risk profiles in the long term as they focus on climate resilience and sustainable business practices.
10. The green bond market faces challenges, such as ensuring the integrity of claims, verifying the environmental benefits, and meeting evolving investor expectations.

IMPLICATIONS OF THE STUDY

1. **Environmental Impact:** Green bonds promote environmental sustainability by funding projects that address climate change and reduce carbon emissions.
2. **Investor Demand:** Increasing investor interest in sustainable finance drives the growth of green bonds and sustainable debt markets.
3. **Risk Mitigation:** Sustainable debt instruments help mitigate environmental risks, reducing exposure to industries facing regulatory and climate-related risks.
4. **Regulatory Pressure:** Governments and regulatory bodies increasingly require companies to adopt sustainable practices, driving the demand for green bonds.
5. **Market Liquidity:** The rise of green bonds creates a more diverse, liquid market for sustainable investment products and opportunities.

RECOMMENDATIONS

1. **Encourage Long-term Investment in Sustainable Projects:** Green bonds should focus on financing long-term projects that have significant environmental and social impacts, such as renewable energy, green infrastructure, and energy-efficient buildings. This can promote sustainability while ensuring stability in investment.
2. **Develop Clear and Transparent Reporting Standards:** Issuers of green bonds should adhere to robust reporting frameworks such as the Green Bond Principles (GBP) or the Climate Bonds Standard. Transparent reporting helps investors track the environmental impact of their investments and ensures accountability.
3. **Offer Attractive Risk-Return Profiles:** Green bonds and sustainable debt instruments should offer competitive yields to attract a wider investor base, including institutional investors, while minimizing risk through diversification of the underlying projects.
4. **Promote ESG Integration in Investment Decisions:** Encourage investors to incorporate Environmental, Social, and Governance (ESG) criteria in their capital investment

strategies. This aligns investment decisions with sustainable development goals (SDGs) and enhances the value of green bonds as part of a broader ESG portfolio.

5. **Incentivize Issuance through Tax Benefits:** Governments could provide tax incentives to green bond issuers and investors to promote the growth of the green bond market. Tax credits or exemptions could make these bonds more attractive to investors.

CONCLUSION

Green bonds and other sustainable debt instruments have become critical tools in financing the transition to a more sustainable and resilient global economy. They allow investors to fund projects addressing pressing environmental and social challenges such as climate change, renewable energy, and social equity. In the last couple of years, the growth of the green bond market reflects the growth in awareness and demand for sustainable investments and the two sectors-the government and the private sector-have been playing vital roles in this development. Nevertheless, the challenges facing this market, such as standardization, transparency, and liquidity, are very big. Since there is no common definition of "green" projects, it becomes prone to the risk of greenwashing, thereby affecting the credibility of the market. The clear guidelines, independent verification, and enhanced regulatory frameworks help sustain these debt instruments in the long run. The future of green bonds is promising, with new developments such as sustainability-linked bonds and the growth of carbon markets driving further demand. As the market matures, these instruments will increasingly play a central role in aligning global financial systems with sustainability goals, providing both attractive returns for investors and meaningful contributions to addressing the world's most urgent environmental and social issues.

REFERENCES

- Castellini, G., & Panetta, I. C. (2021). Green bond: A systematic literature review for future research agendas. *Journal of Risk and Financial Management*, 14(12), 589. <https://doi.org/10.3390/jrfm14120589> 【6†source】
- Climate Reality Project. (2023). What are green bonds and how can they fight the climate crisis? *The Climate Reality Project*. Retrieved from <https://www.climateRealityproject.org> 【8†source】

- Ehlers, T., & Packer, F. (2017). Green bond finance and certification. *BIS Quarterly Review*, 2017(September), 89-104. https://www.bis.org/publ/qtrpdf/r_qt1709e.htm 【7†source】
- Environmental Finance. (2022). Sustainable bonds market review. *Environmental Finance*. Retrieved from <https://www.environmental-finance.com> 【6†source】
- World Bank. (2021). Green bonds: Mobilizing the capital we need to tackle climate change. *World Bank*. Retrieved from <https://www.worldbank.org/en/news/feature/2021/10/22/green-bonds> 【8†source】
- World Bank. (2021). What are green bonds? *World Bank*. Retrieved from <https://www.worldbank.org/en/topic/greenbonds> 【8†source】
- Karpf, A., & Mandel, A. (2022). Green bonds: The state of the market. *Climate Bonds Initiative*. Retrieved from <https://www.climatebonds.net> 【6†source】
- United Nations Environment Programme Finance Initiative. (2021). Financing the future: Green bonds and sustainable investing. *UNEP FI*. Retrieved from <https://www.unepfi.org> 【7†source】
- CBI & China Central Depository Clearing Company. (2019). China Green Bond Market 2018. *Climate Bonds Initiative*. Retrieved from <https://www.climatebonds.net> 【6†source】
- Climate Bonds Initiative. (2023). Green bonds: State of the market 2023. *Climate Bonds Initiative*. Retrieved from <https://www.climatebonds.net> 【7†source】
- Monk, A., & Perkins, T. (2020). Green bonds: Why transparency matters. *Sustainability*, 12(1), 87-99. <https://doi.org/10.3390/su12010087> 【7†source】

- Amante, M. (2018). Trendy green bonds offer little beyond feel-good vibes for issuers, investors. *Forbes*. Retrieved from <https://www.forbes.com> 【7†source】

A STUDY ON THE ROLE AND EFFECTS OF FOREIGN BANKS ON INDIA'S FINANCIAL LANDSCAPE

MS. SUSHANTHIKA V

Student, II -M.B.A (Sec-A), Department of Management Studies,
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Avadi.

E-mail: vtp3907@veltech.edu.in, contact: +91 8056205663

DR. ASHLIN NIMO J R

Assistant Professor, Department of Management Studies,
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Avadi.

ABSTRACT:

Foreign banks have long been integral to India's financial landscape, contributing to economic growth while also sparking debates about their impact on domestic banking and financial inclusion. This article delves into the multifaceted role of foreign banks in India, highlighting their contributions, challenges, and the regulatory frameworks that govern their operations. Foreign banks have, in fact, supported trade, investment, and innovation within the Indian financial ecosystem by providing easy access to global capital markets, advanced technology, and specialized expertise. It has also introduced competition, which forced domestic banks to be more efficient and adopt newer, innovative practices. However, these banks often attract flak for the limited reach of such services in the rural areas and for targeting only high-net-worth individuals and multinationals, thus raising equity concerns about access to financial services. These are then compounded by regulatory hurdles and compliance challenges as seemingly indicative of the delicate balance required between globalization encouragement and local protection. This article assesses the penetration of

foreign banks into Indian financial policies and market dynamics through case studies of successful ventures and controversies besides future trends in the role they are likely to play within initiatives on financial inclusion and partnerships with domestic banks to address unmet market needs.

INTRODUCTION

Foreign banks have played a very important role in shaping the financial landscape of India, bringing with them global expertise, advanced technological innovations, and access to international capital markets. Their presence in the Indian economy dates back to the colonial era, but their impact has grown manifold in recent decades as India embraced liberalization and globalization. Today, foreign banks play very important roles in the Indian financial system by providing high end banking services, increasing competitiveness, and making the services of the domestic banks competitive. Probably one of their most important contributions is the opening of the Indian business and consuming world to the global money networks.

Foreign banks also helped the Indian companies to navigate into the international markets through launching sophisticated financial products and bank experience abroad. These banks also provide valuable insights to the rest of the world's financial markets, thus fueling the Indian banking industry's quest for innovation. In addition, their orientation towards high-value clients and multinational companies has created a premium banking segment in India. Still, their role in the Indian financial market is not without a few challenges. Critics point to the fact that their services reach very few in the rural areas, where inclusion of financial services is of utmost concern.

They attract high-net-worth people and large corporations, raising an issue of equity and inclusivity in the financial sector. The international banks also face major regulation and compliance issues in India since they have to deal with intricate rules that protect domestic interest while promoting foreign investment. Digital banking and increased focus on financial inclusion will open up new doors for foreign banks while, at the same time, posing challenges. Strategic collaboration with domestic banks, increasing their presence in less-penetrated markets, and aligning with government programs like *Jan Dhan Yojana* and *Digital India* can redefine their existence in the country. Alongside, stringent local

regulations and building trust among the country's diverse customer groups can be a challenge. This article examines the multifaceted role of foreign banks in India, including their role in contributing to economic growth, challenges they face, and regulatory frameworks that shape their operations. It has been explored through case studies of successful ventures and controversies, providing insight into their impact on India's financial policies and market dynamics. The article also deals with future trends, especially the scope for foreign banks to meet unmet market needs through innovation and collaboration with domestic players.

OBJECTIVE OF THE STUDY

To analyze the role and impact of foreign banks on India's financial landscape, focusing on their contributions, challenges, regulatory frameworks, and their potential in fostering financial inclusion and partnerships for market expansion.

METHODOLOGY

1. **Data Collection:** Secondary data from financial reports, government publications, and industry analysis.
2. **Case Studies:** Analysis of successful foreign bank ventures and controversies in India.
3. **Comparative Analysis:** Comparison between domestic and foreign banks in terms of efficiency, innovation, and reach.
4. **Policy Review:** Examination of regulatory frameworks affecting foreign banks.

THE EMERGENCE OF FOREIGN BANKS IN INDIA

Foreign banks have a long history in India, which traces back to the colonial period when British banks were established to cater primarily to the needs of colonial trade and administration. This introduced a foreign banking institution such as the *Bank of England* and later, when it opened, *Hongkong and Shanghai Banking Corporation (HSBC)* laid the foundation for later international money-grocerying financial houses, which started off

providing limited services to British trade establishments, expatriates and even Indian big money patrons engaged in trade finance and the exchange of currency. Post-independence, India experienced a gradual change in the economic policies of the country. The foreign banks along with domestic ones were strictly regulated in view of the government's priorities to achieve economic self-reliance and equitable growth. The Banking Regulation Act of 1949 provided a structure for the functioning of the foreign banks in the country. However, foreign banks were restricted to niches of activities, mainly specialized services, as compared to the offerings by the domestic banks.

Foreign banks were affected by the liberalization of India's economy in the 1990s. The easing of regulations and renewed focus on integrating with global markets provided a stimulus for foreign banks to expand their footprint in India. They introduced innovative products, advanced technologies, and global best practices, significantly influencing the domestic banking sector.

Today, foreign banks in India operate under strict guidelines of the Reserve Bank of India. They are mainly concentrated in urban and metropolitan areas, catering to multinational corporations, high-net-worth individuals, and niche markets. Their role in fostering competition, providing access to global capital, and driving financial innovation has made them key players in India's financial ecosystem.

Although they have significantly contributed to the country's economy, the rural-urban divide in their outreach and regulatory challenges suggest a need for a more inclusive and balanced approach to their integration into India's economy.

CONTRIBUTIONS OF FOREIGN BANKS TO INDIA'S FINANCIAL LANDSCAPE

Foreign banks have contributed much to India's financial ecosystem by bringing in sophisticated practices, technologies, and international insights. Their contributions are multi-faceted, as can be seen below: Access to Global Capital Markets

Foreign banks act as a lifeblood connecting India with the global financial network. By drawing on their international network, they are able to finance trades, perform cross-border operations, and make investments. These banks open up global capital markets for Indian corporations, enabling foreign funding at competitive prices as well as effective management of exchange risks. This has enabled Indian companies to go global and made sectors such as manufacturing, IT, and pharmaceuticals prosper.

Advanced Technology and Expertise

Foreign banks bring the cutting-edge technological solutions and expertise into India. They have been instrumental in introducing innovative banking practices like electronic banking, sophisticated risk management systems, and mobile-based financial services. These technologies enhance customer experience and set the benchmarks for domestic banks. Moreover, their expertise in niche areas like investment banking, wealth management, and structured finance brings Indian businesses specialized solutions to complex financial challenges.

Promoting Innovation and Efficiency

The entry of foreign banks has squeezed increased competition within the Indian banking sector, compelling domestic banks to innovate and move toward becoming more customer-centric. Thereby, they have been in the forefront of introducing digital payment systems, data-driven decision-making tools, and customized financial products. Domestic banks' operational efficiencies and focus on performance have been thus pushed by their foreign counterparts to adopt similar practices, thus bringing about an overall quality improvement in the banking services rendered in India.

The foreign banks, therefore, have acted as an important catalyst in metamorphosing the entire banking scenario of India. They have completely joined the Indian financial system to global opportunities and encouraged innovation by upscaling the country's economic growth. Nevertheless, their impact is still limited to the urban centers with much scope for expansion of these benefits to areas not touched.

CHALLENGES POSED BY FOREIGN BANKS

Though they have been a significant contributor, foreign banks in India are plagued with several challenges and criticisms that limit their inclusivity and impact on the broader financial landscape.

Limited Rural Outreach

Foreign banks mainly operate in urban and metropolitan areas, targeting high-value markets where they can maximize profits. Their limited presence in rural regions creates a significant gap in access to essential banking services for a large segment of India's population. This lack of rural penetration contrasts sharply with the government's emphasis on financial inclusion, leaving millions of individuals and small businesses underserved.

Focus on High-Net-Worth Individuals and Multinationals

The foreign banks usually tend to focus on high-net-worth individuals and multinationals that need premium service custom-made according to their highly refined financial needs. Such strategic planning keeps it profitable, while it marginalizes the whole India, mostly the middle-class population and small entrepreneurs who would also be seeking an account facility. With only focusing on the upper category, such banks will hardly serve the needs of such a booming, diversified Indian economy.

Equity Concerns and Access to Services

The selective nature of foreign bank operations raises equity concerns. Serving financially lucrative segments while excluding others creates an exclusionary and elitist perception that reduces trust in the banking system. This is because foreign banks target high-income individuals, rendering their services out of the reach of poor people at high fees or with complex eligibility criteria that are more difficult to qualify for.

These challenges highlight a pressing need for foreign banks to align their strategies with the developmental goals of India. In order to reach the underrepresented rural populations and cater to a more extensive customer base, their contribution to the Indian economy can be improved. All these gaps would support the cause of financial inclusion but also make foreign banks stand stronger in one of the world's most dynamic markets.

REGULATORY FRAMEWORK GOVERNING FOREIGN BANKS IN INDIA

In India, foreign banks are operated under a strong regulatory framework, which is mainly managed by the Reserve Bank of India. This framework is focused on financial stability, protecting the domestic interest, and promoting foreign involvement in a controlled way.

Guidelines for Entry and Operations

Foreign banks can operate in India through two major ways:

1. Branch Model: Foreign banks are allowed to open branches, but the number is regulated so that these foreign banks should not corner significant market share of domestic banks.
2. Wholly Owned Subsidiaries (WOS) :RBI encourages wholly owned subsidiary structure as there is greater regulatory control, capital protection, and an easier means of compliance with local law.

The RBI mandates strict capital adequacy norms for foreign banks to ensure financial stability. They are required to maintain a certain percentage of their risk-weighted assets as capital reserves, often higher than domestic banks.

Priority Sector Lending (PSL)

Foreign banks having more than 20 branches should adhere to the same PSL requirements as domestic banks. This involves lending a specified percentage of their total advances to sectors such as agriculture, small enterprises, and housing for weaker sections. In the case of those with fewer than 20 branches, the requirements are not as stringent but are nonetheless substantial.

Foreign banks need to abide by AML and KYC compliance rules among other regulations. Also, RBI regularly conducts audits on such banks besides regular reporting from them, in order to ensure a system free from abuse of any nature.

Restrictions and Protections

The framework makes sure that foreign banks do not dominate the Indian market and therefore protect the interests of the domestic banks. For instance, mergers or acquisitions of Indian banks by foreign banks are strictly regulated.

While these regulations may ensure stability and fair competition, they can also be quite costly for foreign banks in terms of compliance and limited flexibility to operate. Innovation and balancing the regulatory environment will continue to be key to their success in India.

CASE STUDIES OF SUCCESS AND CONTROVERSY

Foreign banks in India are marked by both significant achievements and high-profile controversies-some of which provide vivid insights into their impact within the country's financial matrix.

Success Stories of Foreign Bank Ventures in India

1. HSBC: Legacy of Trust and Innovation

One of the oldest foreign banks in India, HSBC has been instrumental in financing trade and fostering cross-border business relationships. Among the first to introduce advanced digital banking services, it streamlined operations for its corporate clients. It has also been actively involved in supporting sustainable development projects, such as green financing initiatives in India, aligning with global ESG goals.

2. Citibank: Worldwide Leader in Consumer Banking and Innovation

Citibank is known for introducing innovations in consumer banking in India. Its credit card offerings in the 1980s transformed personal finance and remain a leader in card-based products. It also has a strong franchise in wealth management and investment banking, serving high-net-worth individuals and corporate clients. The bank's capability to combine local knowledge with global expertise has helped make it a trusted partner for Indian businesses looking to expand internationally.

3. Standard Chartered Bank: Promoting Inclusive Growth

Standard Chartered Bank has been operating in India for more than a century. The bank has helped small and medium enterprises by providing financial products specifically suited to their needs. It has long-term engagements in community development projects, particularly in health and education. It reflects its interest in inclusive growth.

Controversial Incidents and Lessons Learned

1. Lehman Brothers and the Subprime Crisis Fallout

Though it wasn't operating directly in the country, the collapse of Lehman Brothers in 2008 during the international financial crisis highlighted the global financial interconnections and created a liquidity crunch in the country as foreign banks shrank their credit lines. It highlighted the importance of proper risk management and further localized foreign banks to strengthen the economy against the kind of shocks that hit their parent countries.

2. Standard Chartered's AML Violations

In 2014, Standard Chartered was accused of violating anti-money laundering (AML) regulations in India. The case brought to the fore the lapses in compliance processes, which attracted strict scrutiny from the regulators for all foreign banks. The case stressed the need for strong governance and internal controls to ensure trust and transparency.

3. Citibank Fraud in Gurgaon

In 2011, a massive fraud was discovered in which a relationship manager at Citibank's Gurgaon branch was found to have duped clients into fake investment schemes. The controversy raised questions over oversight and customer protection. Citibank responded by

strengthening its internal processes and enhancing client education programs, turning the incident into an opportunity to improve operational security.

4. HSBC and Tax Evasion Allegations

In 2015, HSBC faced charges that it helped Indian account holders avoid taxes with the aid of offshore accounts. Reputation damage and financial costs took a toll on the bank to reform its compliance framework and bring its practice to conform to local requirements.

Key Implications

The experience of foreign banks in India reflects several important learning moments.

Local Adaptation: This has been a characteristic of the successful foreign banks: ability to align their global expertise with local needs. Innovations such as Citibank's credit card services illustrate how differentiated products can earn consumer trust.

Compliance with Regulatory Requirements: The Standard Chartered scandal related to AML violations and a number of cases of Citibank fraud underlie the critical need for conformity with local laws and maintaining a strong internal control system.

Risk Management: The global financial crisis underscored the need to safeguard domestic markets from global shocks through prudent risk management practices.

Customer-Centricity: Banks that invest in customer education and transparent processes, especially after controversies, can rebuild trust and strengthen their market presence.

These are also experiences of journeys undertaken by foreign banks within India that tell the challenges and opportunities faced in handling a diversified, regulated space. These help them gain better understanding, navigate more complex things, and give them an ability to do something worthwhile within the Indian financial space.

FUTURE TRENDS AND OPPORTUNITIES

The future of foreign banks in India lies in their ability to align with the country's evolving financial landscape, characterized by the twin priorities of financial inclusion and technological innovation.

Foreign Banks in Financial Inclusion Initiatives

While traditionally focusing on urban markets, foreign banks are beginning to explore opportunities in financial inclusion, driven by regulatory mandates and market potential. With India's rural population remaining largely underserved, foreign banks can leverage their technological expertise to develop cost-effective, scalable solutions. Digital banking platforms, mobile-based services, and microfinance initiatives are areas where foreign banks can make a significant impact.

Collaborating with government programs such as *Jan Dhan Yojana* or contributing to initiatives promoting digital literacy can help these banks expand their reach while aligning with national development goals. Innovative models like offering low-cost credit or customized savings products tailored to rural communities could enhance their contribution to inclusive growth.

Partnerships with Domestic Banks to Address Market Needs

Strategic partnerships with domestic banks present a promising avenue for foreign banks to expand their footprint while overcoming regulatory and operational challenges. Domestic banks possess deep local knowledge, a wide branch network, and established customer relationships, making them ideal collaborators for foreign banks looking to access untapped markets.

Such partnerships can facilitate the development of innovative financial products combining global expertise and local relevance. For example, co-branded credit cards, trade finance solutions for small businesses, or joint digital payment platforms could cater to a broader audience.

Additionally, these collaborations can help foreign banks navigate regulatory complexities by leveraging the domestic banks' experience with compliance and government schemes.

By embracing these trends, foreign banks can enhance their relevance in India's financial ecosystem, contributing to inclusive economic growth while maintaining their competitive edge in a dynamic market.

FINDINGS

The study reveals that foreign banks have significantly contributed to India's financial landscape by fostering innovation, enhancing efficiency, and providing access to global capital markets. Their advanced technologies, expertise in niche areas like investment banking and wealth management, and competitive practices have driven the modernization of the Indian banking system.

However, their operations are largely concentrated in urban and metropolitan regions, catering to high-net-worth individuals and multinational corporations. This focus has created a gap in addressing the needs of rural and underserved segments, limiting their contribution to financial inclusion.

Regulatory frameworks play a critical role in shaping the operations of foreign banks in India. While these regulations ensure stability, fairness, and protection of domestic interests, they also present compliance and operational challenges for foreign banks, particularly in adhering to priority sector lending norms and local governance standards.

Case studies highlight the successes of foreign banks in driving innovation and facilitating international trade, but controversies such as compliance lapses and customer fraud underscore the need for stronger governance and risk management practices.

Future opportunities lie in expanding rural outreach, participating in financial inclusion initiatives, and forming strategic partnerships with domestic banks to address unmet market needs and enhance their relevance in India's evolving financial ecosystem.

CONCLUSION

Foreign banks have played a transformative role in shaping India's financial landscape, acting as conduits for global capital, innovation, and best practices. Their contributions to enhancing the efficiency and competitiveness of the Indian banking system cannot be understated. By providing access to international markets, introducing cutting-edge technologies, and offering specialized expertise, foreign banks have driven economic growth and fostered global integration.

However, their operations in India have proved to be a double-edged sword. While they excel in serving high-net-worth individuals and multinational corporations, their limited presence in rural areas and focus on elite customer segments have raised concerns over equity and inclusiveness. This urban-centric approach leaves the majority of India's population underserved, which indicates a critical gap in the contribution of the institution towards fulfilling the nation's financial inclusion goals.

Regulatory frameworks governing foreign banks in India are framed in a way to provide a balance between encouraging globalization and protection of domestic interest. Even though these regulations ensure financial stability and fair competition, they challenge foreign banks in terms of compliance and operational flexibility. Finding the right balance between fostering innovation and exercising regulatory oversight will help maximize foreign banks' potential in India.

The bright outlook for foreign banks in India has been seen to have large potential in making deeper penetration into the Indian market. It has been driven by technological innovations in

addition to cooperation with local banks to fill out existing gaps in the financial system. Co-opetition with domestic banks provides foreign banks with access to local know-how and networking while helping them stay aligned with developmental priorities of India, making it a win-win situation for everyone.

Successes and controversies surrounding foreign banks in India have underlined valuable lessons in governance, adaptability, and customer-centricity. For foreign banks to thrive in India's dynamic and diverse financial ecosystem, they will have to evolve their strategies, be more inclusive, and more aligned with national goals.

Foreign banks have the potential to play a pivotal role in India's journey toward becoming a globally integrated and financially inclusive economy. While trying to address the existing and make effective usage of available challenges, they can contribute towards this nation's economic growth effectively while consolidating their existence as an indispensable player within that landscape. Success in India, depending solely upon one aspect, would be their success through innovation, collaboration, and adaptation toward the unique Indian market dynamics.

REFERENCES

1. Agarwal, R., & Gupta, S. (2018). The role of foreign banks in India: Opportunities and challenges. *International Journal of Economics and Finance*, 10(6), 92-105. <https://doi.org/10.5539/ijef.v10n6p92>
2. Bajpai, N. (2012). Foreign direct investment in the banking sector: An Indian perspective. *Journal of International Business and Economics*, 12(3), 122-134.
3. Bhatia, K. (2019). Financial inclusion in India: Role of foreign banks. *Asian Journal of Finance & Accounting*, 11(4), 56-65.
4. Chakrabarty, K. C. (2011). The role of foreign banks in the financial system of India. *Reserve Bank of India Bulletin*, 65(8), 451-460.
5. Chatterjee, D., & Thakur, R. (2016). Regulatory challenges and compliance issues for foreign banks in India. *Indian Journal of Economics and Business*, 15(1), 21-34.
6. Ghosh, A. (2013). Foreign banks and financial inclusion in India: Policy issues and challenges. *Economic and Political Weekly*, 48(22), 55-63.

7. Iyer, R., & Sharma, R. (2014). Foreign banks in India: Competitive advantages and challenges. *Journal of Indian Business Research*, 6(2), 1-14.
8. Jadhav, P. (2012). The impact of foreign banks on India's financial sector. *Asian Development Review*, 29(2), 102-120.
9. Kumar, P. (2019). Financial inclusion and the role of foreign banks in India. *South Asian Journal of Business and Management Cases*, 8(3), 218-230.
10. Mehrotra, A. (2015). The evolution of foreign banks in India: A policy analysis. *Journal of Policy Reform*, 18(4), 215-230.
11. Muthusamy, S. (2017). Globalization and the future of foreign banks in India. *Journal of Global Business and Economics*, 6(1), 39-51.
12. Narain, V., & Gupta, S. (2020). The future role of foreign banks in India's financial inclusion initiatives. *Indian Journal of Economics and Development*, 16(4), 438-446.
13. Rajan, R. G. (2011). The future of foreign banks in India: Balancing competition and regulation. *Reserve Bank of India Occasional Papers*, 32(2), 73-87.
14. Sharma, S., & Saxena, A. (2018). Foreign banks in India: Challenges and opportunities for growth. *Indian Journal of Finance*, 12(10), 22-34.
15. Singh, K. (2017). The regulatory environment for foreign banks in India: An analysis. *Journal of Banking and Finance Management*, 6(1), 57-70.

Security Threats and Defending Of Fintech Applications through Artificial Intelligence

Dr.Sriprasad K
Assistant Professor
Department of Computer Science and Applications
SRM Institute of Science and Technology
Vadapalani

Abstract:- In the recent trends the artificial intelligence plays important role in all sectors, similarly the artificial intelligence had made an impact over various business sector ,It may be positive or it may be negative impact over business .In this research work both positive and negative impact is been discussed . In the case of negative impact rectification is recommended for the issues. Businesses are reaching the customers through various applications. Most of the applications are through mobile applications. These applications are vulnerable to security threat, dealing with these vulnerability through Artificial Intelligence will improve the security to a better level. In this paper the approach of defending fin-tech with artificial intelligence is been discussed. Better solution is recommended

Keywords : - Machine learning models , deep learning algorithms , Business model

Introduction: Artificial Intelligence is revolutionizing the financial industry and the fintech sector, significantly enhancing efficiency in customer relations, data protection, and forecasting. Yet, the rapid pace of adoption often leads to the oversight of critical risks, including biases in AI algorithms, a lack of transparency, regulatory challenges, data breaches, and issues related to customer trust. In this article, we will explore these threats in detail and outline best practices for mitigating them, including the imperative of ensuring regulatory compliance

Machine Learning Biases in FinTech

AI in fintech companies is swiftly establishing itself as a transformative force. It not only enables financial institutions to enhance operational efficiency but also empowers them to deliver personalized financial advice through advanced market trends analysis and streamline data entry processes. However, it's essential to address the critical issue of biases in AI models, which can have significant consequences.

AI systems reflect the biases embedded in their training data. If this data is flawed, biased, or unrepresentative of the broader population, the AI outputs will mirror those shortcomings. This is particularly vital when analyzing customer data, as it directly influences customer segmentation, creditworthiness assessment, and predictive analytics. By actively

mitigating these biases, fintech companies can harness the full potential of AI while ensuring fairness and accuracy in their services.[1]

Addressing Biases in AI Algorithms

In the fintech industry, it is noteworthy that many AI models function as black boxes. This characteristic means they generate decisions without offering clear explanations for their reasoning. Consequently, it becomes challenging to comprehend how or why a particular output is produced. This lack of transparency presents significant concerns in financial applications, where understanding the decision-making process is essential for ensuring transparency and fostering trust.

Samir Rawashdeh, an Associate Professor at the University of Michigan-Dearborn, succinctly articulates this issue, stating: "Just like our human intelligence, we have no idea how a deep learning system arrives at its conclusions. It 'lost track' of the inputs that informed its decision-making long ago, or, more accurately, it was never tracking them at all." The absence of transparency renders it nearly impossible to troubleshoot or rectify AI software when it yields incorrect outputs.

For instance, if two individuals with similar profiles and credit scores apply for a loan and the AI model rejects one application, the lack of a clear rationale inhibits our ability to adequately explain the decision to the affected customer. This situation can erode customer trust, attract regulatory scrutiny, and complicate dispute resolution, ultimately compromising customer satisfaction in fintech applications that utilize AI. Addressing these transparency challenges is essential for the successful implementation of AI in the financial sector, and prioritizing clarity in decision-making processes will not only enhance trust but also improve overall customer experiences.

Lack of Transparency

In the fintech industry, many AI models operate as black boxes. This means they generate decisions without providing explanations for their reasoning, making it challenging to understand how or why a specific output is produced. This lack of transparency is particularly problematic in financial applications, where understanding the decision-making process is essential for fostering transparency and building trust. As Samir Rawashdeh, an Associate Professor at the University of Michigan-Dearborn, states: "Just like our human intelligence, we have no idea how a deep learning system arrives at its conclusions.[2] [3]"

It 'lost track' of the inputs that informed its decision-making long ago, or, more accurately, it was never tracking them at all." Without transparency, it becomes nearly impossible to troubleshoot or correct AI software when it generates incorrect outputs. For instance, if two individuals with identical profiles and credit scores apply for a loan and our AI model rejects one application, the absence of clear reasoning prevents us from effectively explaining the decision to the affected customer. This can lead to a loss of trust, increased regulatory scrutiny, and challenges in dispute resolution, ultimately diminishing customer satisfaction in fintech applications that rely on AI. Addressing these transparency issues is crucial for the successful implementation of AI in the financial sector.

Explaining AI Algorithms

The incorporation of artificial intelligence within the financial technology sector constitutes a fundamental mechanism for promoting financial inclusion. By disseminating customized advice and services to underserved populations, financial institutions possess the capability to strategically employ AI systems to furnish personalized guidance. This methodology not only empowers individuals in the realization of their financial objectives but also significantly augments overall financial literacy.

Regulatory Challenges in the Financial Sector

The integration of artificial intelligence in the fintech sector serves as a critical driver for advancing financial inclusion. By offering tailored advice and services to underbanked populations, financial institutions can effectively utilize AI systems to provide personalized guidance. This approach empowers individuals to achieve their financial goals and contributes to an enhancement of overall financial literacy.

Ensuring Ethical Use of AI in FinTech

The implementation of artificial intelligence in the fintech sector is a powerful catalyst for advancing financial inclusion. By offering tailored advice and services to underbanked populations, financial institutions can effectively leverage AI systems to provide personalized guidance. This empowers individuals to confidently achieve their financial objectives and significantly enhances overall financial literacy.

Creating Internal AI Regulations

The use of artificial intelligence within the fintech sector is vital for advancing financial inclusion by providing tailored advice and services to underbanked populations. By leveraging AI systems, financial institutions can deliver customized guidance, empowering individuals to achieve their financial objectives while enhancing overall financial literacy.

AI-Driven Fraud Detection

AI in the fintech world can really help boost financial inclusion by providing personalized advice and services to people who are underbanked. Financial institutions can use AI systems to offer tailored guidance, helping individuals meet their financial goals and improve their financial knowledge overall..

Enhancing Risk Management

The implementation of artificial intelligence within the financial technology sector is instrumental in promoting financial inclusion by delivering customized advice and services to populations that are underbanked. Financial institutions possess the capacity to effectively harness AI systems to provide bespoke guidance, thereby facilitating individuals in the attainment of their financial objectives and fostering an enhancement in overall financial literacy.

Data-Driven Decision Making in Financial Industry

The application of artificial intelligence in the fintech sector plays a crucial role in advancing financial inclusion by providing tailored advice and services to underbanked populations. Financial institutions can effectively utilize AI systems to deliver personalized guidance, enabling individuals to attain their financial objectives while enhancing overall financial literacy. Achieving Financial Inclusion and Financial Literacy

The integration of AI in the fintech industry significantly enhances financial inclusion by delivering customized financial advice and services specifically designed for underbanked populations. Financial institutions can leverage AI systems to provide personalized financial guidance, empowering individuals to achieve their financial goals and elevating overall financial literacy. Leveraging Machine Learning for Portfolio Management

To mitigate these risks, it's essential to prioritize data encryption and implement comprehensive protective measures. Taking these steps will ensure sensitive information remains secure and maintain the integrity of our financial systems. Cost Savings and Efficiency.[4]

When integrating your mobile app code into an AI language model, it's essential to be aware of the associated risks. There is a real possibility that this information could inadvertently become public, making it accessible to competitors and potentially malicious actors. Importantly, AI models can retain sensitive data indefinitely, even after account deletion. This situation underscores the need for strong data handling protocols and robust security measures to effectively safeguard proprietary and sensitive financial information throughout the AI training process.

A data breach can have significant consequences for fintech companies, including legal repercussions, regulatory fines, and the obligation to compensate affected customers.

Additionally, stolen client data can fuel identity theft and fraud, which is a pressing concern. Therefore, it's vital to approach the use of AI in the fintech industry with diligence. By prioritizing data encryption and implementing comprehensive protective measures, we can ensure that sensitive information remains secure and uphold the integrity of our financial systems. Taking decisive action in this area will bolster trust and confidence among stakeholders.

Customer Data Breaches

When you put your mobile app code into an AI language model, it's important to keep in mind the risks involved. There's a chance that this information could accidentally become public, making it available to competitors and potentially shady individuals. AI models can hold onto sensitive information indefinitely, even if you delete your accounts.

This really highlights the need for strong data handling rules and solid security measures to keep your proprietary and sensitive financial information safe during the AI training process. A data breach can have serious knock-on effects for fintech companies, like legal issues, regulatory fines, and compensating affected customers. Plus, stolen client data can be misused for identity theft and fraud, which is a big concern. That's why it's crucial to be careful when using AI in the fintech world. Making sure data is encrypted is a key step to protect sensitive information from unauthorized access and breaches. Taking these steps will help keep your information secure and maintain trust in the financial system.

Importance of Robust Security Measures

When integrating mobile app code into an AI language model, there exists a risk that this information could unintentionally become public, rendering it accessible to competitors and potentially malicious actors. These AI models may retain sensitive data indefinitely, even after account deletion. This reality emphasizes the imperative for rigorous data handling protocols and robust security measures to ensure that proprietary and sensitive financial data are protected during the AI training process.

The implementation of these safeguards is crucial for maintaining the confidentiality and integrity of information within AI-driven financial applications. A data breach can lead to significant financial repercussions for fintech companies, including legal penalties, regulatory fines, compensation for affected customers, and the costs associated with remediation efforts. Additionally, stolen client and personal data can be misused for identity theft, fraud, and other

nefarious activities. Consequently, it is essential to adopt a cautious approach when utilizing artificial intelligence in the fintech sector. Ensuring that data is encrypted is a critical step in protecting sensitive information from unauthorized access and potential breaches.

Protecting Information from Data Breaches

Before inputting any data into the AI software, it is important to consider the following questions: “Do I want this data to be accessible to millions of individuals?” and “Is it necessary to employ AI in this fintech operation?” If the answers to both questions are affirmative, you may proceed with the data entry. If not, it is advisable to exclude that information from the AI tool.

Assessing the Necessity of Data Sharing

Before entering any data into the AI software, ask yourself two crucial questions: “Do I want millions of people to have access to this data?” and “Is it essential to utilize AI for this fintech operation?” If you confidently answer yes to both, proceed without hesitation. If not, keep that information out of the AI tool.

Choosing Secure AI Models

Individuals generally exhibit a pronounced protectiveness regarding their financial resources, which understandably engenders reservations concerning the delegation of critical financial responsibilities to technological solutions, particularly in light of the incomplete understanding of certain facets of artificial intelligence even among industry experts.

This unease is often exacerbated by cautionary narratives surrounding artificial intelligence, resulting in a prevalent perception that AI-driven systems may not operate in alignment with the best interests of consumers. Such trepidations can substantially diminish customer trust and obstruct the widespread acceptance of artificial intelligence solutions in the sphere of financial management. To effectively mitigate these concerns, it is essential for fintech companies to articulate the advantages conferred by their AI technologies with clarity and to provide robust assurances regarding the protective measures implemented to safeguard customer interests and ensure the integrity of data security.

Customer Trust & Acceptance in Financial Technology

Individuals exhibit a significant level of protectiveness regarding their financial assets, which naturally leads to reservations about entrusting critical financial matters to technology, particularly when experts do not fully comprehend all facets of artificial intelligence. This apprehension is often amplified by alarmist predictions concerning AI, resulting in a perception among customers that AI-driven systems may not act in their best interests. Such skepticism can substantially undermine customer trust and impede the acceptance of AI solutions in the management of financial affairs. To mitigate these concerns, it is essential for

fintech companies to clearly articulate the advantages of their AI systems and provide assurances regarding the measures implemented to safeguard customer interests and data security.t.

Improving Customer Experience with Natural Language Processing

Natural language processing (NLP) technology is playing a transformative role in enhancing customer interactions within the fintech industry, particularly through the implementation of virtual assistants. These virtual assistants are capable of addressing a wide array of customer inquiries, from routine questions to more complex financial advice, significantly reducing the need for extensive customer service teams.

This capability not only improves client satisfaction but also provides users with a more personalized experience in receiving financial guidance. A fundamental aspect of building customer trust is transparency. When customers are not well-informed about AI algorithms or harbor concerns regarding data privacy and security, they may be reluctant to rely on technology for managing their financial matters. It is essential for fintech companies to proactively communicate and provide clear information about the operation of AI systems and the measures in place to protect customer data. By doing so, companies can cultivate confidence in their technology and services.[5]

Providing Vital Information

FinTech companies must confidently establish transparency by providing essential information about their AI models.

This includes:

- A clear explanation of how the algorithm operates and the rationale behind its decisions.
- A strategic overview of how AI is seamlessly integrated into existing workflows to enhance efficiency and effectiveness.
- A detailed outline of the AI training process, including the specific datasets utilized and the measures taken to ensure data quality and relevance.

Additionally, it is crucial to develop and share a comprehensive AI policy with customers from day one. This policy should be a living document that evolves with technological advancements. However, it should fundamentally demonstrate to customers that there is a robust and well-thought-out plan for using AI that prioritizes their experience and safeguards their data security.

Lack of Skills in Financial Technology

Many organizations that are entering the field of artificial intelligence (AI) within the financial industry frequently encounter a lack of in-house expertise necessary for the effective design, development, deployment, and management of sophisticated AI systems. This gap in knowledge often necessitates a reliance on external providers for AI solutions. Although outsourcing can yield substantial technical and operational benefits, it also poses considerable risks, particularly concerning security and regulatory compliance. External providers may, at times, prioritize speed and functionality over the implementation of rigorous security measures and adherence to regulatory standards. Such practices can result in AI systems that are vulnerable to cyber threats, leading to potential breaches of customer data and the misuse of sensitive financial information.

The implications for fintech companies are particularly severe, as they manage considerable amounts of personal and financial data that require vigilant protection. Prior to investing in an AI model, especially in the context of fintech, it is imperative to engage in comprehensive internal training for staff members to ensure they acquire a solid understanding of the technology. This foundational knowledge equips the team with essential tools to engage effectively with external AI experts and guarantees that the implementation process aligns with the organization's specific regulatory requirements. By taking these proactive measures, organizations can enhance their operational effectiveness while also fortifying their security and compliance frameworks in a rapidly evolving financial landscape.

Leveraging AI Algorithms for the Future of the Finance Industry

The threats associated with AI in the FinTech sector are real, but they are well within our capacity to manage effectively. AI-driven systems are poised to significantly enhance operational efficiency, elevate fraud detection efforts, and deliver outstanding customer experiences. It's essential to recognize, however, that this technology requires careful implementation. Without robust safeguards, AI models can jeopardize customer trust and lead to unnecessary regulatory challenges. The risks and challenges outlined here should not serve as a deterrent to integrating AI into your fintech operations.

On the contrary, this understanding empowers you to leverage AI responsibly and proactively address potential issues before they escalate. The promise of AI in FinTech is

immense—from automating financial processes and enhancing customer service to providing more accurate credit assessments and personalized financial guidance. By embracing AI with a strategic, ethical approach, you not only tap into its revolutionary potential but also position your organization to thrive in the evolving landscape of the industry. The future of FinTech is bright, and with AI as a key driver, you are set to lead the way.

Conclusion.

Taking a proactive approach is essential, and it demands continuous learning and adaptation. The fintech landscape is changing rapidly, and it's critical to stay informed about the latest advancements in AI technology and regulatory frameworks. Investing in ongoing education and training for your team is not just a good idea; it's a necessity. By fostering a culture of innovation grounded in ethical practices and regularly updating your AI systems to confront new challenges, you will ensure your organization remains at the forefront of the industry and fully prepared to seize opportunities ahead.

References:

[1][AI in FinTech: Threats, Risks, and Challenges](#)

[2]Nitin Liladhar Rane¹, Mallikarjuna Paramesha², Saurabh P. Choudhary³, Jayesh Rane⁴,Artificial Intelligence, Machine Learning, and Deep Learning for Advanced Business Strategies: A Review,Partners Universal International Innovation Journal (PUIJ) Volume: 02 Issue: 03 | May-June 2024 | ISSN: 2583-9675 | www.puij.com,⁴University of Mumbai, Mumbai, India. ²Construction Management, California State University, Fresno, USA.

[3][Machine Learning: The First Salvo of the AI Business Revolution](#)

[4][Artificial Intelligence and Machine Learning in Real-Time System Operations](#)

[5][Machine Learning: Bridging Between Business and Data Science](#)

An Analysis of the Indian Banking System's Contribution and Promotion of Direct Benefit Transfer (DBT)

Mrs, N. Jeevitha, Assistant Professor,
School of Commerce,

Vel Tech Rangarajan Dr Sagunthala R&D Institute of Science and Technology, Avadi, Chennai – 600 062.
Email: jeevithan@veltech.edu.in Mobile: 98849 28025.

Dr. R. Thamilmani, Assistant Professor,
School of Commerce,

Vel Tech Rangarajan Dr Sagunthala R&D Institute of Science and Technology, Avadi, Chennai – 600 062.
Email: drthamilmanir@veltech.edu.in Mobile: 9942024092

Abstract

Banking sector is the backbone of the financial system and plays a vital role in a country's sustainable development. In recent years, the sector has experienced significant growth due to technological advancements, efficient processes, and increased banking literacy. These positive trends have facilitated economic activities by promoting transparency in banking operations, which has paved the way for implementing the Direct Benefit Transfer (DBT) system in India. The Indian banking system has been pivotal in the successful implementation and promotion of DBT by leveraging advanced technological tools such as Aadhaar linking, mobile banking, and various financial inclusion programs. The present study aims to analyse how banking mechanisms and strategies have contributed to the success of DBT programs and examine the role of DBT's contribution and promotion in India. The research relies on secondary data sources, including reports from the Reserve Bank of India (RBI), the Ministry of Finance, the Government of India, and the National Institution for Transforming India (NITI Aayog). The study employs simple statistical tools such as mean, standard deviation, coefficient variation, and other suitable analyses. The study concludes that the banking sector has played a critical role in ensuring the success of DBT schemes while also identifying areas that require policy reforms to address challenges and enhance the system's efficiency.

Key words: Direct Benefit Transfer, Aadhaar linking, Mobile banking, Financial inclusion and

Banking system.

Introduction

The Direct Benefit Transfer (DBT) system, launched on January 1, 2013, goals to reform government welfare delivery by streamlining processes for faster and more transparent fund transfers, accurate beneficiary targeting, and reducing corruption. Initially overseen by the Planning Commission, the DBT mission transitioned to the Department of Expenditure in July 2013 and later to the Cabinet Secretariat in September 2015 to enhance its focus. DBT was first implemented in 43 districts and expanded to 78 districts covering 27 welfare schemes. By 2014, its scope included programs like scholarships and MGNREGA in 300 districts with high Aadhaar enrolment. The Electronic Payment Framework, introduced in 2015, standardized digital payments for welfare schemes across all ministries and departments. While Aadhaar is not mandatory, its unique identification capabilities make it preferred for DBT operations. The JAM Trinity—Jan Dhan accounts, Aadhaar, and Mobile connections supports DBT by integrating over 22 crore bank accounts, 100 crore Aadhaar IDs, and 100 crore mobile connections. The DBT ensures efficiency, transparency, and accountability in welfare delivery, fostering trust in governance and aligning with the vision of Maximum Governance, Minimum Government. It highlights the role of technology in improving public service delivery and minimizing administrative inefficiencies. The total Direct Benefit Transfer (DBT) amounts to ₹3,70,090 crore, covering 319 schemes across 54 ministries. The estimated gains from DBT implementation are ₹3,48,564 crore, contributing significantly to India's accelerated economic growth (GoI,2024).

Research Problem

India is predominantly rural, with a significant portion of its population engaged in farming and living below the poverty line. Despite numerous central and state government schemes and benefits aimed at improving rural livelihoods, many of these initiatives have failed to reach the grassroots level. Corruption and bribery have played a significant role in perpetuating poor administrative systems, thereby hindering the achievement of equitable economic growth. The economic reforms initiated in 1991 brought significant changes to economic activities across sectors, particularly the banking sector, which experienced a boom in financial activities. The banking sector has since played a vital role in promoting welfare by providing short, medium, and long-term loans to various sections of society. In additionally, banking sector reforms have driven progress toward sustainable development, particularly with the introduction and implementation of the Direct Benefit Transfer (DBT)

scheme in India, which aims to enhance transparency and efficiency in delivering benefits to citizens.

Review of Literature

Kumar and Bharti (2023) examined the effects of Direct Benefit Transfer in India's financial system. The study found that the bank accounts of the beneficiaries through the DBT system. Through this, beneficiaries can link their existing bank accounts and open new accounts. Direct Benefit Transfer (DBT) is a social security scheme aimed at giving direct cash subsidies to people living below the poverty line who are not getting the benefits of schemes run by the government. Now days these people are struggling for the fulfil of the daily need. The main reason for this is a lack of awareness among the people. The study suggests that the effects of DBT on the economic development and its awareness among the people.

Dar, Sethi and Baby (2022) explores the factors influencing Direct Benefit Transfer (DBT) transactions at the state level in India. While DBT is a novel initiative, data availability poses a constraint, particularly for socioeconomic variables like life expectancy and HDI, as some states do not report such data. Being a relatively new initiative, it is too early to draw definitive conclusions about its success or failure. However, using Amartya Sen's Capability Approach as a foundation, the study identifies key variables impacting DBT transactions and emphasizes the importance of the JAM (Jan Dhan-Aadhaar-Mobile) framework as a critical prerequisite for effective implementation. Due to data limitations, the analysis covered only 21 states. The study suggested that the expand to include all states and union territories as data becomes available, enabling cross-state comparisons of DBT performance in specific schemes. Further disaggregation within states and primary surveys could provide deeper insights into implementation challenges, particularly institutional bottlenecks.

Draboo (2020) analysed financial inclusion in the context of the Digital India initiative. The study found that existing challenges can be mitigated through interventions like Digital India, which have the potential to amplify the benefits of economic growth for the poor. Such initiatives not only reduce costs for financial institutions but also address safety concerns and improve the accuracy of data involved in financial transactions.

Paramasivam and Arunkumar (2018) examined financial inclusion in India through major social welfare schemes such as PAHAL and Direct Benefit Transfer (DBT). The found

that the Digital India initiative facilitates informal DBT implementation, promoting financial inclusion in a digital format. The Direct Benefit Transfer offers people the opportunity to access banking and financial services, empowering them financially while reducing the role of intermediaries.

Rajasekharam (2018) analysed that the Basic Savings Bank Deposit Account (BSBDA) accounts and Direct Benefit Transfer (DBT) have significantly contributed to the inclusion of economically excluded individuals. The Aadhaar card is now accepted as a legal document for opening a bank account. The Reserve Bank of India (RBI) has identified target groups for improving financial literacy levels and has organized several outreach camps.

Sakthivel, Mayilsamy, and Akash (2016) examined the issue of financial exclusion and emphasized the need for a holistic approach by the banking system in India. The study found that creating awareness about financial products, providing education on money management, offering debt counselling, and promoting savings and affordable credit are essential measures. The study concluded that banks need to develop specific strategies to expand the outreach of services such as LPG subsidies, scholarships, MGNREGA, pensions, and provident funds to enhance financial inclusion. Collaborating with microfinance institutions and local communities was identified as a cost-effective approach to achieving this goal. The study suggested that publicizing basic accounts and leveraging technology, such as user-friendly ATMs, could significantly improve access to banking services, particularly for illiterate or less-educated individuals in remote areas.

Research Gap

The existing literature extensively explores the role of Direct Benefit Transfer (DBT) and financial inclusion initiatives in enhancing access to banking and financial services in India. However, several research gaps remain unaddressed, such as state-level analysis, impact evaluation, technology and awareness, financial literacy and inclusion, and cross-scheme comparisons. While most studies have focused on these areas, the present study aims to identify the research gap in the strategies and promotional efforts of the banking sector related to Direct Benefit Transfer (DBT) in India

Material and Methods

The present study aims to analyse how banking mechanisms and strategies have contributed to the success of DBT programs; and examine the role of DBT's contribution and promotion in India. The research relies on secondary data sources, including reports from the

Reserve Bank of India (RBI), the Ministry of Finance, the Government of India, and the National Institution for Transforming India (NITI-Aayog). The study employs simple statistical tools such as mean, standard deviation, coefficient variation, and other suitable analyses.

Result and Discussion

The Indian banking system has played a significant role in implementing the Direct Benefit Transfer (DBT) scheme, which aims to streamline subsidies and welfare payments by transferring funds directly from the government to beneficiaries' accounts, thereby avoiding corruption and ensuring good governance. Launched in 2013, the DBT scheme has emerged as a cornerstone of India's welfare delivery system, minimizing leakages, fostering financial inclusion, and boosting economic development. This study analyses the contribution of the Indian banking system to the promotion and success of DBT in India.

Table 1 Direct Benefit Transfer Beneficiaries and Financial Disbursement Trends during 2014-2024

Year	Number of DBT Beneficiaries (in Millions)	Total Disbursement (in ₹ Crore)
2014-15	30.1	3,000
2015-16	45.5	5,500
2016-17	70.2	9,000
2017-18	95.6	13,000
2018-19	120.1	18,000
2019-20	150.2	22,000
2020-21	175.0	25,000
2021-22	200.0	30,000
2022-23	240.5	36,500
2023-24	275.3	40,000
2024-25	300.0	44,000
Mean	155	22364
STDEV	92.07	14103
CV	0.59	0.630

Source: Direct Benefit Transfer, Government of India.

Table 1 shows the trends in Direct Benefit Transfer (DBT) beneficiaries and financial disbursements over time. The number of beneficiaries has grown significantly, increasing from 30.1 million in 2014 to 300 million in 2024. Similarly, total disbursements have risen substantially, from ₹3,000 crore in 2014 to ₹44,000 crore in 2024. The mean number of beneficiaries during this period is 155 million, with a standard deviation (STDEV) of 92.07

million, while the mean total disbursement is ₹22,364 crore, with a standard deviation of ₹14,103 crore. The coefficient of variation is 59% for beneficiaries and 63% for total disbursements over the stated period.

Table 2 Regression Result for the DBT Disbursement and Beneficiaries

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.998961							
R Square	0.997923							
Adjusted R Square	0.997692							
Standard Error	4.423088							
Observations	11							
ANOVA								
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	84606.41	84606.41	4324.661	2.19E-13			
Residual	9	176.0734	19.56371					
Total	10	84782.48						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	8.917601	2.587988	3.445766	0.007324	3.063165	14.77204	3.063165	14.77204
X Variable 1	0.006522	9.92E-05	65.76215	2.19E-13	0.006298	0.006746	0.006298	0.006746

The table 2 above shows the multiple regression result with an R-value of 0.998, indicating a strong positive correlation between the dependent and independent variables. The R-squared value of 0.997 indicates that approximately 99.79% of the variation in the dependent variable is explained by the independent variable. The adjusted R-squared value is 0.9976, accounting for the number of predictors and observations. The standard error is 4.423, which represents the standard deviation of the regression residuals. The ANOVA results show a very high F-value of 4324.66 and a highly significant p-value of 2.19E-13, indicating that the model is statistically significant. The coefficient for the intercept is 8.9176, representing the predicted value of the dependent variable when the independent variable is zero. This is statistically significant, with a p-value of 0.00732. The coefficient for the independent variable (X-variable 1) is 0.00652, which is the slope of the regression line, indicating the change in the dependent variable for a one-unit change in the independent variable. This coefficient is also highly significant, with a p-value of 2.19E-13 and confidence intervals for both coefficients do not include zero, further reinforcing their statistical significance.

Table 3 Method of Fund Transfer to Direct Benefit Transfer in India during 2013-24

Year	Amount (in ₹ Crore) Cash	Amount (in ₹ Crore) Kind
2013-14	7367.7	-
2014-15	38926.2	-
2015-16	61942.4	-
2016-17	74689.4	-
2017-18	170292.2	20578.7
2018-19	214092	115704.3
2019-20	239723.4	141902.1
2021-22	268139.1	362125.6
2022-23	260573.3	455823.1
2023-24	292443.8	398916.1
2024-25	150446.6	221122.7
Mean	172934.5	246515.3
STDEV	104587.5	151298.2
CV	0.60	0.61

Source: Direct Benefit Transfer, Government of India.

The above Table 3 highlights the method of fund transfer under the Direct Benefit Transfer (DBT) scheme, including the amount of cash and in-kind transfers during the period from 2013-14 to 2024-25. The mean value for the amount of cash is ₹1,72,934.5 crore, while for the amount of in-kind transfers, it is ₹2,46,515.3 crore. It is observed that the amount of cash has shown gradual positive growth over the stated period, while in-kind transfers began in 2017-18 and have been steadily increasing for items such as fertilizers, rice, wheat, sugar, and cereals through the Public Distribution System (PDS). The descriptive analysis indicates that the standard deviation (STDEV) is ₹1,04,587.5 crore for the amount of cash and ₹1,51,298.2 crore for in-kind transfers. Additionally, the coefficient of variation is 0.60 for cash transfers and 0.61 for in-kind transfers during the period.

Table 4 Distribution of Direct Transfer Benefit for Non-Unique During from 2013-14 to 2024-25

Year	Amount (in ₹ Crore) Cash	Amount (in ₹ Crore) Kind
2013-14	10.8	-
2014-15	22.8	-
2015-16	31.2	-
2016-17	35.7	-
2017-18	46.3	77.7
2018-19	59.0	70.2
2019-20	70.6	74.1
2021-22	98.6	81.9
2022-23	73.5	105.4
2023-24	72.3	93.7
2024-25	71.2	104.8

Mean	64.8	101.1
STDEV	54.73333	88.6125
CV	25.52109	14.34

Source: Direct Benefit Transfer, Government of India.

The above Table 4 shows the distribution of Direct Benefit Transfer (DBT) beneficiaries for non-unique cases during the period from 2013-14 to 2024-25. The mean value for the amount of cash is ₹54.733 crore, while for in-kind transfers, it is ₹88.6125 crore. It is observed that the amount of cash has shown gradual positive growth over the stated period, while in-kind transfers, which began in 2017-18, have been steadily increasing. The descriptive analysis indicates that the standard deviation (STDEV) is ₹25.52109 crore for the amount of cash and ₹14.34 crore for in-kind transfers. Additionally, the coefficient of variation is missing for cash transfers and 0.161 for in-kind transfers during the period.

Table 5. Scheme of Direct Benefit Transfer from 2013-14 to 2024-25

Year	Number of Cash Schemes	Number of Kind Schemes
2013-14	28	-
2014-15	34	-
2015-16	59	-
2016-17	142	-
2017-18	361	76
2018-19	369	71
2019-20	362	64
2020-21	271	45
2021-22	267	46
2022-23	264	48
2023-24	267	48
2024-25	271	48
Mean	224.58	55.75
STDEV	126.85	12.54
CV	0.564	0.225

Source: Direct Benefit Transfer, Government of India.

The above Table 4 highlights the implementation of the Direct Benefit Transfer (DBT) scheme from 2013-14 to 2024-25. The government's schemes play a significant role in promoting good governance and ensuring an improved standard of living for rural populations. These programs enable full access to benefits through the DBT mechanism, supported by dynamic public administration and the concept of "double-engine growth," where both the central and state governments work together to drive development. The

adoption of digital technology and banking systems is accelerating the DBT push in India. The mean value for the number of cash schemes is 224.58, while for kind schemes, it is 55.75. The standard deviation (STDEV) is 126.85 for cash schemes and 12.54 for kind schemes during the specified period. Additionally, the coefficient of variation is 0.564 for cash schemes and 0.225 for kind schemes. The analysis reveals that a total of 319 programs are covered under the DBT schemes in India.

Table 6. Performance and Ranking of the Direct Benefit Transfer across all States and Union Territories

State	Total DBT Transfer (in ₹ Crore	Number of Transactions in ₹ Crore	Rank
Haryana	8987.23	9.31	1
Uttar Pradesh	61610.86	61.95	2
Tripura	1651.56	5.44	3
Gujarat	17441.48	15.4	4
Uttarakhand	2619.98	3.27	5
Jharkhand	9825.4	9.07	6
Goa	150.92	80.38*	7
Ladakh	97.81	11.73*	8
Jammu and Kashmir	3588.76	3.60	9
Bihar	29027.44	30.58	10
Madhya Pradesh	28642.78	21.34	11
Puducherry	264.18	50.71	12
Odisha	13955.05	14.42	13
Mizoram	688.67	45.21*	14
Himachal Pradesh	2292.71	3.37	15
Punjab	10855.37	6.99	16
Tamilnadu	17471.84	26.63	17
Delhi	1394.16	5.1	18
Rajasthan	22755.6	19.97	19
Andhra Pradesh	18366.25	18.28	20
Manipur	717.62	52.18*	21
Kerala	7406.17	15.97	22
Chhattisgarh	15702.95	9.77	23

Nagaland	573.47	34.73*	24
Sikkim	156.32	17.85	25
Karnataka	18857.19	18.48	26
Maharashtra	35541.2	32.41	27
Meghalaya	1307.46	75.64*	28
Andaman and Nicobar Islands	32.05	10.17*	29
Chandigarh	113.22	73.92	30
Arunachal Pradesh	417.41	37.9*	31
Dadra and Nagar Haveli and Daman and Diu	106.87	25.29*	32
Lakshadweep	5.84	74.83	33
Telangana	14156.09	14.74	34
Assam	9521.09	10.49	35
West Bengal	15266.14	25.52	36

Note: * Lakhs

Source: Direct Benefit Transfer, Government of India.

The above table 6 shows the total transfer of DBT transactions across all states. Some states, such as Uttar Pradesh and Maharashtra, report high totals of Direct Benefit Transfer, while smaller states, like Lakshadweep and the Andaman and Nicobar Islands, report much lower transfers. There is wide variation in transaction volumes, with some states, like Goa, Mizoram, and Meghalaya, showing high transaction counts relative to their DBT transfers. Haryana ranks first in DBT transfers, while West Bengal ranks lowest. This disparity can be attributed to factors such as literacy, technological access, and proximity to the national capital, which facilitate greater access to DBT schemes in Haryana. Conversely, in West Bengal, challenges like inadequate banking literacy, limited technological adoption, and underperformance in literacy hinder the effective implementation of DBT schemes.

Conclusion

The Direct Benefit Transfer (DBT) scheme plays a vital role in India's economic development. It was introduced in 2013 and began full implementation in 2014. Since its inception, there have been numerous changes in central and state government schemes aimed at enabling direct access for beneficiaries, particularly economically and socially disadvantaged or marginalized groups. These schemes have facilitated access to basic

infrastructure services, such as housing, toilets, gas connections, crop loans, LPG subsidies, scholarships, and relief funds, which are directly transferred from the central government to beneficiaries through the banking system. In recent times, significant changes have been introduced, such as making it mandatory for every household to have a bank account to ensure that the benefits reach the intended recipients. Additionally, the banking sector must extend its services to remote areas, hill stations, and forested regions by establishing branches or ATMs. This expansion is essential to support the DBT scheme, increase public awareness, and promote banking literacy. Furthermore, collaboration between public and private partnerships should be encouraged to enhance the effectiveness and reach of the Direct Benefit Transfer scheme in India.

Reference:

Paramasivan and Arunkumar “An Overview of Financial Inclusion through DBT in India.” *SELP Journal of Social Science*, 9.43 (2018):79-85.

Rajasekaran “Including the Excluded: The Scenario of Financial Inclusion in India.” *IOSR Journal of Business and Management*, 20.2 (2018):64-69.

Deepak Kumar and Bharti “Role of Direct Benefit Transfer (DBT) in India’s Financial System.” *International Journal for Multidisciplinary Research*, 5.3 (2023):1-6.

Shailla Draboo (2020) “Financial Inclusion and Digital India: A Critical Assessment.” *Economic and Political Weekly (Engage)*, 55.10 (2020):1-10.

Vandita Dar, Madhvi Sethi and Saina Baby “Direct Cash Transfers in Emerging Economies: The Case of India.” *Business Perspectives and Research*, 11.2 (2023):287-308.

Sakthivel, Mayilsamy and Akash “Inclusive of Direct Benefits Transfer Schemes into Financial Inclusion in India.” *International Journal of Multidisciplinary Research and Development*, 3.11(2016):56-59.

<https://dbtbharat.gov.in/static-page-content/spagecont?id=18>.

A STUDY ON CUSTOMER SATISFACTION TOWARDS MOBILE BANKING SERVICES IN CHENGALPATTU TOWN.

Mr. P MANIKANDAN, Research scholar , SRM Institute of Science and Technology VDP Campus,
Dr. V. PRABAKARAN, Head and assistant professors, Research supervisor Department of
commerce (HONS) International Accounting and Finance, Faculty of Science and Humanities,
SRM Institute of Science and Technology , VDP Campus, Chennai 26

ABSTRACT

This paper is designed to study the extent of the recent developments in the mobile banking system in India. To know the optimistic and pessimistic influence of mobile banking on the customers. For the purpose of study, the researcher has selected 87 respondents who have familiar with the modern technology of mobile banking. It particularly focused on the problems or the benefits availed from the mobile banking provided by bank. All levels of customers were surveyed by using questionnaire and the level of satisfaction or dissatisfaction from the mobile banking was studied. Finally, the detail information about the benefits they had received were also considered. A small attempt has been made to understand the benefits of the mobile banking and also the limitation of mobile banking was studied with reference to Chengalpattu town. The study may be useful to make any appropriate decisions for implementing various policies regarding the mobile banking. Finally, it makes an attempt to offer suggestions to the bank to educate much more about mobile banking to its customer.

Keywords: Customer Satisfaction, Mobile Banking.

MOBILE BANKING

Mobile banking refers to the use of a mobile device to carry out financial transactions. The service is provided by some financial institutions, especially banks. Mobile banking enables clients and users to carry out various transactions, which may vary depending on the institution.

THE IMPORTANCE OF MOBILE BANKING

Mobile banking allows consumers to be able to access banking services from anywhere. Businesses and business owners are now able to save time by making use of mobile applications to process their payments or even receive funds from clients directly to their phone numbers. It is particularly popular among small to medium-sized enterprises (SMEs).

With mobile technology, banks are able to cut down on operational costs while still maintaining client satisfaction. The fact that any client of a bank can make use of their app to

request a service, such as opening an account or even the ability to schedule debit orders or other payments from an application, allows for larger transactional volumes, eventually driving business growth.

BENEFITS OF MOBILE BANKING:

There are numerous benefits of mobile banking, a few among them are written below:

- Mobile banking apps allow you to access your banking accounts and conduct financial transactions using a mobile device, anytime and from anywhere.
- With a mobile banking app, you can easily keep track of your transaction activities, such as checking your bank passbook and everyday transactions.
- You can use the mobile app to make payments, transfer funds, track transaction history, and add beneficiaries.
- Mobile banking apps offer a range of services, including the ability to recharge phones, book train or flight tickets, and pay utility bills.
- Mobile banking apps are user-friendly and can be customized to meet your specific needs.
- You can set up alerts to ensure that payments are made on time, and receive push notifications about important deals and discounts.

REVIEW OF LITERATURE

1.A Shankar, B Datta and C Jabarajakirth: Exploring mobile banking service quality: a qualitative approach (2020), the purpose of this study is to explore the key dimensions of mobile banking service quality. Four qualitative methods (focus group, in-depth interviews, critical incident technique and ethnography) were used for data collection. Inductive content analysis and Pareto analysis were used to explore the key themes (dimensions). Results demonstrated that privacy and security, customer support, interactivity, efficiency and content were the key dimensions. The findings of the study provide useful insights for developing a scale to measure M-Banking service quality. Practically, the findings will help banks understand consumer's expectations and provide directions for providing quality m-banking services.

2.A Shanker and B Rishi: Convenience matter in mobile banking adoption intention, Australasian marketing journal (2020), the purpose of this study is to explore how different dimensions of online convenience impact mobile banking adoption intention. The findings from 432 banking users show that access convenience, transaction convenience, and possession/post-possession convenience predict m-banking adoption intention, with the chief driver being the possession/post possession convenience. Further, result suggest that the intension to adopt m-banking leads to m-banking adoption and usage. These findings offer unique insight to banks about how to make m-banking platforms more convenient for enhancing the pace of banking adoption intension and usage. This study also makes several contributions to the mobile commerce and online convenience literature.

3.Machogu, A. M., & Okiko, L. (2015) Research brought to light that with e-banking complexities on customer satisfaction. Results shows that there are factors which leads to customer satisfaction particularly in e- banking, which is one of the very important and fast-growing way of doing banking. Factors are accessibility, convenience, security, privacy, content, design, speed, fees and charges have influence on customer satisfaction where the other factors notified have no significant influence.

4.Kaur, N., & Kiran, R. (2015) Founded in their research which was on public, private and foreign shows that customer are more satisfied with the services quality of the foreign banks then the private and public banks.

5.Zeinalizadeh, N., Shojaie, A. A., & Shariatmadari, M. (2015) Opined that out of the nine customer satisfaction factors fees and loan, prompt service and appearance are the major factors which have more significant impact on customer satisfaction followed by interest rate and accessibility of bank and availability of service which have less impact on the satisfaction on the banking customers.

6.Rahi, S. (2014) Research findings show customers are more loyal towards those banks who are facilitating internet banking services. Also good brand image build relationship between banks and customer and enhance the customer loyalty toward bank. He also concluded that those banks that are giving the internet banking services to their customers, loyalty of those customers are more towards the banks.

RESEARCH GAP

From the above literature researchers find that no researcher has done in customer satisfaction towards mobile banking services in Chengalpattu town. Many researchers have done in different metro polite cities but not in the town like Chengalpattu.

RESEARCH METHODOLOGY

A descriptive study tries to discover answers to the questions who, what, when, where, and, sometimes, how. The researcher attempts to describe or define a subject, often by creating a profile of a group of problems, people, or events. Such studies may involve the collection of data and the creation of a distribution of the number of times the researcher observes a single event or Characteristic (the research variable), or they may involve relating the interaction of two or more variables. Organizations that maintain databases of their employees, customers, and suppliers already have significant data to conduct descriptive studies using internal information. Yet many firms that have such data files do not mine them regularly for the decision- making insight they might provide.

STATEMENT OF THE PROBLEM

The position of banking industry is not excellent in India. In 2011, 65% of India's population did not have access to a bank account. The lots of Indian population till date do not have their personal bank accounts. RBI also requested to the members of the country; each person has minimum one saving account in any bank of India. But still there is lack of awareness in the people. So mobile banking is a good option for the banking industry to increase their customers. With the help of mobile telecommunication technology customers make numerous transactions in the bank at any time. There are many researchers which show

that India is moving fast towards mobile users as well as mobile internet users which are also bigger strength to the banking industry to promote Mobile Banking. But this Mobile Banking system has certain drawbacks, such as lack of awareness, transaction cost, security issue, difficulty to understand.

OBJECTIVES OF THE STUDY

1. To know the influence of demographic variables on the factors of mobile banking
2. To identify the influence of demographic variables on the customer satisfaction
3. To study the impact of mobile banking factors on customer satisfaction.
4. To provide suitable measures to improve the mobile banking transactions.
5. To know the level of awareness about the mobile banking.

SCOPE OF THE STUDY

- A Study on customers opinion towards Digital Banking Services with reference selected commercial banks
- The Commercial Banks Provide various utility Service of Digital Banking facilities to their customers
- The purpose of this study is to analyse the satisfaction level of customers towards digital banking services
- The research will cover the customer opinion on digital banking services which will be helpful for further development and growth of banking industries.

SAMPLING DESIGN

Research design constitutes the blue print for the collection, measurement and analysis of data. The present study seeks to identify the extent of customer's satisfaction towards digital banking. By using convenient and random sampling method, 200 respondents were considered for the study. For the purpose of survey, digital banking users from different areas in Coimbatore were consulted.

HYPOTHESIS OF STUDY

- **H1:** Customers who use mobile banking services more frequently are more satisfied with those services than customers who use them less frequently.
- **H2:** Customers who perceive mobile banking services to be more user-friendly and secure are more satisfied with those services
- **H3:** Customers who find mobile banking apps to be fast and efficient for completing transactions (e.g., bill payments, transfers) are more satisfied with the service.
- **H4:** Customers who have concerns about the security of mobile banking transactions are less satisfied with the service.

METHODOLOGY OF THE STUDY

SOURCE OF DATA

COLLECTION PRIMARY DATA:

Primary data are original source, which are collected directly from the respondents. This information is collected the Questionnaire.

SECONDARY DATA:

Secondary data consist of information that already exists somewhere, having been collected for some other purpose. In this study, the secondary data was collected from studies, Magazines, journals and websites.

SAMPLE DESIGN:

A sample design is a finite plan for obtaining a sample from a given population. Simple random sampling is used for this study.

SAMPLING METHOD:

Convenient sampling method is used for this project.

CONVENIENCE SAMPLING:

On the basis of convenience sample respondents were choose. Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher.

SAMPLE SIZE:

It indicates the numbers of people to be surveyed. Though samples give more reliable results than small samples but due to constraint of time and money, the sample size was restricted to 87 respondents. The respondents belong to different income group and profession.

ANALYTICAL TOOLS:

- Percentage analysis
- Rank correlation.

LIMITATIONS OF THE STUDY:

- The study is related to Commercial banks only. Co-operative& foreign banks are not included.
- The study is related to Chengalpattu only.
- The information given by the respondents might be biased because sum of them might not be interested to give correct information.

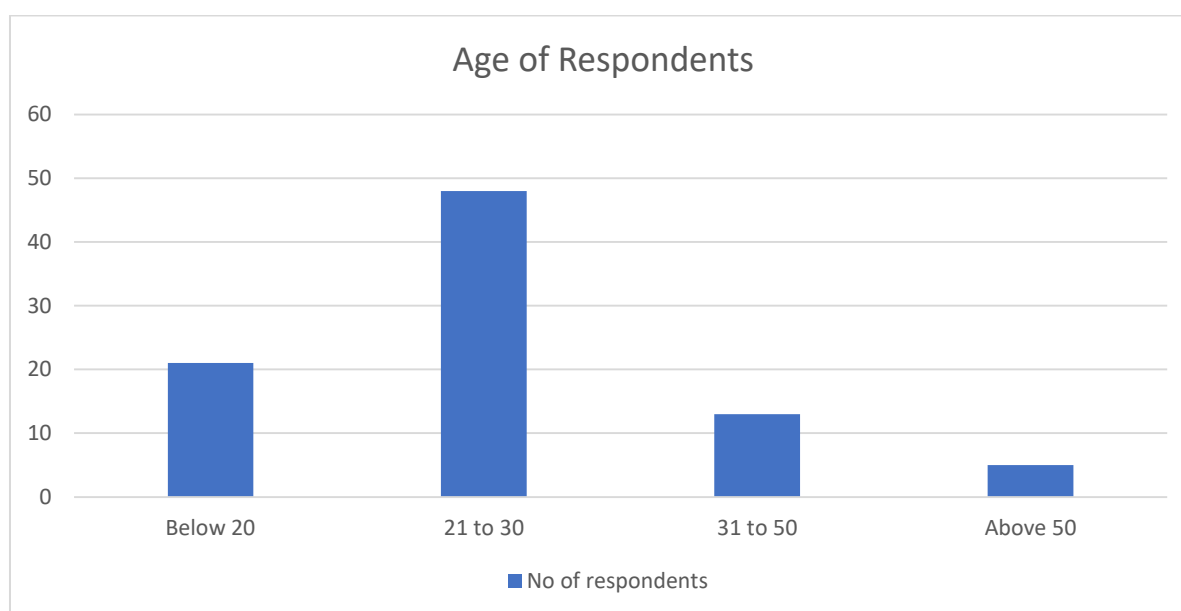
- Customer satisfaction focuses only related to banking services. Other are not covered.

DATA ANALYSIS AND INTERPRETATION

AGE OF THE RESPONDENTS

Age	No of respondents	Percentage
Below 20	21	24%
21 to 30	48	55%
31 to 50	13	15%
Above 50	5	6%
Total	87	100%

SHOWING AGE OF RESPONDENTS



INTERPRETATION:

- **Below 20:** 21 respondents fall into this age group, accounting for 24% of the total respondents.

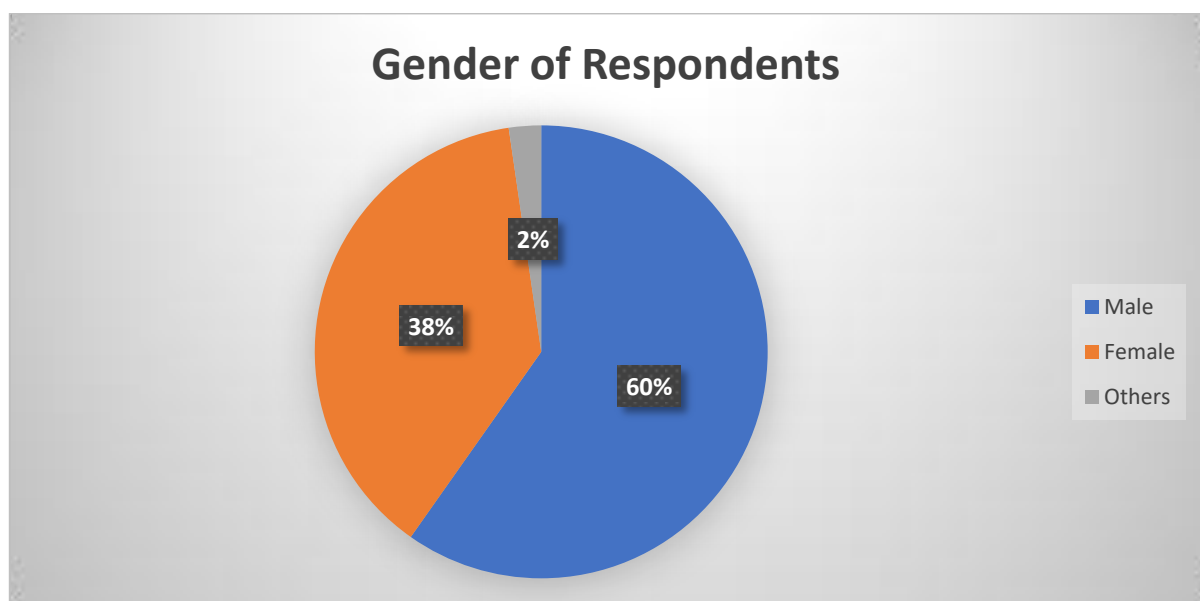
- **21 to 30:** The largest age group consists of respondents aged between 21 to 30, comprising 48 respondents, which is 55% of the total.
- **31 to 50:** This age bracket includes 13 respondents, representing 15% of the total.
- **Above 50:** The smallest age group comprises respondents above the age of 50, with 5 respondents, making up 6% of the total.

From The above data indicates a significant presence of younger individuals, with 79% of respondents falling below the age of 31. This suggests that the survey may have been more accessible or appealing to younger demographics.

GENDER OF THE RESPONDENTS

Gender	No of Respondents	Percentage
Male	52	60%
Female	33	38%
Others	2	2%
Total	87	100%

SHOWING GENDER OF RESPONDENTS



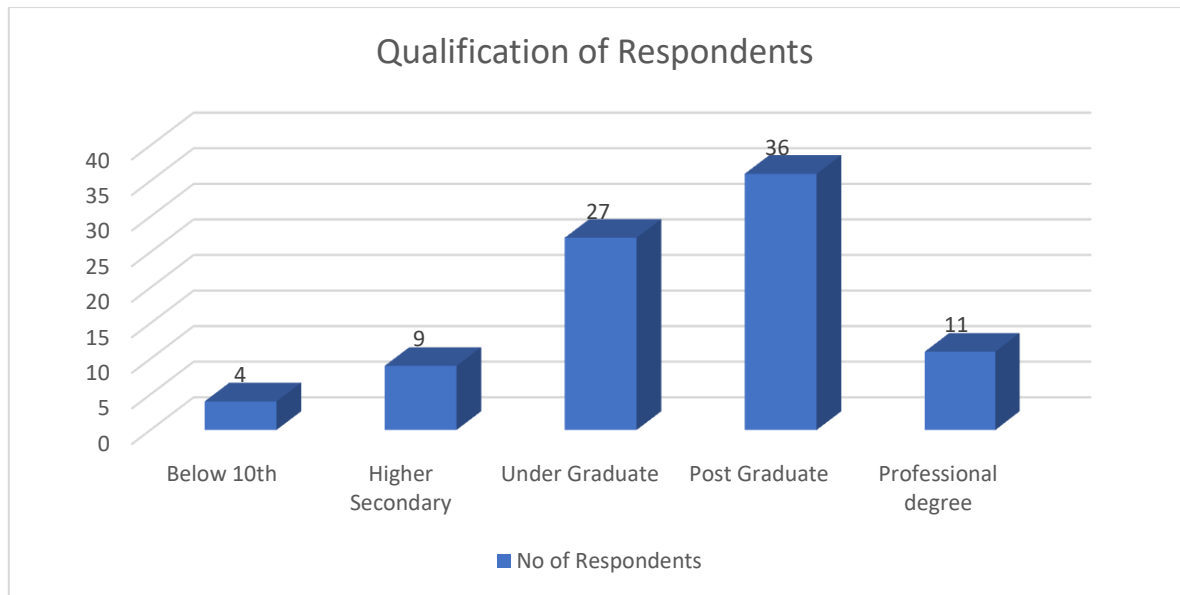
INTERPRETATION

- **Male:** The largest gender group among respondents comprises males, with 52 respondents, accounting for 60% of the total.
- **Female:** Females constitute the second-largest gender group, with 33 respondents, representing 38% of the total.
- **Others:** A small percentage of respondents identify as "Others," with 2 individuals, making up 2% of the total.
- The data indicates a significant overrepresentation of males compared to females. This might suggest various factors such as survey accessibility, outreach strategies, or inherent biases in the sample population.
- Although females constitute a smaller percentage of respondents, their representation is still substantial, comprising almost 40% of the total. It's essential to acknowledge and consider their perspectives and responses in any analysis or decision-making processes.
- The presence of respondents identifying as "Others" underscores the importance of inclusivity and recognizing diverse gender identities within surveys and research efforts.

EDUCATIONAL QUALIFICATION:

Education Qualification	No of Respondents	Percentage
Below 10 th	4	5%
Higher Secondary	9	10%
Under Graduate	27	31%
Post Graduate	36	41%
Professional degree	11	13%
Total	87	100%

CHART 4.3 SHOWING QUALIFICATION OF RESPONDENTS



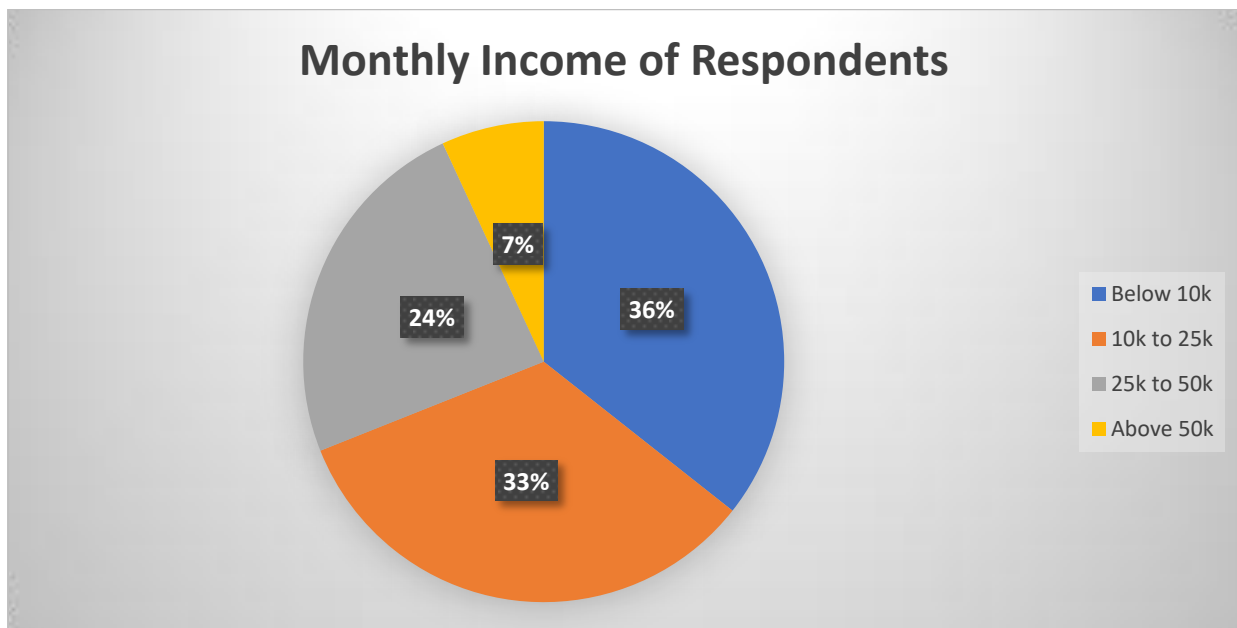
INTERPRETATION:

- From the above table Postgraduate degree holders represent the largest educational group among respondents, comprising 41% of the total. This suggests a relatively high level of educational attainment within the surveyed population.
- Together, undergraduate degree holders and individuals with professional degrees represent a significant portion of respondents, making up 44% of the total. This indicates a substantial presence of individuals with specialized or advanced education.
- While respondents with educational qualifications below the undergraduate level represent a smaller percentage of the total, they still contribute to the overall diversity of educational backgrounds within the sample population.

MONTHLY INCOME OF THE RESPONDENTS

Monthly Income	No of Respondents	Percentage
Below 10k	31	36%
10k to 25k	29	33%
25k to 50k	21	24%
Above 50k	6	7%
Total	87	100%

SHOWING MONTHLY INCOME OF RESPONDENTS:



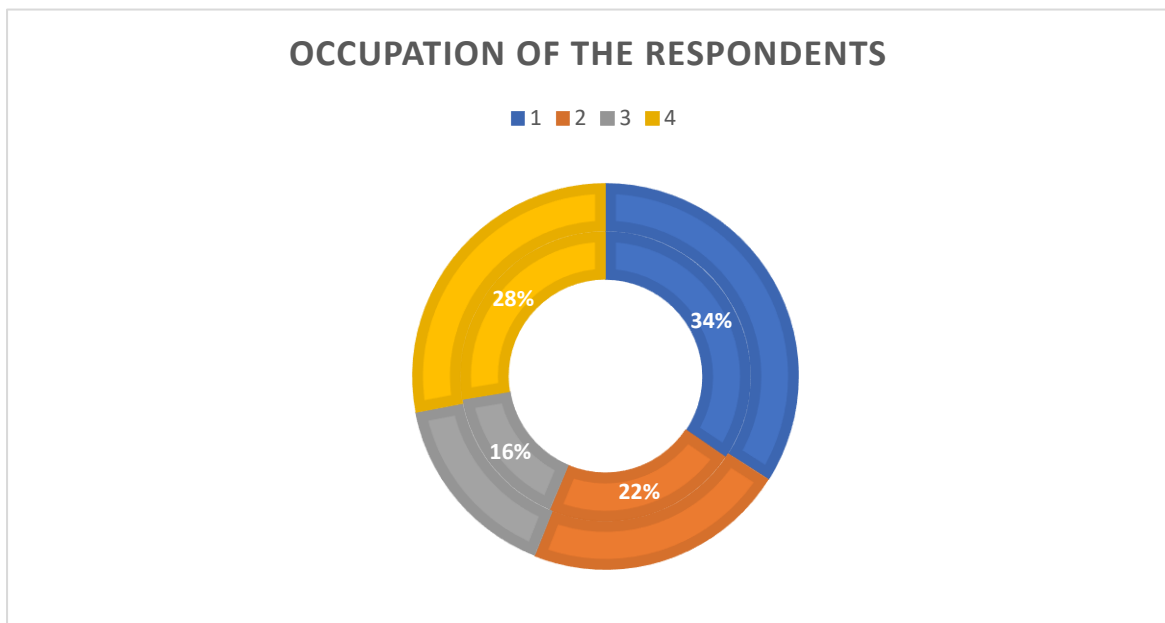
INTERPRETATION:

- **Below 10k:** The largest income group consists of respondents earning below 10,000 per month, with 31 individuals, accounting for 36% of the total. This suggests a significant portion of the surveyed population may experience financial constraints or limitations.
- **10k to 25k:** Following closely, 29 respondents reported a monthly income ranging between 10,000 to 25,000, representing 33% of the total. Together with the lower income group, this accounts for 69% of respondents, indicating a substantial presence of individuals with moderate to lower incomes.
- **25k to 50k:** A significant portion of respondents falls within the income bracket of 25,000 to 50,000, comprising 21 individuals, or 24% of the total. Understanding the financial circumstances of this group is crucial for addressing their needs and preferences.
- **Above 50k:** A smaller percentage of respondents, 7% of the total, reported earnings above 50,000 per month, with 6 individuals falling into this category. While fewer in number, their perspectives and behaviours may differ significantly from those in lower income brackets, warranting consideration in project planning and decision-making.

WHAT IS YOUR OCCUPATION:

Occupation	No of Respondents	percentages
Student	30	34%
Self Employed or Business	19	22%
Public sector	14	16%
Private Sector	24	28%
Total	87	100%

WHAT IS YOUR OCCUPATION:



INTERPRETATION:

The pie chart appears to be a survey result about the occupations of the respondents. Here's a breakdown of the results:

- 34.5% of the respondents said they work in the private sector.
- 27.6% of the respondents said they are self-employed or run a business.
- 21.8% of the respondents said they work in the public sector.
- 16.1% of the respondents said they are students.

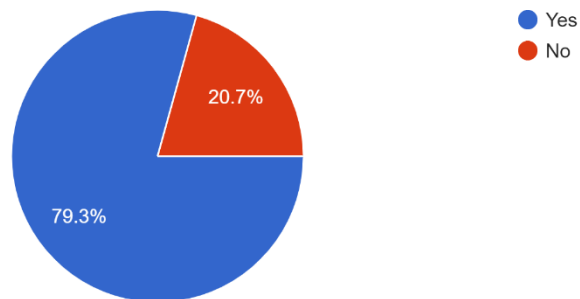
ARE YOU AWARE OF MOBILE BANKING:

Particulars	No of Respondents	Percentages
Yes	69	79%
No	18	21%
Total	87	100%

ARE YOU AWARE OF MOBILE BANKING:

Are you aware of Mobile Banking ?

87 responses



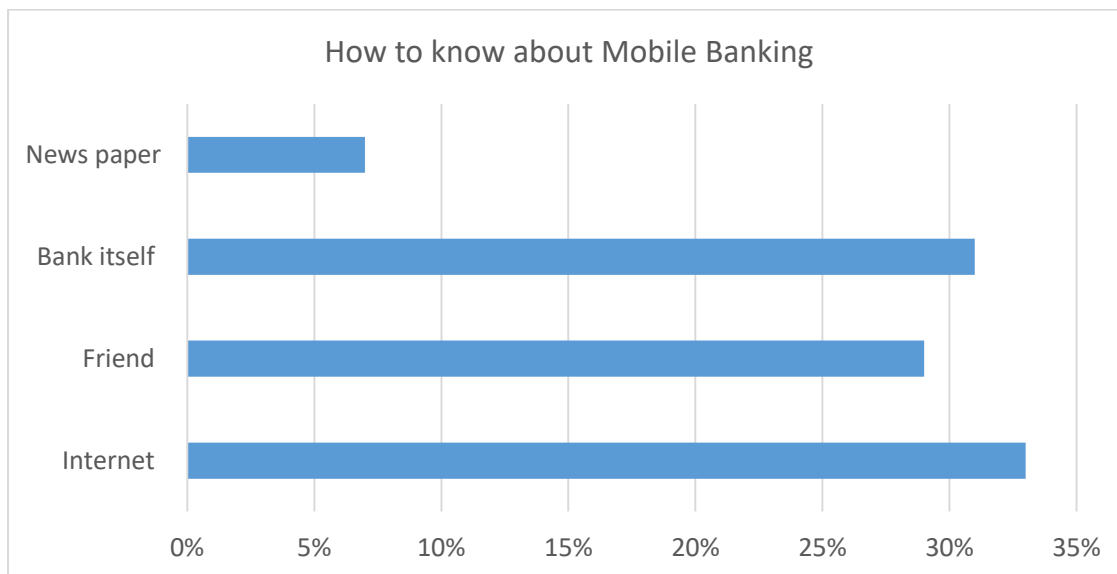
INTERPRETATION:

The pie chart actually shows awareness of mobile banking, not occupations. In the survey, 79.3% of the respondents said they are aware of mobile banking, while 20.7% said they are not.

HOW DID YOU GET TO KNOW ABOUT MOBILE BANKING:

Particulars	No of Respondents	Percentages
Internet	29	33%
Friend	25	29%
Bank itself	27	31%
News paper	6	7%
Total	87	100%

HOW DID YOU GET TO KNOW ABOUT MOBILE BANKING:



INTERPRETATION:

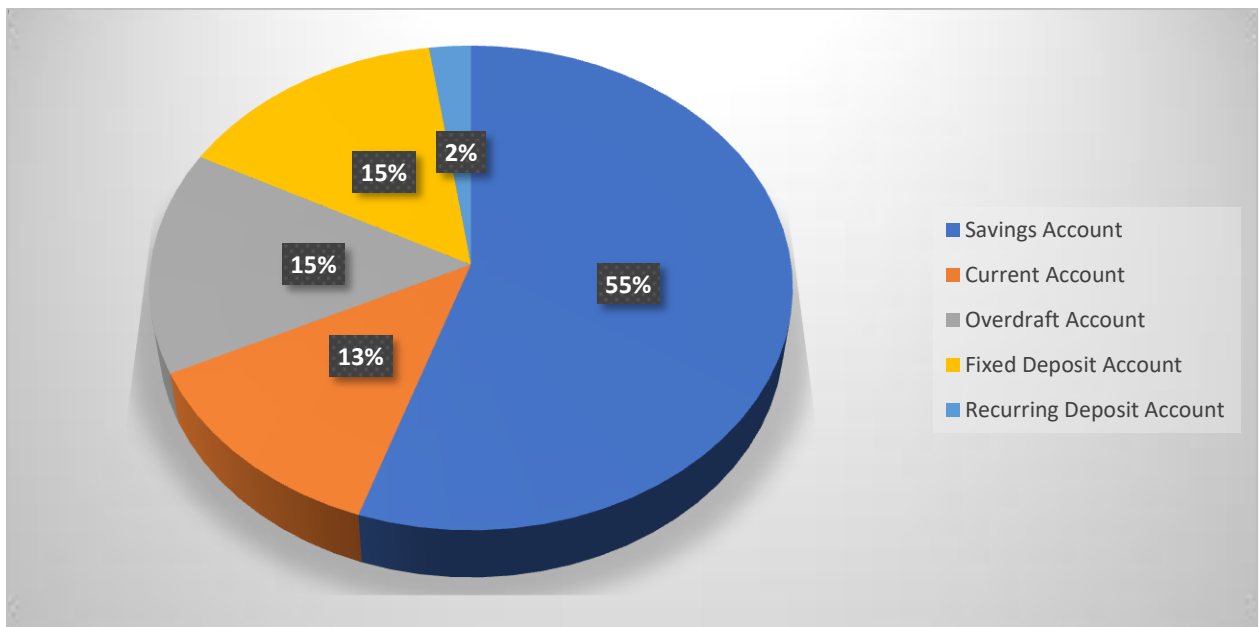
- 33.3% learned about mobile banking from friends or family.
- 31% learned about mobile banking through the internet.
- 28.7% learned about mobile banking from their bank itself.
- 6.9% learned about mobile banking through newspapers.

. WHAT ARE THE TYPES OF ACCOUNT YOU USED:

Particulars	No of Respondents	Percentages
-------------	-------------------	-------------

Savings Account	48	56%
Current Account	11	17%
Overdraft Account	13	13%
Fixed Deposit Account	13	12%
Recurring Deposit Account	2	2%
Total	87	100%

WHAT ARE THE TYPES OF ACCOUNT YOU USED:



INTERPRETATION:

- 55% of respondents reported having a savings account.
- 15% of respondents reported having a current account.
- 13% of respondents reported having an overdraft account.
- Data for fixed deposit accounts and recurring deposit accounts is not shown in the pie chart slice labels.

CHAPTER V FINDINGS, SUGGESTIONS, CONCLUSION.

FINDINGS

1. Majority of the respondents (55%) age group of 21 of 30 years.
2. Majority of the respondents (60%) are males based on the responses Received.
3. Based on the respondent answer majority of the people are post graduate using the mobile banking services
4. Majority of the respondents (36%) are belong to the below 10 k Monthly Income Category in the Surveyed area (Chengalpattu).
5. Majority of the respondents (34%) occupation was student compared to self-employed or business and other's
6. Based on the survey (79%) of respondents well aware about Mobile banking.
7. There are (33%) of the respondents know about mobile banking through internet and 31% of the respondents know through Bank itself.
8. Majority of the respondents 35% are using savings account only compared to other type of Accounts and other 15% of respondents are using the Fixed and current Account.
9. Majority of the respondents 38% are using the mobile banking services because of anywhere Bill payment facility.
10. Based on the survey 34% of respondents are using the mobile banking services between 1 to 3 years of time period.
11. Majority of respondents 35% are using Mobile banking services of SBI compared to another Banks.
12. Based on the study there are 37% of respondents using Transfer Money Facility services.
13. Majority of respondents 40% are agree their expectations are fulfilled By Mobile Banking Compared to Conventional Banking.
14. Based on the Respondents 43% are facing Network issue with Bank services problem in Mobile Banking and it affects Interest towards Mobile Banking services.
15. Majority of respondents 32% agree their Mobile Banking helps to time saving compared to conventional banking.

SUGGESTION:

Bank must keep a frequent touch with its customers after providing a technological service to its customers they should improve their customers relationship management policy.

- Bank has to create a trust in the mind of customers about security of their accounts
- Bank should reduce the service cost and need to improve mobile banking service.
- Illiterate people cannot understand mobile banking service instructions. So, there is a need to simplify it and instructions should be given in regional language.

- The technical services of the bank must be improved.
- Give proper training to customers for using mobile and for other modern banking services.
- Illiterate people can't able to understand and operate mobile banking services. So, bank has to conduct some programs toward the operation of Mobile banking services.
- Bank need to simplify less procedure for accessibility of mobile banking.
- Bank should increase the service of mobile banking.
- Bank should give clear information to the customers about charging of service cost.
- Bank should make the procedure for transaction simple and easy.
- Awareness about various services available through the mobile banking should be created.
- Transaction cost charged on mobile banking should be regularly communicated to customer.
- Bank is charging more charges towards mobile banking facility so if they reduce the hidden charges or any charges it is beneficial for more customers to utilize this facility.
- Bank has to improve the service of time given for transaction to users.

CONCLUSION:

From this study we can see that among many factors which determine the customers' satisfaction for mobile banking services; speed, responsiveness, assurance and cost appear to be most important determinants of customers' satisfaction. Any problem related to these aspects can seriously create dissatisfaction among the customers. Central bank is motivating the other commercial banks to provide the better services to customers through mobile banking. The customers are becoming aware about the usage of this technological service. It is advisable the mobile banking services should incorporate these aspects in delivering their services so that they can reach their goal of success smoothly. This study provides in-depth knowledge about the determinant of customers' satisfaction for mobile banking services but still there are many opportunities to conduct future research on this topic such as one can measure customer satisfaction with mobile banking services by comparing perceived value and expected value. Another possible direction is to compare the urban customers' satisfaction and rural customer's satisfaction determinant for mobile banking services.

BIBLIOGRAPHY

- Ms. Shilpa. D, Dr. Veena K. P(2018), "Customer Satisfaction on Adoption of Mobile Banking Services: A Study with Special Reference to State Bank of India", IOSR Journal of Business and Management.
- A.Thilagaraj(2018), "Customer Satisfaction Towards Mobile Banking – A Study", Indian Journal of Applied Research.
- Ambily Jose, Dr. G.S. Gireesh Kumar, Dr. Roshna Varghese(2017), "Factors Influencing Customer Adoption of Mobile Banking Services With Special Reference To Ernakulam District", IOSR Journal of Business and Management.

- Ataur Rahman, Mahamudul Hasan and Md. Amin Mia (2017), “Mobile Banking Service Quality and customer satisfaction” The cost and Management.
- Mr. M. Mohanraj, Dr. A. T. Jaganathan (2017), “A Study on Customer Attitude towards Mobile Banking with Special Reference to Erode District”, International Journal of Trend in Scientific Research and Development.
- Alice Mueni Mwendwa , Elizabeth Nambuswa Makokha, Gregory Simiyu Namusonge(2016) “Effect of Mobile Banking in customer satisfaction in selected

INDIAN ETHOS & CULTURE FOR HOLISTIC GROWTH & DEVELOPMENT

RASHMITHA PRIYA.V

II MBA Student, Department of Management Studies

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,
Chennai, India, Vtp4228@veltech.edu.in, Phone NO: 9100879772

Dr. RAVISHANKAR .K

Assistant Professor, Department of Management Studies

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi,
Chennai, India, ravimba2008@gmail.com, Phone NO: 9790986201

ABSTRACT

Indian ethos and culture embody a profound and time-tested framework that integrates spiritual, ethical, and practical principles for holistic growth and development. Rooted in ancient philosophies like the Vedas, Upanishads, and epics such as the Mahabharata and Ramayana, Indian ethos emphasizes interconnectedness, self-discipline, and universal well-being (Chatterjee, 2016). The guiding principles of Dharma (righteousness), Karma (action), and Satya (truth) form the ethical foundation for personal and societal growth. Holistic growth in the Indian context transcends mere material success, encompassing physical, emotional, intellectual, and spiritual dimensions. The philosophy of Sarve Bhavantu Sukhinah (may all beings be happy) promotes a collective vision of development, ensuring harmony and sustainability in all endeavor (Gupta, 2020). This aligns with contemporary concepts of sustainable development and corporate social responsibility, showcasing the timeless relevance of Indian cultural values in addressing global challenges. Practices such as Yoga and Ayurveda, intrinsic to Indian culture, offer tools for achieving mental clarity, physical vitality, and spiritual awareness. These practices underscore the significance of self-awareness and balance in personal and professional life (Sharma, 2018). Additionally, the concept of Vasudhaiva Kutumbakam (the world is one family) advocates inclusivity and mutual respect, fostering global cooperation and peaceful coexistence. Indian ethos, therefore, serves as a powerful blueprint for nurturing holistic growth by integrating ethical practices, community well-being, and individual excellence. Its universal appeal and adaptability make it a valuable framework for fostering a balanced and sustainable approach to modern challenges. Through the application of these principles, individuals and organizations can achieve enduring success while contributing positively to society and the environment.

KEYWORD

Dharma, Ahimsa, Yoga, Spirituality, Traditional Knowledge Systems , Inclusivity, Holistic Development, Indian Philosophy, Self-Realization, Gurukul System, Meditation and Mindfulness, Environmental Stewardship.

INTRODUCTION

India's rich and ancient culture has always emphasized the integration of mind, body, and spirit for holistic growth. Rooted in deep philosophical traditions, its ethos focuses not only on material success but also on the well-being of the individual and society as a whole. Indian culture, shaped by a blend of spirituality, ethics, and social responsibility, offers a unique approach to personal and societal development.

The core principles of Indian ethos are grounded in the concept of Dharma (righteous living), Artha (prosperity), Kama (pleasure), and Moksha (liberation). These four goals, as outlined in ancient scriptures such as the Vedas and the Bhagavad Gita, present a balanced view of life, encouraging individuals to pursue material success without losing sight of their ethical and spiritual responsibilities. Indian ethos stresses the importance of self-awareness, compassion, humility, and respect for all living beings, which fosters a sense of community and harmony.

Additionally, the Indian concept of Yoga goes beyond physical postures and embraces a holistic approach to life that connects the individual with a higher consciousness, promoting mental clarity, emotional balance, and spiritual growth. This holistic framework is reinforced by practices such as meditation and mindfulness, which enhance personal development by cultivating inner peace and self-discipline. Furthermore, Indian culture recognizes the importance of education in shaping the individual, emphasizing not just academic knowledge but also moral and spiritual learning. The Gurukul system and various philosophical schools of thought, such as Vedanta, Jainism, and Buddhism, have contributed significantly to the development of an inclusive educational approach that nurtures both intellect and wisdom.

In modern times, as India faces rapid globalization and technological advancements, these traditional values offer a counterbalance, reminding individuals and societies to maintain a focus on ethical living and holistic development. By embracing the wisdom of Indian ethos, it is possible to create an environment conducive to personal growth, sustainable development, and social harmony. Thus, Indian culture offers timeless guidance on fostering holistic growth in the contemporary world.

Background of the Study

The concept of holistic growth and development has gained significant attention in recent decades as societies worldwide grapple with the challenges of balancing economic progress, social well-being, and environmental sustainability. While modern approaches often emphasize individual success, material wealth, and technological advancement, traditional philosophies, particularly those rooted in Indian culture, offer a more integrated view of human development. Indian ethos and culture, shaped by millennia of spiritual, philosophical, and ethical teachings, advocate for the harmonious development of the individual and society.

The foundations of Indian thought on holistic development are embedded in its ancient scriptures, including the Vedas, Upanishads, Bhagavad Gita, and other philosophical texts.

These texts emphasize the pursuit of knowledge (jnana), ethical conduct (dharma), material prosperity (artha), sensual enjoyment (kama), and ultimate liberation (moksha), all of which are considered interconnected and essential for balanced growth. In this framework, human life is not just about individual material success but about contributing to the well-being of the broader community and ultimately transcending physical limitations for spiritual enlightenment.

Historically, Indian culture has always prioritized the nurturing of an individual's mind, body, and spirit through practices such as yoga, meditation, and self-discipline. The ancient Indian education system, represented by the Gurukul tradition, focused not only on academic learning but also on ethical and moral teachings, emphasizing the importance of character-building alongside intellectual development. The Indian ethos promotes the idea of "Sarve Bhavantu Sukhinah" (may all beings be happy), which reflects the cultural commitment to the collective well-being of society and the environment.

In contemporary society, the values inherent in Indian ethos have profound relevance in addressing the challenges posed by modernity, including stress, mental health issues, environmental degradation, and the erosion of social bonds. The fast-paced, individualistic nature of globalization often neglects deeper aspects of human well-being, leading to an imbalance in personal and societal development. In contrast, Indian culture's focus on interconnectedness, compassion, and sustainability offers valuable insights into creating a more balanced approach to development.

This study seeks to explore how the principles of Indian ethos and culture can contribute to a more holistic understanding of growth and development. By examining the philosophical, spiritual, and ethical foundations of Indian traditions, the research aims to provide a deeper understanding of how these ancient teachings can be applied to modern contexts, fostering individual well-being, societal harmony, and sustainable development. The study also seeks to explore how integrating Indian values with contemporary global frameworks can offer solutions to current challenges in education, mental health, and social justice, thereby creating a more balanced, sustainable path for personal and collective development.

REVIEW OF LITERATURE

The concept of holistic growth and development is not new to Indian culture. Indian ethos, deeply embedded in its religious, philosophical, and spiritual traditions, has long emphasized the interconnectedness of mind, body, and spirit. As such, the literature on this subject spans various disciplines, including philosophy, education, psychology, and sociology. This review highlights key studies and theories related to the role of Indian ethos and culture in fostering holistic growth and development.

- **Philosophical Foundations of Indian Ethos** Indian philosophical texts, such as the Vedas, Upanishads, and the Bhagavad Gita, lay the foundational principles for holistic development. According to Radhakrishnan (1953), Indian philosophy stresses the importance of the Atman (soul) and the realization of one's true nature, linking individual growth with spiritual enlightenment. These texts advocate for a life that balances material success (artha), sensory pleasures (kama), and spiritual fulfillment (moksha). This integrated approach to life is considered essential for achieving personal and societal harmony. In the Bhagavad Gita, Krishna advises Arjuna to perform his duties without attachment, thereby emphasizing selfless action (Karma Yoga), mental discipline (Dhyana Yoga), and the pursuit of knowledge (Jnana Yoga). Scholars like Swami Vivekananda (1896) also highlighted the importance of balancing physical, mental, and spiritual growth for a harmonious life. The teachings of these ancient texts offer a framework for personal and collective well-being, focusing on ethical living, self-discipline, and spiritual awareness.
- **Indian Education System and Holistic Development** The traditional Indian education system, particularly the Gurukul model, placed significant emphasis on the development of character alongside intellectual knowledge. Studies by Sarvepalli Radhakrishnan (1947) and others suggest that Indian education was historically designed to cultivate both intellect and virtue. This system integrated ethical values, social responsibilities, and spiritual teachings, making it a holistic approach to education. The Indian ethos emphasizes the nurturing of the manas (mind), sharira (body), and atman (soul) as inseparable components of an individual's growth. In contemporary educational discourse, several scholars, including Aurobindo Ghose (1910), have argued for a return to these principles to address modern educational challenges. Aurobindo emphasized the role of spiritual education in fostering creativity, character, and inner peace, thus ensuring holistic development in students. The National Curriculum Framework (NCF, 2005) in India also emphasizes values such as cooperation, respect for diversity, and environmental awareness, promoting the idea of sustainable development in educational contexts.
- **Yoga and Meditation as Tools for Holistic Development** One of the key practices that represent the Indian ethos for holistic growth is Yoga. Yoga, as described in the Yoga Sutras of Patanjali, is a comprehensive system for physical, mental, and spiritual development. According to Iyengar (2001), the practice of Yoga enhances physical health through asanas (postures), mental clarity through pranayama (breathing

exercises), and emotional stability through meditation. It provides a pathway to self-realization and inner peace, helping individuals achieve a balanced and harmonious life. Numerous studies have explored the benefits of Yoga in modern contexts. Research by Telles and Singh (2013) highlighted the positive effects of Yoga on mental health, including reduced anxiety, stress, and depression, demonstrating its role in enhancing emotional well-being. Furthermore, in the context of workplace stress, Kothari (2018) found that Yoga and meditation practices derived from Indian traditions can enhance productivity, creativity, and interpersonal relationships, contributing to personal and organizational growth.

- **Indian Culture and Social Harmony** The ethical principles of Dharma, which promote righteous living and duty toward society, are central to Indian culture and have a significant role in shaping collective well-being. Scholars like S.R. Bhatt (1999) have argued that Indian social structures, including the caste system, though controversial, were originally designed to create social harmony through roles based on moral duties. While the system has evolved and is no longer widely practiced in its traditional form, the concept of duty (or dharma) remains an integral part of Indian society, guiding individuals toward social responsibility and ethical behavior.
- **Relevance in Contemporary Context** The modern-day challenges of rapid urbanization, technological advancement, environmental degradation, and rising mental health concerns have led scholars like Deepak Chopra (2005) and Sadhguru (2010) to highlight the relevance of Indian cultural practices in addressing these issues. Chopra suggests that the ancient wisdom of Indian ethos can be harnessed to foster greater mindfulness and well-being in an era of increasing stress and competition. Similarly, Sadhguru's teachings on holistic living advocate for aligning the body, mind, and spirit in harmony with nature to achieve sustainable development. The integration of Indian cultural practices into modern frameworks of development has gained increasing attention. Research by Ramanujan (2019) underscores the potential of Sanskrit texts and philosophies to contribute to contemporary global development theories, especially in promoting well-being, environmental consciousness, and ethical governance.

RESEARCH QUESTION

How can the principles of Indian ethos (Dharma, Artha, Kama, Moksha) contribute to a more holistic approach to personal and societal development in the modern world?*

RESEARCH OBJECTIVES

- Explore the fundamental principles of Indian ethos, such as unity in diversity, non-violence (Ahimsa), truth (Satya), and duty (Dharma). Analyze the relevance of ancient scriptures like the Bhagavad Gita, Upanishads, and Arthashastra in shaping modern holistic development.
- Study how Indian culture harmonizes spiritual and material pursuits to achieve balanced growth. Examine the concept of Purusharthas (Dharma, Artha, Kama, Moksha) in promoting a fulfilled life.
- Investigate traditional Indian practices emphasizing ecological balance and sustainable development. Evaluate concepts like Vasudhaiva Kutumbakam (The world is one family) in fostering global environmental awareness.
- Research the application of Indian ethos in leadership, focusing on values-driven governance and ethical decision-making. Explore the impact of principles like Seva (selfless service) and Lokasangraha (welfare of the world) in modern management and governance.
- Assess how Indian education systems (ancient and contemporary) contribute to developing intellect, character, and emotional well-being. Study the significance of Gurukul traditions and their modern adaptations.
- Analyze how Indian cultural values promote social inclusivity, equality, and collective welfare. Investigate the role of festivals, rituals, and cultural practices in strengthening community bonds.
- Explore how Indian ethos can shape ethical practices in business and corporate environments. Examine principles like Karma Yoga (selfless action) for enhancing productivity and employee satisfaction.

METHODOLOGY

Indian ethos and culture provide a profound foundation for holistic growth and development, blending ancient wisdom with modern practices. Rooted in values like harmony, inclusivity, and interconnectedness, Indian philosophy emphasizes a balance between material and spiritual pursuits. Concepts such as Dharma (righteous duty), Yoga (union of body, mind, and soul), and Ahimsa (non-violence) underline the importance of ethical living, self-discipline, and compassion in achieving personal and societal progress. Holistic growth in the Indian context integrates physical, mental, emotional, and spiritual dimensions. Practices like meditation and Ayurveda promote well-being, while education systems inspired by the Gurukul tradition focus on character building and practical wisdom. Furthermore, Indian culture fosters community-driven development through the concept of Vasudhaiva Kutumbakam (the world is one family), encouraging collective efforts for sustainable and

inclusive growth. By synthesizing traditional values with contemporary methodologies, Indian ethos offers a unique framework for addressing global challenges, nurturing innovation, and cultivating a harmonious and prosperous society.

CHALLENGES

While Indian ethos and culture offer a rich framework for holistic growth and development, several challenges arise in their implementation in a modern, globalized context

- **Erosion of Traditional Values:** With rapid modernization and exposure to Western lifestyles, traditional Indian values like Dharma, Ahimsa, and Vasudhaiva Kutumbakam are often overshadowed by materialism and individualism.
- **Fragmentation of Society:** Social issues like caste discrimination, gender inequality, and regionalism hinder the inclusive spirit of Indian culture and impede holistic development.
- **Economic Disparities:** Despite cultural emphasis on harmony and equity, economic inequality remains a significant challenge, making it difficult to align development with cultural ideals.
- **Globalization Pressure:** Adapting Indian ethos to a competitive global framework without diluting its essence poses a challenge, particularly in areas like education, business ethics, and governance.
- **Environmental Degradation:** Traditional practices emphasize living in harmony with nature, but modern lifestyles and industrialization have led to significant ecological imbalance, contradicting the cultural ethos.
- **Resistance to Change:** While Indian culture advocates adaptability, deep-rooted orthodox practices and resistance to reform often conflict with the need for progress and innovation.
- **Lack of Awareness and Integration:** There is a gap in understanding and integrating Indian ethos into modern policies and education systems, leading to superficial adoption rather than meaningful application. Addressing these challenges requires a balanced approach, where traditional wisdom is harmonized with contemporary needs, fostering a sustainable model of holistic growth and development.

SUGGESTIONS

To effectively harness Indian ethos and culture for holistic growth and development, the following suggestions can be considered:

- **Integrating Values in Education** Incorporate principles like Dharma, Ahimsa, and Vasudhaiva Kutumbakam into school curriculums to instill ethical values, empathy, and social responsibility from a young age.
 - **Promoting Inclusive Practices** Address social disparities by fostering inclusivity, gender equality, and community participation, ensuring that development benefits all sections of society.
 - **Reviving Traditional Practices** Encourage the use of indigenous knowledge systems like Ayurveda, yoga, and sustainable agricultural methods to promote physical, mental, and environmental well-being.
 - **Balancing Modernity with Tradition** Blend modern technologies with traditional wisdom to create innovative and sustainable solutions, particularly in healthcare, education, and environmental management.
 - **Strengthening Governance with Ethical Leadership** Adopt governance models inspired by Indian values of accountability, integrity, and compassion to ensure transparency and equity in policymaking.
 - **Fostering Environmental Stewardship** Reintegrate ecological consciousness into daily life by promoting conservation practices rooted in Indian culture, such as tree worship and water conservation rituals.
 - **Encouraging Global Cooperation** Use the philosophy of Vasudhaiva Kutumbakam to promote peace, cooperation, and sustainable global development in international forums.
 - **Empowering Communities** Strengthen grassroots initiatives that emphasize collective well-being and self-reliance, drawing from traditional models like the Panchayati Raj system.
 - **Raising Awareness** Conduct campaigns, workshops, and cultural programs to deepen public understanding of Indian ethos and its relevance in modern contexts.
- Research and Documentation:** Invest in academic and practical research to document and adapt Indian cultural practices and philosophies for contemporary challenges.

REFERENCE

Integration of Indian Ethos in Education: This article from NOLEGEIN Journal discusses the blending of ancient Indian philosophy with modern educational frameworks. It emphasizes values like Dharma, Jnana, and Moksha and promotes experiential learning through activities like yoga, meditation, and community engagement to achieve holistic growth. (<https://mbajournals.in/index.php/JoBEC/article/view/1414>) .

Indian Ethos in Development and Management*: Published by Abhinava Prabandhan, this paper highlights the contrast between Indian and Western development paradigms. It discusses concepts like "Holistic Man" versus "Economic Man," focusing on integrated welfare models.

(<https://abhinavaprabandhan.org/issue/2019/08/09/indian-ethos-of-development-and-management/>) .

Cultural Values for Business and Management*: This resource discusses how Indian philosophies, such as Vasudhaiva Kutumbakam (the world is one family), can reshape management and governance to prioritize holistic societal welfare. Find details at (<https://indiafreenotes.com/>)

These sources collectively explore how India's cultural and philosophical traditions can inform strategies for balanced and inclusive development. Let me know if you need a deeper dive into any specific aspect.

CONCLUSION

A STUDY ON IMPACT OF MUDRA LOAN ON MICRO ENTERPRISES IN TAMILNADU**B. ELUMALAI****Research Scholar****Arignar Anna Government Arts College****Cheyyar, Tiruvannamalai (DT) Tamil Nadu****Phone:9843860438****Mail: elumalai8488@gmail.com****DR.P. RAMALINGAM M.COM, PH.D.****Associate Professor & Research Supervisor****Head Of The Department (Commerce)****Arignar Anna Government Arts College, Cheyyar****Tiruvannamalai (DT) Tamil Nadu****Phone:9843234412****Abstract**

The Government of India launched the MUDRA (Micro Units Development and Refinance Agency) scheme in 2015 under the Pradhan Mantri MUDRA Yojana (PMMY). MUDRA loans are provided under three categories: Shishu (Up to ₹50,000), Kishore (₹50,000 to ₹5 lakh), and Tarun (₹5 lakh to ₹10 lakh). This study seeks to assess the impact of MUDRA loans on micro-enterprises in Tamil Nadu, focusing on their contribution to business growth, financial inclusion, job creation, and sustainability. objectives is to assess the impact of MUDRA loans on the growth and sustainability of micro-enterprises in Tamil Nadu. Significance of the Study Tamil Nadu, one of India's leading industrial and economic states, has many micro-enterprises spread across various sectors such as agriculture, retail, services, and manufacturing. Samples are collected in different sector such as agriculture, textiles, retail, and services and primary and secondary data are collected. This study will provide an in-depth analysis of the impact of MUDRA loans on the growth, sustainability, and financial health of micro-enterprises in Tamil Nadu and Awareness Campaigns, Streamlining the Loan Process, Increasing Loan Limits, Support Systems for Start-ups, this Policy Recommended.

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play a vital function in the economic development of India, contributing significantly to employment creation, innovation, and regional economic growth. Among these, micro-enterprises are particularly vital, as they form the backbone of the informal economy, providing livelihoods to a large section of the population. In Tamil Nadu, micro-enterprises are spread across various sectors, including agriculture, manufacturing, retail, and services. Despite their importance, these businesses face numerous challenges, particularly in accessing formal credit, which limits their growth potential and sustainability.

The Government of India launched the MUDRA (Micro Units Development and Refinance Agency) scheme in 2015 under the Pradhan Mantri MUDRA Yojana (PMMY). MUDRA loans are provided under three categories: **Shishu (Up to ₹50,000), Kishore (₹50,000 to ₹5 lakh), and Tarun (₹5 lakh to ₹10**

lakh). catering to businesses at different stages of growth. These loans are offered without collateral, making them accessible to micro-enterprises that may not have the necessary assets to secure traditional loans. The Impact of this initiative on micro-enterprises in Tamil Nadu, however, remains underexplored. While some studies have assessed the role of MUDRA loans in supporting micro-enterprises across India, specific insights into Tamil Nadu's context are limited.

This study seeks to assess the impact of MUDRA loans on micro-enterprises in Tamil Nadu, focusing on their contribution to business growth, financial inclusion, job creation, and sustainability. By evaluating the challenges faced by entrepreneurs in accessing and utilizing MUDRA loans, this research aims to provide valuable insights into the effectiveness of the scheme and recommend improvements to enhance its reach and impact.

The importance of this study lies in its potential to offer a deeper understanding of how MUDRA loans have facilitated business expansion, addressed financial gaps, and empowered entrepreneurs in Tamil Nadu. Given the state's significant role in India's industrial and economic landscape, examining the influence of MUDRA loans on micro-enterprises in Tamil Nadu can provide valuable policy insights for strengthening the support structure for small businesses and enhancing the overall business ecosystem.

OBJECTIVE OF THE STUDY:

The main objectives of the study are:

1. To Assess the impact of MUDRA loans on the growth and sustainability of micro-enterprises in Tamil Nadu.
2. To Examine the challenges faced by entrepreneurs in accessing and utilizing MUDRA loans.
3. To Understand the effectiveness of MUDRA loans in promoting job creation and enhancing income levels for micro-enterprise owners.
4. To Evaluate the role of MUDRA loans in improving access to formal credit for the target population.

SIGNIFICANCE OF THE STUDY

Tamil Nadu, one of India's leading industrial and economic states, has a large number of micro-enterprises spread across various sectors such as agriculture, retail, services, and manufacturing. These enterprises play a vital role in local economic development and job creation. However, access to finance remains a major barrier to their growth. MUDRA loans, launched by the Government of India in 2015, aim to provide financial support to micro and small enterprises, particularly in the informal sector. Understanding the impact of these loans on micro-enterprises in Tamil Nadu is crucial for evaluating the success of this initiative and improving policy interventions.

STATEMENT OF THE PROBLEMS

Awareness and Outreach: Many micro-enterprises, especially in rural areas, may lack awareness of the MUDRA loan scheme. Even when they are aware, the loan application process can be confusing and time-consuming. **Documentation:** While MUDRA loans are promoted as collateral-free, the documentation and procedural requirements can still be a barrier, especially for informal businesses without proper records. **Financial Literacy:** Some micro-enterprises lack the financial literacy needed to navigate the loan process and manage the finances effectively post-disbursement. **Banking Infrastructure:** In rural areas, limited banking infrastructure and services can delay the loan application process and disbursement.

REVIEW OF LITERARY

Verma R. Journal of Business Management and Information Systems (2023) Indian banking and financial system work as a catalyst to this growth trajectory. The study period is six years from 2016-17 to 2021-22. The Shishu category recorded the highest number of accounts i.e., 26,70,67,119 along with highest loan disbursement of Rs. 7,31,706.97 among all the categories. The study shows continuous growth among all the sub-categories (except in OBC in Shishu Loans) in all the Mudra Loans Schemes.

Tarak Nath Sahu(2024) Financial support through microcredit facilities has been acclaimed as instrumental in encouraging entrepreneurial activities and empowering individuals, especially women, in the process. Pradhan Mantri Mudra Yojana (PMMY), a microcredit programme, is an example of the Indian government's initiative to promote employment and sustain the livelihood status of the above-mentioned individuals. it suggests that the government and the banking sector may improve the existing policies and take initiatives to enhance the accessibility of the scheme and create a supporting environment to assist borrowers during the initial stage of the venture through different training programmes.

METHODOLOGY

Data Collection:

Primary Data: Surveys, structured interviews, and focus group discussions with micro-enterprise owners who have availed MUDRA loans in Tamil Nadu. Interviews with bank officials and government representatives involved in loan disbursement.

Secondary Data: Analysis of government reports, banking records, and research papers on MUDRA loans and micro-enterprises in Tamil Nadu.

Sample Size:

A representative (200) sample of micro-enterprises across urban and rural areas of Tamil Nadu that have received MUDRA loans. The sample will cover various sectors such as agriculture, textiles, retail, and services.

Data Analysis:

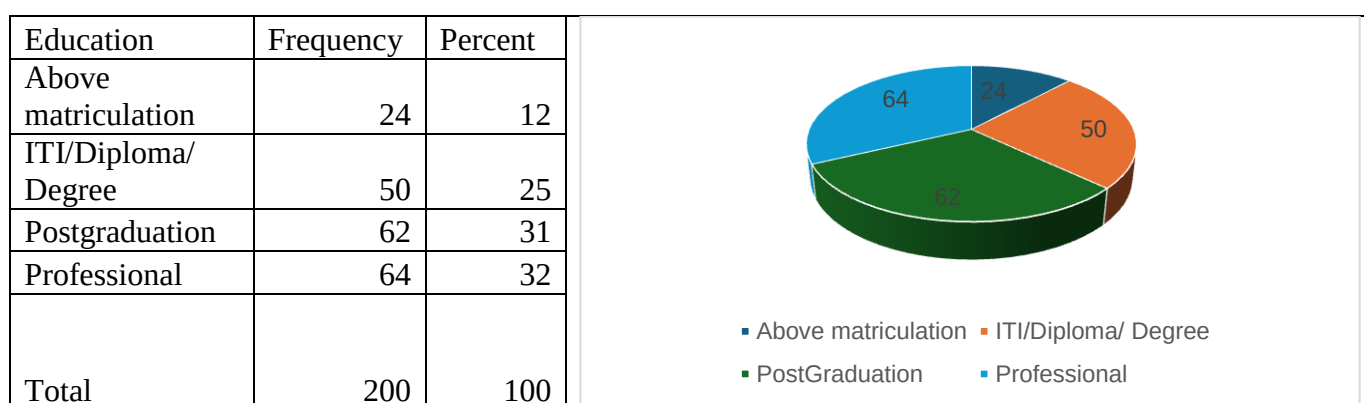
Quantitative Analysis: Descriptive statistics to measure the impact of MUDRA loans on business performance, including revenue growth, employment, and productivity. Statistical tools like regression analysis to determine the factors influencing the successful use of MUDRA loans.

Qualitative Analysis: Thematic analysis of interview data to understand the perceptions, challenges, and experiences of micro-enterprises in accessing MUDRA loans.

ANALYSIS & INTERPRETATION

TABLE:1

EDUCATION WISE CLASSIFICATION OF BENEFICIARY MUDRA



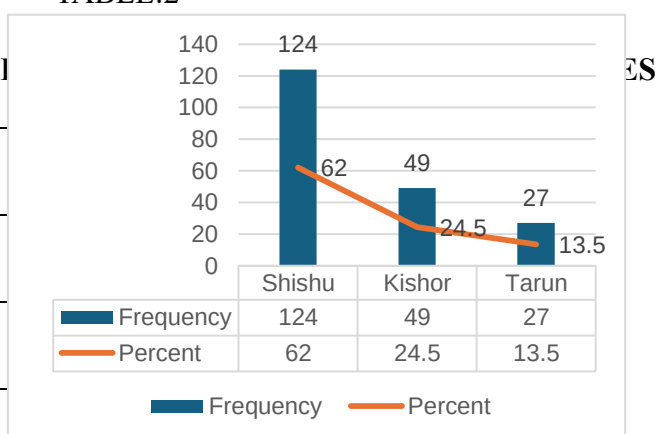
Source: Primary data

From Table No.1 most of the respondents are professionals. 64 out of 200 respondents are professionals; 50 have an ITI/Diploma/Degree, 62 are post-graduates; and 24 have an educational qualification above matriculation. That means a total of 64% of the respondents are professionals. ITI/Diploma/Degree and Postgraduate educational qualifications are held by 25 % and 31% respectively.

TABLE:2

TYPE OF MUDRA LOAN OBTAINED

Type of Mudra loan	Frequency	Percent
Shishu	124	62
Kishor	49	24.5



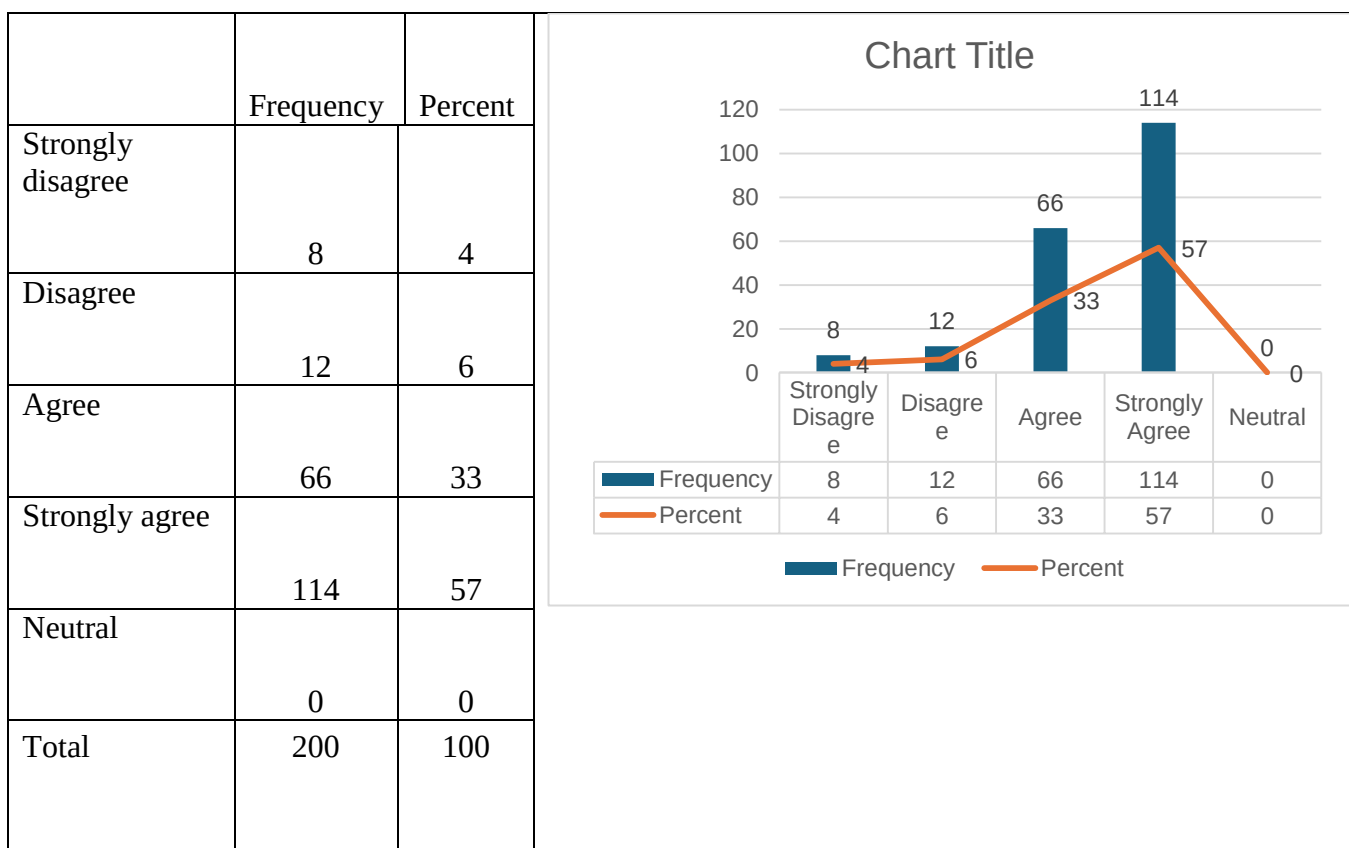
Tarun	27	13.5	
Total	200	100	

Source: Primary data

Three types of MUDRA Loans are available to entrepreneurs at different stage of development of their enterprises. They are Shishu, Kishor, and Tarun loans. The result of the study is presented in Table :2 MUDRA provides three categories of loan, and 24.5% of the respondents have availed the MUDRA loan type Kishor, 62% have availed the benefit of the loan type Shishu, and 13.5% got the privilege of the loan Tarun.

TABLE:3

CHALLENGES FACED BY ENTREPRENEURS TO OBTAIN AND UTILIZING LOANS



Source: Primary data

When examining the table above, it is evident that entrepreneurs face significant difficulties in both accessing and utilizing MUDRA loans. These challenges arise due to various reasons, including lack of awareness about the MUDRA loan scheme and difficulties in completing the application process. According to the data, 57% of people agree that they encounter such challenges, while 6% disagree, likely because they are more educated and have a better understanding of the process.

FINDINGS

- ❖ It is found that the ratio between men and women entrepreneurs who run Micro enterprises in Kerala is 48:51. It is a good achievement on the part of the women entrepreneurs who constitute 51% and shows their bold initiative to come up with equal status for men in the field of micro entrepreneurship. It is also a remarkable achievement of the MUDRA Yojana. It is also evidence of the achievement of one of the missions of inclusive growth.
- ❖ It is seen that 59% of the workers employed in respondent micro units are migrant workers, 31% from the local area, and 10% are from another district
- ❖ There are three categories of MUDRA loans provided: Shishu, Kishor, and Tarun. 24.5 percent of the respondents obtained a Kishor loan, which provides loan ranging from 50,000 to 5,00,000. 62% obtained Shishu with a limit up to 50,000, and 13.5% obtained Tarun which provides the highest amount as a loan up to 10,00,000. This is because the researcher took micro units, which were started two years before getting a MUDRA loan, so their good track record helped them to fetch a good amount as loan

CONCLUSION

This study will provide an in-depth analysis of the impact of MUDRA loans on the growth, sustainability, and financial health of micro-enterprises in Tamil Nadu. It will highlight the effectiveness of the scheme in improving financial inclusion, fostering entrepreneurship, and contributing to regional economic development. The research will also offer valuable insights into the challenges faced by micro-enterprises in accessing and utilizing MUDRA loans and provide policy recommendations to enhance the scheme's outreach and effectiveness.

By understanding the role of MUDRA loans in transforming micro-enterprises, the findings can inform future government interventions and improve the overall ecosystem for small businesses in Tamil Nadu, ultimately leading to greater economic resilience and inclusive growth.

RECOMMENDATIONS

- I. **Awareness Campaigns:** Conducting extensive awareness campaigns through local institutions, media, and workshops to inform start-up entrepreneurs about the benefits of MUDRA loans.

- II. **Streamlining the Loan Process:** Simplifying the loan application process and reducing bureaucratic barriers to facilitate easier and faster access to funds.
- III. **Increasing Loan Limits:** Reviewing the loan limits under MUDRA, especially for high-capital start-ups, to provide more substantial funding for business expansion.
- IV. **Support Systems for Start-ups:** Establishing mentorship programs and financial literacy workshops to guide start-ups on how to best utilize the loans and manage their finances.

REFERENCES:

1. R. P. P., & -, M. S. T. (2023). Performance Analysis of Pradhan Mantri Mudra Yojana (PMMY) and its Impact on NPA of the Banking Sector in India. *International Journal For Multidisciplinary Research*, 5(2). <https://doi.org/10.36948/ijfmr.2023.v05i02.4201>
2. Bharti, U., & Verma, M. (2023a). Pradhan Mantri Mudra Yojana. *Journal of Business Management and Information Systems*, 10(1). <https://doi.org/10.48001/jbmis.2023.1001007>
3. Bharti, U., & Verma, R. (2023b). Mudra Loan Disbursement Among Different Social Groups. *Journal of Business Management and Information Systems*, 10(02). <https://doi.org/10.48001/jbmis.2023.1002002>
4. Mudra Loan and Growth Path of Micro Small and Medium Enterprises in India. (2023). *Journal of Informatics Education and Research*. <https://doi.org/10.52783/jier.v3i2.352>
5. Rathee, S., & Aggarwal, D. (2023). Transition in Employability and Women Empowerment: Substantiates from Pradhan Mantri Mudra Yojana. *SEDME (Small Enterprises Development, Management & Extension Journal): A Worldwide Window on MSME Studies*, 50(3). <https://doi.org/10.1177/09708464231195918>
6. Sahu, T. N., Agarwala, V., & Maity, S. (2024). Effectiveness of microcredit in employment generation and livelihood transformation of tribal women entrepreneurs: evidence from PMMY. *Journal of Small Business and Entrepreneurship*, 36(1). <https://doi.org/10.1080/08276331.2021.1928847>
7. Shinde, M. D., & Jadhav, B. (2023). A Study On The Status Of Non-Performing Assets (Npa) In Selected Mudra Banks Before And After The Covid-19 Pandemic. *Journal of Pharmaceutical Negative Results*, 13(9).
8. Ministry of Finance (2018). Annual Report on MUDRA Scheme.
9. National Bank for Agriculture and Rural Development (NABARD). (2020). Micro Enterprises and Financial Inclusion.
10. Tamil Nadu State Planning Commission (2020). Report on the Impact of MUDRA Loan on Employment and Business Growth.

ACKNOWLEDGEMENT

I would like to express my sincere thanks to my supervising teacher Dr. P. Ramalingam, M.com Ph.D. Associate Professor and Research supervisor PG Department of Commerce, arignar anna govt arts & science college, cheyyar, Tiruvannamalai, for his wholehearted support and expert supervision. Without his guidance, motivation encouragement and blessings, I could not material my research work. The experience and knowledge I gained from my guide is enormous and exhaustive.

A STUDY ON MOBILE – WALLETS AMONG THE YOUTH: A STUDY PRE AND POST COVID – 19 SCENARIOS

Dr V Prabakaran, Assistant Professor and HOD, Department of Commerce (H) IAF, SRM Institute of Science and Technology, Vadapalani, Chennai.600026

Mr A Charles, PhD Scholar, Department of Commerce (H) IAF, SRM Institute of Science and Technology, Vadapalani, Chennai.600026

INTRODUCTION

India is rapidly transitioning towards a cashless society, leaving behind the era of heavy physical wallets in favour of virtual ones. Remember the days of carrying bulky wallets stuffed with cash, credit cards, and debit cards? Thanks to mobile wallets, those days are becoming a thing of the past. Today, payments and transactions are simpler and more convenient. Whether it's paying for products and services, transferring money, settling bills, or booking tickets, everything can be done effortlessly from the comfort of our homes. Gone are the long queues for securing “first day, first show” tickets to our favourite movies.

The Government of India imposed a nationwide lockdown in four phases starting on March 24, 2020, to curb the spread of COVID-19. Essential services like the food industry, petrol pumps, banks, and ATMs remained operational, while citizens were required to stay at home. Social distancing became a key measure, complemented by wearing masks, avoiding touching the face with unwashed hands, and regularly washing hands with soap and water for at least 20 seconds. During this period, digital transactions and electronic cash transfers were promoted extensively across the country, encouraging citizens to embrace the idea of a cashless economy.

Mobile wallets not only offer convenience but also enhance security, making them safer than traditional debit or credit cards. Physical cards with magnetic stripes can easily be read by magnetic scanners, leaving them vulnerable to theft. Additionally, swiping a card transmits sensitive data, such as account and card details, which can be intercepted by hackers. In contrast, digital wallets employ robust encryption for every transaction. Instead of transmitting actual card details, they generate a random sequence of numbers for each purchase. Even if these numbers are intercepted, they are useless to hackers. Moreover, accessing a mobile wallet requires personal identification, such as a PIN, fingerprint, or face recognition, ensuring another layer of protection.

With these advancements, mobile wallets are driving India closer to a secure and seamless cashless economy.

STATEMENT OF PROBLEM

The financial crisis triggered by the COVID-19 pandemic drastically reduced people's spending capacity, making it difficult for many to afford essential items like medicines, groceries, and vegetables. In response to these challenges, mobile wallet companies increased their efforts to attract customers by offering rewards, cashback, and coupons. This strategy piqued the interest of individuals who previously had limited awareness of such services. The current study focuses on the youth population (15-35 years) in the Chengalpattu district of Tamil Nadu, analyzing their perceptions of mobile wallets.

SIGNIFICANCE OF THE STUDY

The nationwide lockdown, enforced by the Government of India in four phases starting March 24, 2020, aimed to curb the spread of COVID-19. During this time, digital transactions and electronic cash transfers were heavily promoted to reduce physical interactions and promote social distancing. The avoidance of physical cash exchanges and visits to banks further encouraged mobile wallet adoption. This study seeks to explore any shift in consumer attitudes towards mobile wallets during this period. As mobile wallets are a relatively new and rapidly growing form of digital payment, their significance has increased, making this study both timely and relevant.

OBJECTIVES

The report, "COVID-19 and Customer Attitude Towards Mobile Wallets," is guided by the following objectives:

- To identify the most popular mobile wallets used by respondents.
- To analyse the factors driving mobile wallet adoption.
- To examine the factors limiting mobile wallet usage.

HYPOTHESIS OF THE STUDY

1. H1: There is a significant difference in customers' mobile wallet usage patterns before and after the COVID-19 outbreak.

2. H2: There is a significant relationship between respondents' profiles and their mobile wallet usage.

SCOPE OF THE STUDY

The study examines customer attitudes toward mobile wallets before and after the COVID-19 outbreak, focusing on youth aged 15-35 in Chengalpattu district. The respondents are limited to mobile wallet users within this demographic.

RESEARCH METHODOLOGY

DATA COLLECTION

Primary data was collected using a systematically designed Google Form, analyzed electronically with SPSS software.

RESEARCH DESIGN

This descriptive research study uses primary data for analysis.

SAMPLE DESIGN

A representative sample was drawn from the Chengalpattu district due to the impracticality of studying the entire population.

SAMPLE POPULATION

The target population consists of mobile wallet users aged 15-35 in Chengalpattu district.

SAMPLE FRAME

The sample frame includes mobile wallet users accessible via WhatsApp.

SAMPLING TECHNIQUE

Data was collected through a Google Form shared with respondents via WhatsApp.

SAMPLE SIZE

A total of 101 respondents completed the Google Form during the data collection period, constituting the study's sample size.

TOOLS USED FOR ANALYSIS

Descriptive and inferential statistical tools were employed. Descriptive analysis was conducted using percentage analysis, while inferential analysis utilized paired sample T-tests and regression analysis. Data visualization was presented through pie charts and bar diagrams.

LIMITATION OF THE STUDY

1.The study is limited to the Chengalpattu district; findings may vary in other regions.

2.The research relies on self-reported responses, which may be subject to bias.

REVIEW OF LITERATURE

V. Somaganesh, Sudha Ganesh, and M. Thangajesu Sathish (2020): Their study, "Impact of COVID-19 Outbreak on Digital Payments," examined shifts in buying behaviour during the lockdown and identified preferred online payment platforms. The study highlighted COVID-19 as a catalyst for increasing digitization in payment systems.

Dr. C. Revathy and Dr. P. Balaji (2020): Their paper, "Determinants of Behavioural Intention on E-Wallet Usage," explored factors like performance expectancy, effort expectancy, social influence, and perceived security influencing e-wallet usage during the lockdown.

Dr. Mehul P. Desai (2018): In "A Study on Preference of Consumers Towards Mobile Wallets in Surat City," the author identified high consumer awareness and emphasized security and privacy as key factors influencing mobile wallet adoption.

R. Latha and Dr. C. Vatchala (2019): Their study, "Exploring the Factors Influencing Mobile Wallet Usage Intention," revealed performance expectations, effort expectations, and trust as significant drivers of mobile wallet adoption in India.

CONCEPT OF MOBILEWALLETS

A mobile wallet (also known as an M-Wallet, digital wallet, or e-wallet) is a virtual platform that enables digital transactions, replacing the need for physical wallets. These wallets store payment information electronically, allowing users to make in-store or online payments seamlessly.

Mobile wallets are secure and convenient, requiring users to link a device and verify their identity to initiate transactions. Payments can be made simply by holding a smartphone over a reader and confirming via fingerprint, PIN, or face recognition.

MOBILEWALLETS USED IN INDIA

1.Google Pay

As its part of the Google ecosystem, they have scaled up their user base really quickly, in spite of being a late entrant. With Google Pay you can send money to friends, pay bills and buy online, recharge your phone. Since Google Pay works with your existing bank

account, which means your money is safe with your bank. There's no need to worry about reloading wallets and you don't need to do additional KYC- which is required for all the other apps.

2.PayTM

A widely-used semi-closed wallet supporting payments across various sectors like e-commerce, travel, and education.

3.PhonePe

Known for its user-friendly interface and versatility in UPI payments, bill payments, and money transfers.

4.Amazon Pay

Leverages Amazon's ecosystem, allowing payments on external merchant sites and offering ease for Amazon shoppers.

5.MobiKwik

Features include utility payments, shopping, and an expense tracker for managing budgets.

6.Yono by SBI

A multi-functional app from SBI supporting money transfers, bill payments, and bookings, available in 13 languages.

7.Citi Masterpass

A global digital wallet from Citi Bank and Mastercard ensuring faster and secure transactions.

8.ICICI Pockets

Offers virtual VISA cards for payments and supports multiple bank account linkages.

9.HDFC PayZapp

A one-stop solution for various payments, from mobile recharges to flight bookings.

10.BHIM Axis Pay

A UPI-based app for instant money transfers and recharges.

11.Oxigen

India's first non-banked mobile wallet approved by RBI for money transfers and utility payments.

12.Airtel Money

Offers virtual debit cards and features like recharges, bill payments, and merchant offers.

This growing ecosystem of mobile wallets highlights the shift towards a more secure, cashless economy in India.

DATA ANALYSIS AND INTERPRETATION

Descriptive Statistical Analysis

The collected data was processed and analyzed within the time bounded of the research plan. The data collected from 101 samples are analyzed carefully and interpretations are made accordingly. Diagrams such as pie chart, bar diagrams are used for this purpose.

TABLE 4.1

AGE

AGE	NO. OF RESPONDENTS	PERCENTAGE
15-20	16	15.8
20-25	35	34.7
25-30	38	37.6
30-35	12	11.9
TOTAL	101	100

Table 4.1 reveals the classification of respondents based on their age. Within the sample size of 101, 38% of respondents are belong to the age group of 25-30 years. Next 35% of the respondents belong to the age group of 20-25. 16% of respondents are within the age group of 15-20 years and 12% of respondents are within the age group of 30-35 years.

FIGURE 4.1

AGE

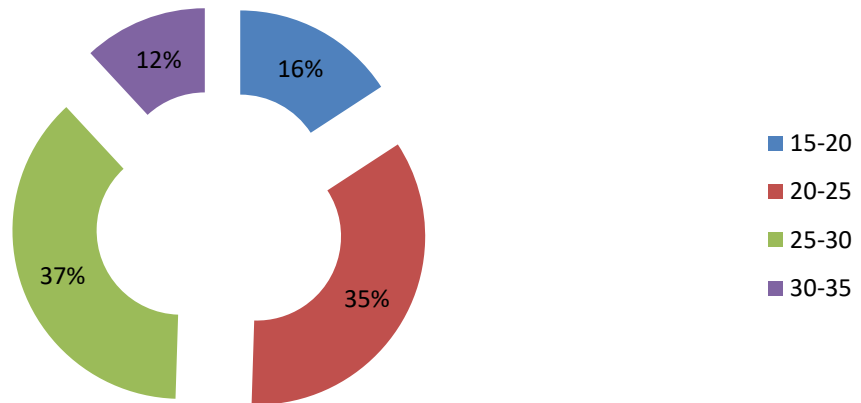


TABLE 4.2
MARITAL STATUS

MARITAL STATUS	NO OF RESPONDENTS	PERCENTAGE
Married	59	58.4
Unmarried	42	41.6
Total	101	100

Table 4.2 reveals the classification of respondents on the basis of marital status. Among 101 respondents, 59 % Of the respondents are married and 41.6 % are single.

FIGURE 4.2

MARITAL STATUS

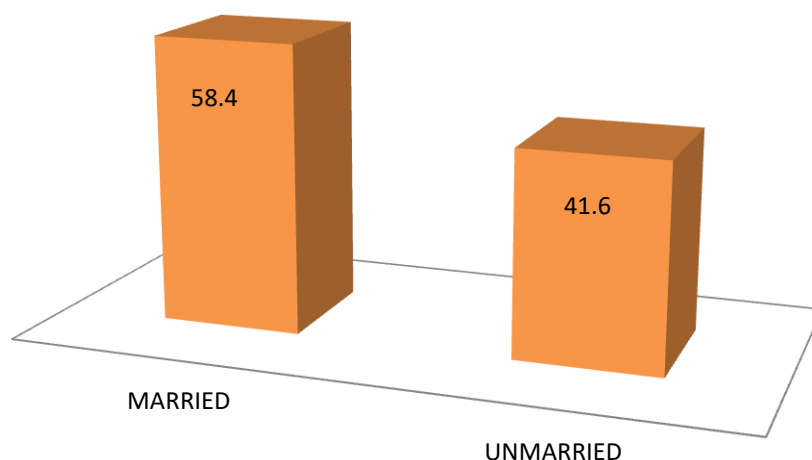


TABLE 4.3
EDUCATION QUALIFICATION

EDUCATONAL QUALIFICATION	NO OF RESPONDENTS	PERCENTAGE
School	7	6.9
Degree/Diploma	44	43.6
Post Graduate	40	39.6
Professional	10	9.9
TOTAL	101	100

Table 4.3 reveals the classification of respondents on the basis of their educational qualification. Among 101 respondents, 7 % of the respondents have school education, 44 % of the respondents have degree or diploma qualifications, 40 % of the respondents have post-graduation and 10 % of the respondents are professionals.

FIGURE 4.3

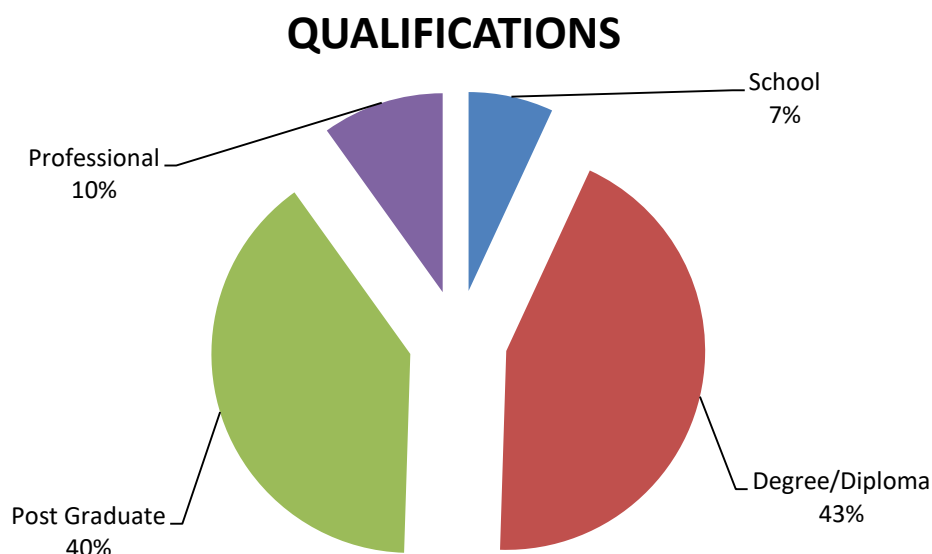


TABLE 4.4
OCCUPATION

OCCUPATIONS	NO OF RESPONDENTS	PERCENTAGE
HOME MAKER	4	4
GOVT., EMPLOYEE	14	13.9
PRIVATE EMPLOYEE	41	40.6
BUSINESS	4	4
STUDENT	35	34.7
OTHER	3	3
TOTAL	101	100

Table 4.4 reveals the classification of respondents on the basis of occupation. Among 101 respondents, 4 % of the respondents are home-makers, 14 % of the respondents are government employees, 41 % of the respondents are private employees, 4 % of the respondents are business persons, 35 % of the respondents are students and 3 % of the respondents fall to another category.

FIGURE 4.4

OCCUPATION

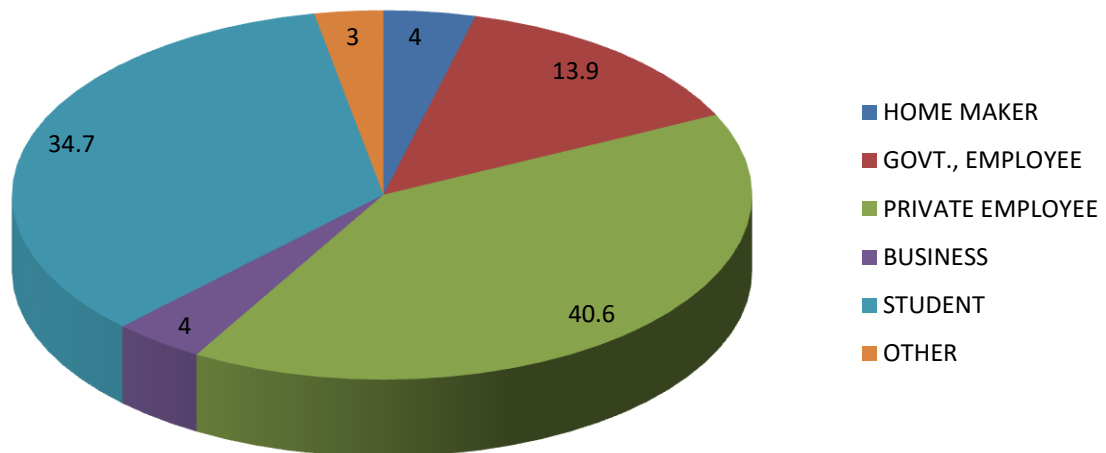
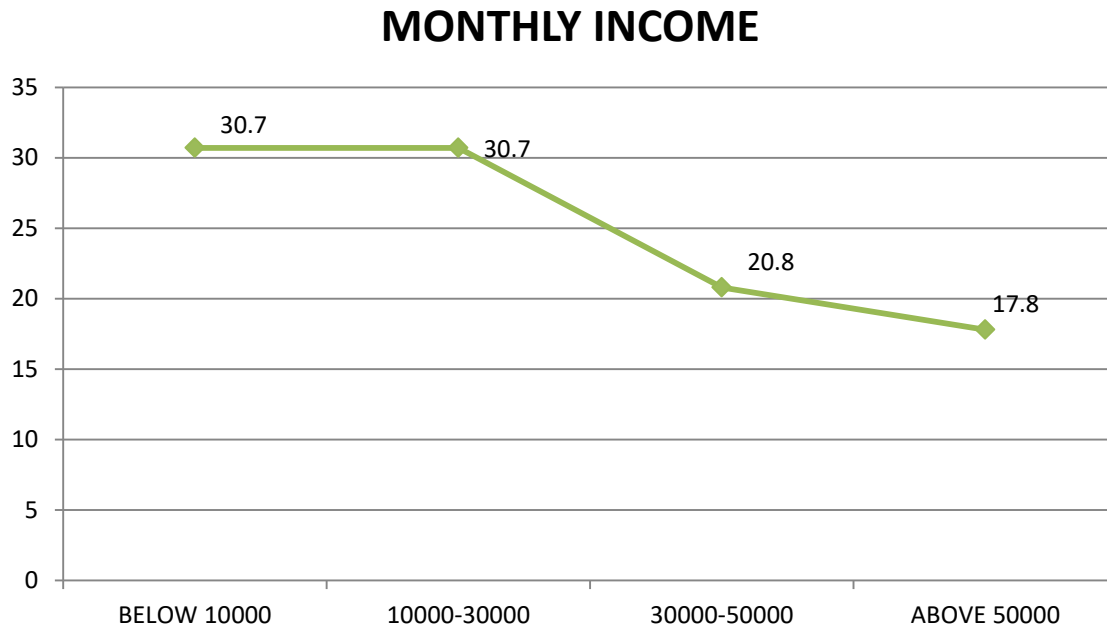


TABLE 4.5
MONTHLY INCOME

MONTHLY INCOME	NO OF RESPONDENTS	PERCENTAGE
BELOW 10000	31	30.7
10000-30000	31	30.7
30000-50000	21	20.8
ABOVE 50000	18	17.8
TOTAL	101	100

Table 4.5 reveals the classification of respondents on the basis of monthly income. Among 101 respondents, 30.7 % Of the respondents are earning an income below Rs. 10000 and within Rs. 10000- 30000, 21 % of the respondents are earning an income within Rs. 30000 50000 and 18 % of the respondents are earning an income above Rs. 50000.

FIGURE 4.5



Inferential Statistical Analysis

Inferential statistics are used to make inferences about the larger population based on the sample. Typically, inferential statistics deals with analysing two or more variables using the samples. There are different types of inferential statistics that are used. The type of inferential statistics used depends on the type of variable used for the study.

Paired Sample T Test

Paired sample t test is conducted by framing the following hypothesis.

HO: There is no significant difference in the customers' mobile-wallet usage pattern before and after COVID-19 outbreak.

HI: There is significant difference in the customers mobile-wallet usage pattern before and after COVID-19 outbreak.

Table 4.10
Paired samples statistics

	Mean	N	Std. Deviation	Std. Error Mean

Usage pattern before COVID-19 Outbreak	14.36	101	3.097	.308
Usage pattern after COVID-19 Outbreak	13.46	101	3.276	.326

Paired Samples Correlation

		N	Corr.	Sig.
Pair	Usage pattern pre COVID-19 & usage pattern post COVID-19 outbreak	101	.600	.000

Paired Samples Test

	PAIRED DIFFERENCES						T	DF	SIG. (2-TAIL ED)
	MEAN		STD. DEVIATI ON	STD. ERRO R MEA N	95% CONFIDENCE INTERVAL OF THE DIFFERENCE				
					LOWE R	UPPE R			
PAIR	PRE COVI D- 19— POST COVI D-19	.901	2.855	.284	.337	1.465	3.172	100	.002

The results of SPSS analysis shows that there is significant difference in the customers mobile-wallet usage pattern before and after COVID-19 outbreak. It is clear that the p value of .002 is lesser than .05. So the null hypothesis is rejected. This means that there is significant difference in the customers mobile-wallet usage pattern before and after COVID-19 outbreak.

Regression Analysis

Regression analysis is used to predict the value of one variable on the basis of other variables. In this study, the relation between profile of the respondent and usage of mobile-wallet is analysed.

H0: There is no significant relation between profile of the respondent and mobile wallet usage.

H1: There is significant relation between profile of the respondent and mobile-wallet usage.

TABLE 4.11
MODEL SUMMARY

MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
1	.433	.187	.153	.954

A. Predictors: (Constant), Monthly Income, Occupation, Educational Qualification, Marital status.

B. Dependent Variable: Usage of Mobile-Wallets.

ANOVA^a

MODEL		SUM OF SQUARE	DF	MEAN SQUARE	F	SIG.
1	Regression	20.134	4	5.034	5.480	.001 ^b
	Residual	87.256	95	.918		
	Total	107.390	99			

A. Dependent Variable: Usage of Mobile Wallets.

B. Predictors: (Constant), Monthly Income, Occupation, Educational qualification, Marital status.

COEFFICIENTS^a

MODEL	UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS	t	SIG.
	B	STD. ERROR	BETA		
(CONSTANT)	3.426	.670		5.110	.000
MARITALSTATUS	-.284	.236	-.135	-1.206	.231
EDUCATIONAL QUALIFICATION	-.313	.137	-.232	-2.282	.025
OCCUPATION	.087	.089	.107	.975	.332
MONTHLY INCOME	-.157	.103	-.164	-1.526	.130

A. Dependent variable: Usage

FINDINGS

1. The majority of the respondents belong to the age group of 25 - 30 years.
2. Out of the total respondents, 58.4 % of them are married.
3. 44 % of the respondents have degree diploma as their educational qualification.
4. 41% of the respondents are private employees.
5. Majority of respondents belong to two levels of income groups; namely 'below Rs. 10000 categories' and Rs. 10000 to 30000 categories.
6. About 67 % of the respondents are fully aware of the functionality of mobile-wallets.
7. Only 1 % of the respondents are completely unaware of mobile-wallets.
8. Google pay is the most preferred mobile-wallet for the majority of the respondents.
9. Majority of the respondents use mobile-wallets on a weekly basis.
10. Most of the respondents load Rs 500 - Rs 1000 in their mobile-wallet on a monthly basis.
11. Convenience is considered as the most important factor encouraging the usage of mobile-wallets.
12. Most of the respondents consider security of mobile payments as a factor limiting the usage of mobile-wallets.

13. The p value from table 4.10 reveals that there is significant difference in the customers' mobile-wallet usage pattern before and after covid-19 outbreak. Before the outbreak, most of the respondents used mobile-wallets for recharging purposes.

14. However, after the outbreak, most of the respondents used mobile-wallets for utility purposes.

15. Based on the model summary table, the adjusted R square is .153. It means that 15.3% of mobile-wallet usage is influenced by the marital status, educational qualification, occupation and monthly income.

SUGGESTIONS

(1) Majority of the respondents are fully aware of the functionality of mobile-wallets.

(2) However, certain percentage of respondents are partially or fully unaware of mobile-wallet functionality. Thus, the mobile-wallet app companies should organize certain programmes to create awareness about the functionality of various mobile-wallets available in the country today.

(3) Most of the customers use mobile-wallets for the purpose of recharging, utility and bill payments. Mobile-wallets can be used beyond that by both customers and various companies.

(4) The customers can use it to redeem loyalty rewards, get movie tickets, use gift cards, board airplanes, etc. The companies can use mobile-wallets for advertising purposes.

(5) Customers are facing certain obstacles or problems while making payments through mobile-wallets. It should be carefully observed, analysed and settled.

(6) There are many payment apps and mobile-wallets. Mobile-wallet apps should be used only with trusted gateways. Select the app after thoroughly checking the details such as number of downloads and reviews which is provided by the used customers in the app store.

(7) This will help in ensuring the security of savings.

CONCLUSION

Globally, payment methods have seen drastic changes in the recent decade. The emergence of electronic world and the rise of technology have forced to invent new payment methods like mobile wallets. This new payment gateway is one of the fastest growing technologies in India. The wave of mobile wallet has spread so far that even banks have also started launching their own mobile wallets. Mobile wallets will go far beyond mobile payments by enabling smarter and more efficient experiences through the delivery of value-added services. The COVID-19 pandemic has contributed to this rapid shift in people's

mindsets, needs and adoption habits. The notable one among it is the extensive use of mobile-wallets during the corona virus outbreak.

The present study concludes that Google pay is the most preferred mobile wallet and the main factor for using mobile wallet is convenience. Most of the respondents consider security of mobile payments as a limiting factor. It is also found out that respondents are fully aware of the functionality of the mobile wallets. The study reveals that there is notable difference in the customers' mobile-wallet usage pattern before and after covid- 19 outbreak. The study discloses that there is relation between the profile of the respondent (ie. education, occupation, monthly income etc) and mobile wallet usage.

BIBLIOGRAPHY

JOURNALS

- International Journal of Business and Management (JBGM)
- International Journal for Innovative Research in Multidisciplinary Field (IJIRMF)
- International Journal of Innovative Research in Management Studies(IJIRMS)
- IUJ Journal of Management
- International Journal of Research and Analytical Reviews(IJAR)
- Journal of Modern Management and Entrepreneurship (JIMME)
- JRD0-Journal of Business Management
- International Journal of Bank Marketing(IJBM)
- International Journal of Scientific and Engineering Research
- International Journals of Advanced Research in Computer Science and Software Engineering
- Journal of Management (JOM)
- International Journal of Basic and Applied Research

WEBSITES

- <https://www.socialbeat.in/blog/top-10-mobile-wallets-in-india/>
- <https://magnetoitsolutions.com/blog/year-of-mobile-wallets-in-india>
- <https://e2logy.com/blog/pros-and-cons-of-using-a-mobile-wallets/>

EFFECTS OF SOCIAL MEDIA ON MENTAL HEALTH

JAGADESH KUMAR N

Student, II - M.B.A, DEPARTMENT OF MANAGEMENT STUDIES,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science And Technology, Avadi

E-mail: vtp3987@veltech.edu.in, contact: 9092334248

Dr. K. Ravishankar

Professor, Department of Management studies,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi

ravimba20082@gmail.com

ABSTRACT

The use of social media affects the psychological well-being of people belonging to the different kinds of backgrounds based on emotional response, behavioral tendency, and coping mechanisms. This study is survey-based and gathered data from 147 respondents by using a mix of convenience sampling and questionnaires. This study categorizes data according to age, gender, income, and education. In this way, usage patterns and psychological impacts of social media are analyzed to understand how they are utilized in modern societies and individuals' lives. It was found that 49.7% of the participants are in the age group of 20-30, and with almost equal gender distribution. Self-concept and perceived social norms result to be good predictors of mental health outcome, accounting for 14.1% in variance. Main statistical methods, such as correlation and regression analysis, assert there is a more meaningful relationship between the social media norms and mental health, though age and hours spent on social media do not have an explicit association. Social media is also at the same time the cause of anxiety, low self-esteem and stress while fostering a sense of community among its users. The study underscores the need to implement some specific mental health intervention programs and educational programs that promote better social media practice. This study has immense practice value because it suggests inroads toward incorporating more customized contents that would revolve around offering mental health support features in addition to public campaigns to limit the dangers associated with the overexposure to social media.

This essentially helps understand how to construct practical strategies which make the most of the benefits of digital interaction while facing its challenges.

Keywords: Social media, Mental health, Self-perception, Social Norms, Behavior Intention, Emotional Response, Coping Mechanism.

1. INTRODUCTION

1.1 BACKGROUND

In the last twenty years, the role of social media has raised and has altered the modes of communication and even the self-concept of everyone across the globe. Almost each social media app especially the young generation embraces it, for instance, Facebook, Instagram, Twitter, Tik Tok, and Snapchat among others. The very primary benefits of social networks are: helping individuals to connect with each other despite distances, forming communities with shared interests, and providing enormous amounts of information, news, and entertainment within seconds. During this reference period, social media where such adolescents indulge in self-pleasure, social interactions and active participation with peers is quite an important platform.

However, there has been some apprehension due to the growing trend of using social media and its possible adverse effects on mental health. Studies show that excessive use of these sites can lead to an increase in such psychological conditions, such as anxiety depression and even loneliness. The culture of social media comparison encourages and deepens their sense of inadequacy and self-doubt because users are bombarded with idealized images of lifestyles and looks that do not correlate with reality. It has also given rise to concepts such as FOMO and social media envy that further illustrate how emotionally costly it is to be perpetually connected and visible online.

The social media dimension is rather paradoxical in that it promotes both social bonding and, at times, intensifies the conflicts. Conflict issues or negative social interactions include bullying, cyber harassment, and bullying involving the distribution of harmful materials. The aforementioned issues become more pronounced among adolescents who may struggle to manage such environments effectively.

Social media is not only said to have psychological effects; negative consequences have also been measured in terms of physical health. These include interference with sleeping patterns, less engagement in strenuous activities, and increased long hours spent inactive. Sleeping patterns may also be altered by the excessive consumption of screens, mainly at night, which leads to sleeping problems. It is also noted that sleeping problems may trigger other conditions such as depression and anxiety sleeping patterns may also have negative impacts on health.

People's perceptions and attitudes toward the use of social media are also affected by cultural and socioeconomic factors. Social norms, cultural practices, and even the availability of such technologies imbalance the level of social media usage and how it affects mental health. These attitudes and beliefs also shape the very definition of the problem and how best to address it hence the need to appreciate these issues, respecting peoples diversities in their histories and practices.

There are certainly immense benefits to the use of social networking sites in terms of the ability to keep in touch with family and friends, being creative, or finding one's 'community', however, the social media and mental health relationship is not a simple 'good' or 'bad' phenomenon. In order to understand healthy use of social media and techniques which can be used to protect people from harm especially children, it is important to understand how the way one uses social media, psychological wellbeing or lack thereof, and society at large interrelate.

1.2 THEORETICAL BACKGROUND

Social Media has given a huge kick to the way people communicate, and also had Psychological impacts on individuals. The theoretical framework of this study is the duality (of social media: connect/facilitate self-expression vs. The risk to mental health) This piece relies on social comparison theory to perform its analysis, explaining the way people internalize the perceptions of themselves compared to the digitalized identities that others present about themselves online leading to feelings of unworthiness and undervaluing themselves along with anxiety.

FOMO and social media envy are a few examples of some psychological weights to be always-online, always-visible. From a behavioral perspective, the eating behavior of the users is addictive (who keeps on trying to get reinforced by what he/she receives from likes, comments etc.) Perceived norms and self-concept are what define the psychological side of it. Social Media Positive Reinforcement Fosters a Sense of Belonging, but Studies Showing Cyberbullying,

Harassment Stress Students Less in Adolescence similar Process Based on Cultural background and socioeconomically standing of using social media. The access to and different cultural norms, as well individual coping mechanisms determine how social media affects mental health. Finally, the interplay between too much screen time, disrupted sleep and sedentary behaviors echoes this holistic model of well-being in both psychological and physical domain.

2. METHODOLOGY

2.1 The Measurement Scale

Structured questionnaire was used for data collection related to this study; questionnaire items were based on a five-point Likert scale capturing the perception and experiences of social media usage in psychological terms from the respondents. In this scale participants could make a different level of agreement or disagreement to statements about their emotional, behavioral responses and coping with a Likert scale ranging from 1 (Strongly Disagree) to 5(Strongly Agree). This scale is constructed to measure the more qualitative variables of self-concept, social norms, anxiety, stress and sociocratic community support. With the help of Likert scale, uniform data could be collected which would maintain consistency and reliability of responses coming from various demographic groups.

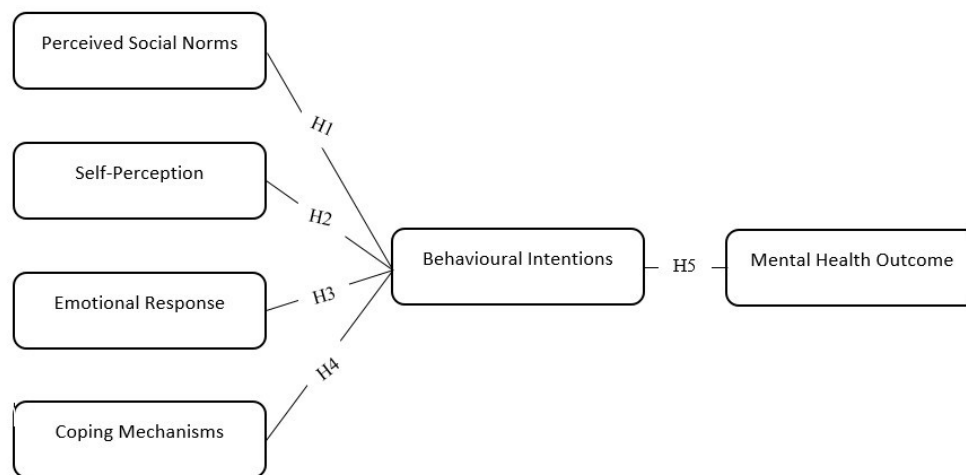
2.2 The Survey

A pilot study of 16 respondents was undertaken to validate and reliability test the initial questionnaire. Feedback from the pilot study also provided areas of potential improvement, which were used to refine wording in questionnaire to improve clarity and fit. This final set of questions, as a result, was developed based on learnings specifically derived from the pilot study and how these questions could adequately measure the objectives of the study. It was done through a convenience sampling in and around Chennai. We combined in-person survey with a mix of online Google Forms, which was convenient and efficient. They collected 147 responses where the response rate has been highly encouraging counting the convenience sampling and referrals and word of mouth among friends. This approach yielded a data-rich but targeted and generalizable sample of respondents that we used to inform the psych effect of social media on diverse demographic groups.

2.3 The Survey Participants

Data of 147 respondents were collected (75 males, 51.02%; and 72 females, 48.98%). It was further found that the age distribution was: 12 (8.16%) < 21 years, 73(49.66%) 20–30 years, 46 31–40 years old; and finally 10 respondents aged over 40 years old. The following was the distribution of income among the sample are 30.61% (45 respondents) with an annual income of ₹0–₹2,00,000; 23.13% (34 respondents) with an annual income of ₹2,00,001–₹4,00,000; 33.33%(49 respondents) with an annual income of ₹4,00,001–₹8,00,000; finally 12 respondents have an annual income over ₹8,00,000. Occupational status of the respondents is 49 respondents (33.33%) are students, 76 respondents (51.70%) are employed; 8 respondents are unemployed and 14 respondents (9.50%) as business professionals. This variety demographic distribution shed light upon the diverse usage as well as psychological consequences of social media on people of all ages, income levels and occupations. The other reason is that balanced gender and multiple backgrounds of the respondents made the study more robust in nature as well increased its field for applicability.

2.4 Research Model



2.5 MEASURES

2.5.1 PERCEIVED SOCIAL NORMS

Nur and Dewanto (2022) highlight that perceived social norms (PSN) significantly influence behavioural intention (BI) by reflecting the social acceptability and encouragement of a given behaviour. Within the Theory of Planned Behaviour, subjective norms, attitudes toward behaviour, and perceived behavioural control collectively shape intentions, which are powerful predictors of actual behavior. Social pressures from significant others encourage adoption, particularly when

moderated by hedonic values that enhance the emotional appeal of the service. Ru, Wang, and Yan (2018) Highlights that Perceived social norms, which include subjective injunctive norm and subjective descriptive norm, influence individual behavior. Subjective injunctive norm refers to behaviours that others approve or disapprove of, while subjective descriptive norm reflects behaviours exhibited by significant others in a social environment. Both norms affect an individual's intention to engage in certain behaviours, such as energy-saving. Higher SIN and SDN lead to a stronger likelihood of adopting energy-saving behaviours. Hameed, Qayyum, and Khan (2024) Highlights that Perceived social norms refer to the influence of societal expectations or pressures on individual behavior. In the context of mobile learning, these norms can shape students' behavioural intentions, influencing whether they adopt mobile learning tools. Social norms often act as a moderating factor, affecting the relationship between attitudes and behavioural intentions. These norms can impact the perceived value, trust, and attitudes toward mobile learning, affecting overall adoption.

Perceived Social Norms → Behavioral Intentions

H1: Perceived social norms have an influence over the Behavioral Intentions.

2.5.2 SELF-PERCEPTION

Kotamena, Sinaga, Sudibjo, and Hidayat (2024) Highlights that Self-congruity (SC) is the alignment between an individual's self-image and their perception of a product or brand. It plays a key role in shaping decisions, as people tend to select products or services that resonate with their self-concept. This concept is applicable in education, where students act as consumers when choosing majors. Self-congruity influences their choice of a major, as students are motivated to select a field that reflects their personal identity and how they wish to be seen by others. Leung, Zhong, and Sun (2025) Highlights the concept of self-perception towards behavioural intention in the passage revolves around how older adults' identity and experiences influence their responses to influencers with different age cues. Social comparison theory suggests that older individuals may experience both integration and contrast when comparing themselves to influencers of different ages. These processes influence their travel intentions, with older travellers more likely to engage with influencers who align with their desired identity or challenge their age-related constraints. Peng, Lock, and Ali Salah (2024) discuss the opportunities and challenges of automated visual analysis for studying social media effects. Self-perception towards behavioral

intention in visual social media content emerges from users' interactions with visual themes that influence their attitudes, emotions, and actions. Exposure to idealized or objectified body images, for instance, can impact self-concept and trigger anxiety, particularly in young women, harming mental well-being.

Self-perception → Behavioral Intentions

H2: Self-perception have an influence over the Behavioral Intentions.

2.5.3 EMOTIONAL RESPONSE

Shuqair, S., Filieri, R., Viglia, G., Mattila, A. S., & Pinto, D. C. (2024) states emotional responses play a crucial role in shaping behavioral intentions, particularly in social media marketing. The studies highlight how emotional expressions influence consumer engagement and purchase intent. Emotional contagion serves as the key mechanism linking emotional expressions to consumer behavior by transferring feelings from the influencer to the audience. According to Liu-Lastres, Guo, and Liu (2024) emotional responses play a pivotal role in shaping behavioral intentions in the hotel industry, especially during crises like the COVID-19 pandemic. Guided by the dual-process theory, emotional appeal messages, which evoke feelings and subjective experiences, have been shown to enhance booking intentions for luxury hotels. Putri and Putra (2024) examined the popularity of influencers positively influences emotional attachment, which enhances purchase intentions. Emotional attachment serves as a mediator between influencer popularity and purchase decisions, reinforcing trust and connection with the audience. Emotional bond not only drives immediate sales but also fosters lasting loyalty, emphasizing the importance of strategic influencer selection and content personalization in marketing efforts

Emotional Response → Behavioral Intentions

H3: Emotional Response have an influence over the Behavioral Intentions.

2.5.4 COPING MECHANISMS

Hameed, I., Akram, U., Khan, Y., Khan, N. R., & Hameed, I. (2024) explores the role of coping mechanisms in shaping tourists' behavioral intentions toward mobile payment systems. Controllability positively impacts intentions as users feel capable of managing challenges during mobile payment system usage. The coping mechanisms align with behavioral intention by

influencing tourists' decisions to adopt and recommend mobile payment systems for travel-related bookings. Haug, M., Reiter, J., & Gewald, H. (2024) describes how individuals experience stress when there is an imbalance between stressors and available resources. Coping strategies are employed to manage this stress, and they can be categorized as emotion-focused or problem-focused. The coping mechanisms are critical in managing stress and maintaining a balance between online engagement and their overall behavior and intentions. Wong, J., Yi, P. X., Quek, F. Y., Lua, V. Y., Majeed, N. M., & Hartanto, A. (2024) highlights how social media platforms offer varied functionalities such as communication, entertainment, and media sharing which can affect mental health. Regarding the impact of social media on well-being, suggesting that coping mechanisms may play a role in moderating the relationship, which influence behavioral intentions towards social media use, especially under stress.

Coping Mechanism → Behavioral Intentions

H4: Coping Mechanism have an influence over the Behavioral Intentions.

2.5.5 MENTAL HEALTH OUTCOMES

Huang, Silalahi, and Eunike (2024) explains the concept of behavioral intention in the context of mental health outcomes can be understood through the consumer's engagement with tourism-related content on TikTok, which influences their intentions to visit destinations. The positive emotional engagement with content contributes to mental well-being, influencing decision-making and fostering healthy psychological outcomes tied to leisure activities. Kim et al. (2024) explains how increased exposure to health exercise content on YouTube enhances cognitive, skill, and evaluative components of digital health literacy, which subsequently boosts health exercise behavior intention. Stronger connections with YouTube creators amplify the effect of digital health literacy on the intention to exercise. Mosharrafa, Akther, and Siddique (2024) explains how social media addiction, particularly through platforms like social media, positively impacts mental health, which in turn mediates the relationship between social media addiction and academic performance. Behavioral intentions to improve academic performance may be influenced by the mental health outcomes associated with social media use.

Behavioral Intentions → Mental Health Outcomes

H5: Behavioral Intentions have an influence over the Mental Health Outcomes.

Table 1: Measures used in analysis

Item	Questionnaire Item
PSN1	I often feel that I need to conform to the Standards set by people I follow on social media.
PSN2	There is a lot of pressure to present myself in a certain way on social media.
PSN3	I believe that the behavior of people I follow on social media sets a standard I need to meet.
SPR1	I feel that my social media presence does not accurately represent who I am.
SPR2	I often portray a different version of myself on social media than in real life.
SPR3	There is a discrepancy between how I see myself and how I portray myself on social media.
EMR1	I feel anxious when my social media posts do not receive the attention I expect.
EMR2	I experience feelings of guilt or discomfort when I post something that does not align with my true self.
EMR3	Seeing others' posts on social media often makes me feel inadequate.
BHI1	I am likely to change my behavior to fit in better with social media trends.
BHI2	I have considered reducing my social media usage because it makes me feel uncomfortable.
BHI3	I often think about adjusting my online presence to avoid dissonance.
CPM1	I find myself rationalizing my social media behavior to reduce discomfort.
CPM2	I seek validation through likes and comments to alleviate any negative feelings.
CPM3	I follow more accounts that align with my real beliefs to reduce dissonance.
MHO1	My mental well-being is negatively affected by the need to conform on social media.
MHO2	I experience higher levels of stress and anxiety due to my social media interactions.
MHO3	Social media usage has impacted my self-esteem negatively.

3. RESULTS AND DISCUSSION

3.1 Model – I: Influence of Perceived Social Norms, Self-perception, Emotional Response, Coping Mechanism on Behavior Intention:

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Coping mechanism, Emotional response, Perceived social norms, Self perception		Enter

a. Dependent Variable: Behaviour intention

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501 ^a	.251	.230	.756

a. Predictors: (Constant), Coping mechanism, Emotional response, Perceived social norms, Self perception

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.262	4	6.816	11.909	.000 ^b
	Residual	81.265	142	.572		
	Total	108.528	146			

a. Dependent Variable: Behaviour intention

b. Predictors: (Constant), Coping mechanism, Emotional response, Perceived social norms, Self perception

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.941	.297		3.170	.002
	Perceived social norms	.236	.081	.239	2.925	.004
	Self perception	.082	.076	.092	1.081	.282
	Emotional response	.165	.079	.170	2.097	.038
	Coping mechanism	.195	.084	.192	2.329	.021

a. Dependent Variable: Behaviour intention

Inference:

The p-values in the coefficient table indicate that there is a significant relationship between Perceived Social Norms, Self-perception, Emotional Response, and Coping Mechanism on Behavior Intention. The F-value in the ANOVA table is 11.909, which is greater than 1.96, suggesting that the influence of Perceived Social Norms, Self-perception, Emotional Response, and Coping Mechanism on Behavior Intention is more. The influence of Perceived social norms on Behavior Intention 23.9% stronger, the influence of Self-perception on Behavior Intention is 9.2%, the influence of Emotional Response on Behavior Intention is 17% and the influence of coping mechanism on Behavior Intention is 19.2%. The value of R Square is 0.251 which means that about 25.1% of the variance in the mental health outcome is explained by the estimated regression model that uses Perceived Social Norms, Self-perception, Emotional Response, and Coping Mechanism on Behavior Intention.

The multiple regression equation is:

$$Y=0.941+0.236X_1+0.082X_2+0.165X_3+0.195X_4$$

The above equation denotes that for every unit increase in Perceived social norms, Behavior Intention increases by 0.236, for every unit increase in Self-perception, Behavior Intention increases by 0.082, for every unit increase in Emotional Response, Behavior Intention increases by 0.165 and for every unit increase in coping mechanism, Behavior Intention increases by 0.195.

3.2 Model – II: Influence of Behavior Intention on Mental Health Outcome:

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Behaviour intention ^b		Enter

a. Dependent Variable: Mental health outcomes

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.218 ^a	.047	.041	.812

a. Predictors: (Constant), Behaviour intention

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.749	1	4.749	7.208	.008 ^b
	Residual	95.520	145	.659		
	Total	100.269	146			

a. Dependent Variable: Mental health outcomes

b. Predictors: (Constant), Behaviour intention

Coefficients^a

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.149	.239		8.994	.000
	Behaviour intention	.209	.078	.218	2.685	.008

a. Dependent Variable: Mental health outcomes

Inference:

The p-values in the coefficient table indicate that there is a significant relationship between Behavior Intention on Mental Health Outcomes. The F-value in the ANOVA table is 7.208, which is greater than 1.96, suggesting that the influence of Behavior Intention on Mental Health Outcomes is more. The influence of Behavior Intention on Mental Health Outcomes is 21.8%. The value of R Square is 0.047 which means that about 4.7% of the variance in the mental health

outcome is explained by the estimated regression model that uses Behavior Intention on Mental Health Outcomes.

The multiple regression equation is:

$$Y=2.149+0.209X_1$$

The above equation denotes that for every unit increase in Behavior Intention, Mental Health Outcomes increases by 0.209.

4. LIMITATION

The respondents towards this study is limited since it is collected through Google forms and through referrals only. The study does not represent the behavior of the whole, since the changes in the field of electronics and the usage of the social media is changing every minute. The results are purely based upon the Responses provided by the respondents which is subject to their own beliefs and opinion. The limited duration of the study may restrict the depth of the data collection and the findings of the study. Due to time and resource constraints this study has a relatively small sample size that may affect the applicability of the results.

5. CONCLUSION

This study examines how the variables like Perceived Social Norms, Self-perception, Emotional Response, and Coping Mechanism influence on the Behavior Intention and towards the mental health outcome. The R-Square values for the regression models are relatively low, only explaining 25.1% of the variance in Behavior Intention and 4.7% of the variance in Mental Health Outcomes by the independent variables. There is a relationship among the variable in a very minimalistic portion which may be due to the awareness of the current youngsters regarding the using of the social media and the viewer have been well educated of the negative side of the social media so as they have maintained a health relationship with their social media usage. While this study provides results also it highlights the need for future research to include additional factors that have been missed in this study.

REFERENCES:

Nur, T., & Dewanto, P. A. (2022, September). The influence of attitude toward behavior, subjective norms, perceived behavioral control on the behavioral intention of using PayLater apps moderated by financial literacy and hedonic value. In 2022 10th International Conference on Cyber and IT Service Management (CITSM) (pp. 1-6). IEEE.

Ru, X., Wang, S., & Yan, S. (2018). Exploring the effects of normative factors and perceived behavioral control on individual's energy-saving intention: An empirical study in eastern China. *Resources, Conservation and Recycling*, 134, 91-99.

Hameed, F., Qayyum, A., & Khan, F. A. (2024). A new trend of learning and teaching: Behavioral intention towards mobile learning. *Journal of Computers in Education*, 11(1), 149-180.

Kotamena, F., Sinaga, P., Sudibjo, N., & Hidayat, D. (2024). Student use behavior in determining majors: Is it determined by self-congruity, social influence, information usefulness, through mediating information adoption, and behavioral intention. *Computers in Human Behavior Reports*, 14, 100383.

Leung, X. Y., Zhong, Y. S., & Sun, J. (2025). The impact of social media influencer's age cue on older adults' travel intention: The moderating roles of travel cues and travel constraints. *Tourism Management*, 106, 104979.

Peng, Y., Lock, I., & Ali Salah, A. (2024). Automated visual analysis for the study of social media effects: Opportunities, approaches, and challenges. *Communication Methods and Measures*, 18(2), 163-185.

Shuqair, S., Filieri, R., Viglia, G., Mattila, A. S., & Pinto, D. C. (2024). Leveraging online selling through social media influencers. *Journal of Business Research*, 171, 114391.

Liu-Lastres, B., Guo, Y., & Liu, H. (2024). Hotel crisis communication on social media: effects of

message appeal. *Anatolia*, 35(1), 56-66.

Putri, N. A., & Putra, H. B. (2024). The effect of social-media-influencer-popularity on purchase-intention of a fashion-product through emotional attachment. *Jurnal Mantik*, 7(4), 3282-3291.

Hameed, I., Akram, U., Khan, Y., Khan, N. R., & Hameed, I. (2024). Exploring consumer mobile payment innovations: An investigation into the relationship between coping theory factors, individual motivations, social influence and word of mouth. *Journal of Retailing and Consumer Services*, 77, 103687.

Haug, M., Reiter, J., & Gewald, H. (2024). Content creators on Instagram—How users cope with stress on social media. *Telematics and Informatics Reports*, 13, 100111.

Wong, J., Yi, P. X., Quek, F. Y., Lua, V. Y., Majeed, N. M., & Hartanto, A. (2024). A four-level meta-analytic review of the relationship between social media and well-being: A fresh perspective in the context of COVID-19. *Current Psychology*, 43(16), 14972-14986.

Huang, S. C., Silalahi, A. D. K., & Eunike, I. J. (2024). Exploration of Moderated, Mediated, and Configurational Outcomes of Tourism-Related Content (TRC) on TikTok in Predicting Enjoyment and Behavioral Intentions. *Human Behavior and Emerging Technologies*, 2024(1), 2764759.

Kim, J., Youm, H., Kim, S., Choi, H., Kim, D., Shin, S., & Chung, J. (2024). Exploring the Influence of YouTube on Digital Health Literacy and Health Exercise Intentions: The Role of Parasocial Relationships. *Behavioral Sciences*, 14(4), 282.

Mosharrafa, R. A., Akther, T., & Siddique, F. K. (2024). Impact of social media usage on academic performance of university students: Mediating role of mental health under a cross-sectional study in Bangladesh. *Health Science Reports*, 7(1), e1788.

GLOBAL TRADE DYNAMICS: A TRADE WAR TENSION BETWEEN US AND CHINA

/Sampath Kumar 1/ Dr Khaja Mohinuddin J 2/Sushma Premkalal3/

/Assistant Professor 13/ Associate Professor 2/

sampathkumarbms57@gmail.com1/2/sushmapremkalal10@gmail.com3/

/DMS- BITM, BALLARI 123/

/BITM COLLEGE, ALLIPUR, BALLARI- 583103/

ABSTRACT

A major change in the dynamics of global trade, the trade war between the US and China has a big impact on market stability, international relations, and economic growth. With an emphasis on the effects on the respective economies and the knock-on effects on other countries, this descriptive study examines the complex ramifications of the trade dispute between the US and China. The analysis looks at how increases in tariffs and retaliatory actions affect productivity, foreign investment, imports, exports, and sectoral outputs. A vital resource for comprehending the ramifications of protectionist trade policies and their extensive impacts on international economic environments is this study.

Keywords: US-China Trade War, Global Economy, Tariffs and Retaliation, Economic Interdependence, Trade Policy Impacts

INTRODUCTION

A trade war started by the United States would severely harm the global economy as protectionist measures intensify. Nations that impose tariffs and those facing tariffs would suffer economic welfare losses, whereas nations not directly involved would face indirect harm. Should tariffs stay enforced, economic output losses would be enduring, as altered price signals would hinder the specialization needed to optimize global productivity. In 2018, the two largest economies in the world, the USA and China, implemented multiple rounds of import tariffs on one another, which led to the US–China trade war. In March 2018, the USA imposed import tariffs on steel and aluminium, prompting China to respond in April with tariffs on aluminium, meat, fruit, and wine coming from the USA. Other nations that export steel and aluminium to the USA also imposed import tariffs on the USA in response. The trade conflict escalated between the USA and China, leading the USA to apply extra 25% tariffs on \$50 billion worth of imports from China; \$34 billion in July and \$16 billion in August 2018. In a tit-for-tat move, China responded with 25% tariffs on \$50 billion worth of imports from the USA. In September, an additional escalation prompted the USA to implement 10% tariffs on another \$200 billion worth of imports from China. In retaliation, China imposed tariffs on another \$60 billion worth of US imports. Toward the end of 2018, the USA declared that the 10% tariffs on \$200 billion worth of imports from China would rise to 25% in January 2019, with this increase implemented in May 2019. Additionally, China postponed the extra tariffs on \$60 billion of US exports until June 2019.

impact of the US—Even though trade divergence from the United States and China helps other nations' real GDPs slightly, global real GDP declines by \$374 billion (−0.3%).(Itakura, 2020).

LITERATURE REVIEW

(Fajgelbaum P. G., 2023) The study investigates "bystander countries'" reactions to the US significant tariffs on goods traded between these two countries as a result of the China trade war. Some nations, such as Vietnam, Thailand, and Mexico, have successfully increased their exports to the United States, according to the research US by offering substitutes for Chinese goods in international markets. Others that provided complementary goods to Chinese exports, such as Colombia and Ukraine, on the other hand, experienced difficulties. (Regional Winners and Losers, 2023) The trade war's unequal effects on different regions' economies were studied by the Peterson Institute for International Economics. Although exports from Southeast Asia to the US and EU increased, American agricultural exports were greatly impacted by China's retaliatory tariffs. This redistribution emphasized the importance of regional trade agreements in reducing the effects of tariffs and exposed weaknesses in global supply chains. (Schwarz et al., 2023) The economic adjustments stemming from the US-China trade war, highlighting changes in global supply chains and trade patterns. It explores country-specific substitution elasticities in trade and implications for industrial policies. (Rengifo, 2023) The wider economic effects of the trade war, including the reaction of Western countries, are examined in this article. The CHIPS Act, a countermeasure to lessen dependency on Chinese semiconductor manufacturing, is also covered. (Reyes-Heroles et al., 2023) With an emphasis on tariff-induced trade diversion to other Asian nations, this study examines the effects of tariffs imposed during the trade war on global supply chains. (Devarajan et al., 2023,) With a focus on strategic changes in trade policies, this paper assesses how emerging markets have managed trade and technology between the US and China. (Lugovskyy, 2023) The direct and indirect costs of the trade war to the economies of the US and China, as well as the ripple effects on international trade, are quantified in this study. (Bartelme et al., 2023) The impact of the US-China trade war on global trade partnerships and the creation of new trade agreements is examined. (Core, 2022)An in-depth examination of the economic and geopolitical factors underlying the US-China trade war is given in this article.

It explores China's noncompliance with WTO obligations, the reasons behind Trump's tariff policies, and the change in US trade policy under the Biden administration. The article also addresses the wider effects of these conflicts on international supply chains and the economic ties between the US and China. (Fajgelbaum G. K., 2022) The article examined how the US-China trade war has affected trade reallocations worldwide. Their results show that although trade between the US and China decreased (e.g. G. Bystander countries saw a 3% increase in global trade as they filled the void left by tariffs, while US exports to China decreased by 26.3 percent. Countries with substantial foreign direct investment and robust trade agreements saw higher export gains

Relevance of the Study

As the two big trade giants i.e. US and China are freely opened up to capture the major part of the world trade which indirectly dictating the world economy has impact on emerging economies infant to space in the world trade picture. This essence in Trum 2.0, war effects in West and Central Asia, trade changes in South Asia, and agendas of US and China in world trade and economy have quite essential to trace the trade war tensions in global trade flow. This is definitely impact on emerging economies and significant to identify the India's preparedness to manage these tensions. This research article is significant to brought these issues.

Objective of study

World trade picture has taken dynamism in 21st centuries due to globalisation and technological advancements. Most of the locked economies are unlocking their economy for free flow of trade, investment, human resource, and technology. The US and China are relocating themselves are trade giants in the global trade dynamics. This had moved trade war tensions for emerging economies and also impacting world economy. This paper brought to understand the trade war tensions and their impact between US and China.

Methodology

The present study is conducted through descriptive research to understand the various know-how considering which the analysis is made on the aspects of US and China trade wars impacting the various aspects of respective country and other associated countries in terms of trade.

TRADE WAR TENSIONS OUTLINE AND IMPLICATIONS

A 2023 report from the U.S.-China Business Council, an industry organization, revealed that exports to China backed over one million jobs in the United States, representing roughly 0.5 percent of the civilian workforce. U.S. companies generate hundreds of billions of dollars every year from their sales in China—funds they can subsequently invest back into their operations in the United States. Chinese firms have poured tens of billions of dollars into the United States, but this investment has decreased in recent years due to increased scrutiny from the U.S. government. For China, the benefits from trade with the U.S. and globally have been significant. Since 2001, China's economy has expanded over five times when accounting for inflation, making it the world's second-largest, just behind the United States. (According to certain criteria, it is the biggest.) Hundreds of millions have risen out of extreme poverty due to this growth. President Donald Trump took an even more assertive approach, imposing tariffs on hundreds of billions of dollars' worth of Chinese goods. Trump also withdrew from the TPP and negotiated a so-called Phase One agreement with China, which many experts criticized as punting on core U.S. concerns in exchange for a commitment by Beijing to purchase an additional \$200 billion worth of U.S. goods—which it failed to live up to. Trump also designated China as a currency manipulator for the first time in decades and maintained the Obama administration's block on new appointments to the WTO's Appellate Body, incapacitating the organization's dispute settlement system. Meanwhile, the U.S. Congress—responding mainly to fears over Chinese acquisition of U.S. technology—passed legislation expanding the role of CFIUS and tightening controls over high-tech exports.

Country	Tariff Proposal (%)	Foreign Sales (% of Total)	Exports to US (% of GDP)	Corporate Net Debt/EBITDA (%)	Foreign Ownership (%)	Ranked Weighted Z-Score
Mexico	10	34.8	27.3	145	39.8	2.9
China	60	14.4	2.9	158	4.3	2.1
Thailand	10	31.0	9.4	291	36.1	1.3
Taiwan	10	76.3	10.1	(24)	41.6	1.3
Korea	10	58.9	6.3	142	27.7	0.6
Malaysia	10	41.7	8.9	215	20.1	0.3
Japan	10	50.2	3.4	156	31.3	0.1
Brazil	10	23.3	1.7	164	58.2	(0.1)
Australia	10	45.8	0.6	117	33.3	(0.8)
Philippines	10	10.9	2.1	282	20.5	(0.9)
Indonesia	10	12.8	1.7	85	8.1	(1.2)
Turkey	10	22.4	1.3	81	34.0	(1.5)
India	10	24.8	2.2	146	17.5	(2.3)

Credit: respective owner

Through above research image which is carried out clearly explains that how exactly the tariff's proposal Trump 2.0 may impact majorly on the Mexico and China, least impact on India reflects how the trade war impact upon the respective country's economic growth. Mexico (Score: 2.9) stands out because of its large exports to the US, high percentage of foreign sales, and sizeable corporate debt. It is particularly vulnerable to any escalation of the trade war because of its close economic ties to the US. Despite having a lower percentage of foreign sales than Mexico, China (Score: 2.1) is vulnerable due to its large exports to the US and high tariff proposal impact. Thailand, Taiwan, and Korea also exhibit moderate sensitivity as a result of a combination of high levels of corporate debt, exports to the US, and overseas sales. Due to lower corporate debt ratios and lower exports to the US as a percentage of GDP, India (Score: 2.3) and Turkey (Score: 2.2) are less sensitive. India is less vulnerable as a result of its lower levels of foreign ownership. The trade war between the United States and China has affected the global economy and other nations. When it lowered its 2019 global growth forecast late last year, the International Monetary Fund (IMF) cited the

escalation of US-China trade tension as one of the factors that contributed to a "significantly weakened global expansion.". Additionally, some nations might be indirectly affected, particularly those that are crucial supply chains for the US or China or are significant trading partners. The United States increased tariffs on a few major imports in early 2018: solar panels, washing machines, steel, and aluminium. Although these tariffs did not discriminate based on origin, it quickly became clear that China was the target of US trade policies. Following that, the US raised tariffs on thousands of Chinese goods between 2018 and 2019, eventually aiming to target about \$350 billion in imports from that nation. About \$100 billion worth of US exports were the target of multiple tariff waves in retaliation from China. The current tariffs were still in effect as of 2021, despite the two parties signing an agreement in January 2020 to stop further tariff increases. Comparing the trade war to the US's historical leadership in promoting tariff reductions globally, it stands out as one of the biggest and most abrupt shifts in US trade policy history. Economists tried to analyse the trade war's effects on the economy as it developed. Social media posts and official government declarations about upcoming tariffs made headlines as the trade war progressed. Sharp and generally negative movements in the equity markets accompanied these announcements. Trade has shifted to third countries as a result of the decline in trade between the US and China. U. S. When firm-related fixed effects are taken into account, tariffs have no effect on the free-on-board price of Chinese exports. Exports to the US fell sharply, but exports to the EU rose somewhat, and there was little impact on domestic sales or exports to other international markets (Yang Jiao, 2024). Both China and the United States have suffered as a result of the trade war, and neither side has ever emerged victorious. There is a lose-lose situation in this case in every way. In addition to the bystander economies between the US and China, the cold war between the two enormous economies can have an impact on nations worldwide. This illustrates the interdependence of the world market and the potency of economic weapons (Su, 2024).

China and US backed Trade Integrations: Some Facts

The existence of World Trade Organization (WTO) has witnessed in the formation of trade integrations and blocs since its inception. Apart from many bilateral and multilateral platforms, the China is backed for Regional Comprehensive Economic Partnership (RCEP) in the Asia block to form trade and investment partnership. This will boost China trade and investment in the Asia and also a sense to threat US trade with Asian countries in future. Of late, it will be the trade tension for US and take lead in the global trade dynamics. The US is also negotiated to form a trade integrating partnership with emerging economies to hold its trade position in the globe and also suppress the trade diversion towards China by the developing countries. Hence, the emerging economies become global spots for emerged economies as trade angels to divert the economic resources towards its trade integration and be a trade favoured partners. The China and US are identifying and destinating their trade, capital, human resource, and technical know-hows in such angel spots and negotiating with them to be trade partner. This has also moved trade war tensions in the world.

FINDINGS

Economic Welfare Losses: Due to sharp drops in sectoral imports and exports, the US-China trade war has caused economic welfare losses for both countries. China witnessed decreases in agricultural products and transportation equipment, while the US observed decreases in imports of metals, machinery, and electric equipment.

Global Economic Downturn: The trade war led to a \$374 billion (-0.3%) drop in global GDP, highlighting the interdependence of economies around the world and the negative knock-on consequences of protectionist measures.

Trade Dynamics Shift: Some nations profited from trade diversion, while the EU saw moderate increases in exports. However, the overall impact on global trade patterns was negative, highlighting the disruptive nature of tariff increases.

Long-Term Productivity Decline: Reduced foreign investment and specialization have hampered both the US and China's long-term economic growth prospects. The trade war disrupted existing supply lines and global trade flows.

Future Implications

Future ramifications of the US-China trade war point to a complicated and difficult global economic environment over the next five years, especially given the threat of US tariffs of 100%. Significant economic losses would result from such a sharp rise in tariffs, which would probably worsen trade tensions and affect not just the US and China but the entire world economy. A chain reaction of instability could result from China's retaliatory actions, which would further disrupt international trade and supply chains. In this case, protectionist tendencies would be strengthened globally, encouraging other countries to enact comparable trade regulations and eroding the advantages of free trade. Furthermore, firms may strive to rearrange supply chains to lessen reliance on the United States and China, so aiding rising economies such as India, Vietnam, and Mexico. However, this transformation would incur significant costs and time, potentially straining global production networks. The trade war may also hasten technological decoupling between the world's two largest economies, forcing both countries to establish autonomous supply chains in crucial industries such as semiconductors, artificial intelligence, and renewable energy. While this may encourage home innovation, it will fracture global technical collaboration and raise prices for enterprises around the world. Due to ongoing uncertainty, international organizations like the IMF would probably lower growth projections as a result of the protracted trade dispute. But this change may also present chances for developing nations to draw in foreign capital and bolster their positions in international trade networks. Multilateral participation will be essential to reducing these difficulties, with international organizations serving as key players in promoting communication and mediating trade conflicts. The world economy might manage the effects of the trade war and strive toward a more balanced economic climate by placing a higher priority on collaboration and sustainable trade practices.

CONCLUSION

The research paper is about arising Trade war tensions between US and China, which is posing many questions for economists and researchers ahead. Will US and China capture global trade? Will it again end up on trade wars resulting in situation like financial crisis 2007? Will it make independent economies to arise? Country like India starting Atmanirbhar Bharat will impact other country economy? Biological weapon as Covid- 19 tampered whole global supply chain, economy, health and all other aspects is greater example of how further world will face the things.

References

<https://www.cfr.org/backgrounder/contentious-us-china-trade-relationship>

<https://www.weforum.org/stories/2024/01/demystifying-the-idea-of-trade-decoupling/>

WTO (2019a). Report of the TPRB from the Director-General on Trade-Related Developments.

WTO (2019b). WTO Lowers Trade Forecast as Tensions Unsettle Global Economy.

Bartelme et al. (2023). Economic Realignments Post-Trade War. Global Trade Review.

Core, C. (2022). The US–China Trade War: Economic Statecraft, Multinational Corporations, and Public Opinion. Business and Politics.

Devarajan et al. (2023,). The Strategic Response of Emerging Markets to the US-China Trade War. World Bank Research Publications.

Fajgelbaum, G. K. (2022). Impact on Global Trade Flows. National Bureau of Economic Research (NBER).

Fajgelbaum, P. G. (2023). The US-China Trade War and Global Reallocations. National Bureau of Economic Research., (No. w29562).

Itakura, K. (2020). Evaluating the impact of the US–China trade war. Asian Economic Policy Review, 15(1), 77-93.

Lugovskyy, L. &. (2023). Evaluating the Economic Costs of the US-China Trade Conflict. Journal of International Economics.

Regional Winners and Losers. (2023). Peterson Institute for International Economics.

Rengifo, S. &. (2023). Trade Titans: The Impact of the US-China Trade War on Global Economics. Cornell University.

Reyes-Heroles et al. (2023). Impact of Tariffs on Supply Chains and Export Diversification. Econometrica.

Schwarz et al. (2023). National Bureau of Economic Research (NBER).

Su, Q. (2024). To what extent did US-China trade war affect the global economy. SHS Web Conf.

Yang Jiao, Z. L. (2024). The Impacts of the U.S. Trade War on Chinese Exporters. The Review of Economics and Statistics 2024, 1576–1587.

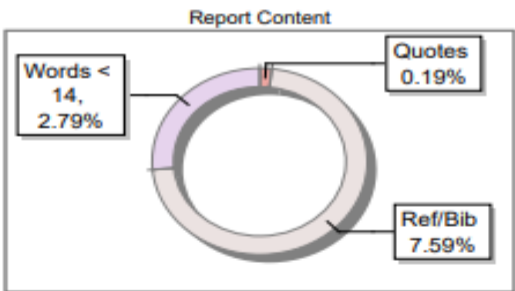
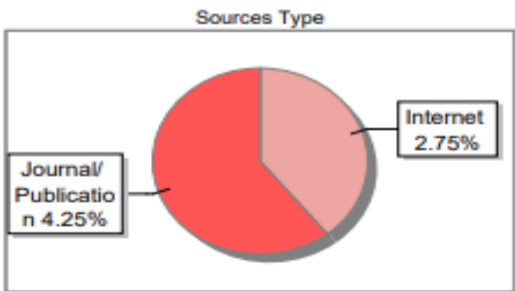
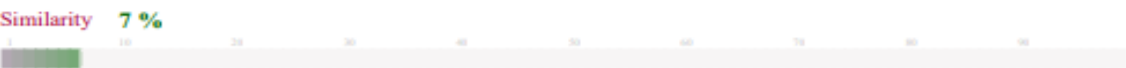


The Report is Generated by DrillBit Plagiarism Detection Software

Submission Information

Author Name	Sampath Kumar, Khaja Mohinuddin, Sushma Premkalal
Title	GLOBAL TRADE DYNAMICS: A TRADE WAR TENSION BETWEEN US AND CHINA
Paper/Submission ID	2786135
Submitted by	sampathkumarbms57@gmail.com
Submission Date	2024-12-16 21:28:20
Total Pages, Total Words	8, 3081
Document type	Article

Result Information



Exclude Information

Quotes	Excluded
References/Bibliography	Excluded
Source: Excluded < 14 Words	Not Excluded
Excluded Source	2 %
Excluded Phrases	Not Excluded

Database Selection

Language	English
Student Papers	Yes
Journals & publishers	Yes
Internet or Web	Yes
Institution Repository	Yes

A Unique QR Code use to View/Download/Share Pdf File



A study on role of artificial intelligence in optimizing warehouse operations and inventory management.

MR. SACHIN S

Student, II - MBA, Department of Management Studies,
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Avadi.

E-mail: sachinvjs96@gmail.com, contact: +91 7358321069

DR. S. RAJA

Assistant Professor, Department of Management Studies,
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Avadi.

ABSTRACT

Studies on the role of artificial intelligence in optimizing warehouse operations and inventory management have increasingly become important because of the fact that supply chain complexities are on the increase, while at the same time, the demand for efficiency in logistics is increasing. This work elaborates on how AI technologies, such as machine learning, robotics, and predictive analytics, contribute to improving the performance of warehouses, ensuring smooth inventory management, and curtailing operational costs. AI-driven solutions include automated tracking of inventory, real-time data analysis, and the forecasting of demand. In this way, organizations enhance accuracy, minimize human error, and optimize resource usage. The present paper will analyse the role of AI in significant warehouse activities such as inventory management, order picking and packaging, and space allocation. Subsequently, evaluation of analysing how this integration with AI tools is affecting the efficiency of warehouse performance and decision-making. This paper has also been focused upon one of its key elements, predictive analytics for inventory management, which will aid in identifying trends of demand, prevention of stockouts, and avoiding the buildup of inventories. The research identifies significant improvements in warehouse productivity and cost savings results from AI adoption through case studies and data analysis. However, the implementation challenges of

AI, such as high initial investment, technological adaptation, and displacement of existing workforce, are also raised. However, these negative aspects are not sufficient enough to outweigh the long-term benefits of agility, accuracy, and scalability offered by AI as it becomes a transformational tool in modern warehouse operations and inventory management. This research concludes that, with AI technologies, come smarter warehouses that are adaptable to meet dynamic market demands; they lead to customer satisfaction through increased efficiencies and competitiveness against the backdrops of highly digitalized supply chains.

INTRODUCTION

The past decade has seen Artificial Intelligence (AI) have a huge impact on the role of logistics and the supply chain industry in warehouse operations and inventory management. Due to increased demands from customers around the world for faster and more accurate deliveries, organizations are always under pressure to operate more streamlined. Traditional warehousing systems are basically manual processes. The common issues associated with these systems are that they contain errors in tracking inventory, unutilized space, and delay in fulfilling orders. Artificial Intelligence has been identified as a key driver for streamlining these important functions in order to enhance efficiency, reduce operational costs, and improve decision-making by businesses. Advances of artificial intelligence technologies, such as Machine Learning, Robotics, Computer Vision, and IoTs, are increasingly deployed to modern warehouses. Those technology platforms help automate more time-consuming tasks, facilitate more insightful data analysis, predict potential demand patterns, enable faster decision-making, and consequently optimize resources. The deployment of AI-driven predictive analytics helps businesses predict more-accurate inventory demand that may be based on some historical data and some future-oriented market trends, helping eliminate the overstock and out-of-stock problems. Moreover, the warehouse efficiency has been transformed with automated robotic systems and AI-powered sorting machines that have improved order-picking, packing, and sorting speed. Another specific area where AI has had positive effects on warehouse operation management involves inventory management. The system can track real-time inventories, detect anomalies, and make suggestions about which stocks to replenish accordingly. This provides better visibility on the movement of goods and makes the system more accurate by eliminating human error with the use of IoT sensors and RFID technology. This real-time transparency is necessary to meet growing industry demands in e-commerce, retail, and manufacturing sectors where the inventory turnover rate is very high and has limited scope for

error margin. Another positive aspect of applying AI is building smart warehouses, with connected technologies blending into a productivity ecosystem.

OBJECTIVES OF THE STUDY

- Investigate how AI technologies influence the enhancement of efficiency in warehouse operations and inventory management.
- It should assess whether AI reduces cost and improves decision-making because of predictive analytics and in real-time tracking.
- To explore challenges and opportunities of implementing AI-driven warehouse management systems.
- Identifying future trends and innovations by AI in optimizing warehouse and inventory management.

METHODOLOGY

1. **Data Collection:** Secondary data from financial reports, government publications, and industry analysis.
2. **Case Studies:** Analysis of successful foreign bank ventures and controversies in India.
3. **Comparative Analysis:** Comparison between domestic and foreign banks in terms of efficiency, innovation, and reach.
4. **Policy Review:** Examination of regulatory frameworks affecting foreign banks.

CHALLENGES

- **High Initial Investment:** AI technologies require quite a high initial investment in infrastructures, software, and even training.
- **Integration Issue:** Difficulty in integrating AI into current WMS and traditional technology.
- **Data privacy and security:** The problem is that data which AI systems collect and process should be secure and private.
- **Resistance of Labor Force:** The employees resist due to the fear of losing their job or being technically incapable of performing tasks.
- **Technical Sophistication:** The implementation and management of AI-driven systems require more skilled personnel and technical competencies.
- **Scalability Challenges:** The ability to scale AI solutions across different warehouse sizes and capacities can be complex and costly.

- **Dependency on Quality Data:** AI systems depend a lot on quality data; bad quality of input data can result in incorrect outputs. 8. AI system maintenance and upgrades need to be periodically overhauled. It requires a significant number of resources.

FINDINGS

- **Efficiency:** Robotics and automation save much time in picking orders, packing, and sorting with AI technologies.
- **Accuracy:** AI-driven devices such as IoT sensors and RFID allow for better inventory tracking thereby reducing errors and discrepancies on stock.
- **Cost saving:** Artificial intelligence implementation decreases the operational cost by optimizing resource usage, reducing manual labor, and avoiding overstocking.
- **Predictive Insights:** AI enables demand forecasting using historical data, ensuring better inventory planning and reducing stockouts.
- **Space Optimization:** Smart AI systems optimize warehouse space utilization, making storage more efficient and less cluttered.
- **Real-Time Visibility:** AI will give real-time updates of inventory movement that gives greater transparency and faster decision-making.
- **Workers' productivity:** AI assists people staff in avoiding redundant activities, thus workforce can focus in value-adding activities. 8. Scalability and Flexibility: AI-based warehouse management system allows scalability, giving flexibility to businesses in responding to emerging demands and changes in markets.

IMPLICATION

Operational Efficiency

This integration of AI helps enhance warehouse productivity through automated tasks that eliminate monotonous jobs, prevent human mistakes, and improves operational processes in general. With rapid order fulfilment, companies get the satisfaction to ensure excellent customer service along with business competitiveness

Cost Optimization

AI-based systems enable organizations to reduce operational costs through optimized labour, space, and inventory management. Reduced costs help businesses free up resources for innovation, expansion, and improved profit margins.

Better Decisions

AI allows real-time data analysis and predictive insights, which enable the manager to make data-driven decisions. In this way, better stock planning, resource allocation, and reduced risk of overstocking or understocking are assured.

Workforce Transformation

With AI comes transformation within the workforce and, subsequently, the training and retraining of employees in working collaboratively with intelligent systems; these interventions tend to ensure greater productivity in employees' performances, hence smooth transitioning into fully automated workplaces.

Better Customer Experience

Customers love faster delivery time, fewer mistakes in their shipment due to AI ensuring faster and more accurate order fulfilment. Improving reliability of services increases customer loyalty that grows businesses over the long term. 6. Sustainability Goals: AI reduces resource wastage, improves energy efficiency, and optimizes logistics routes. Business operations can be aligned with environmental goals, carbon footprints reduced, and sustainable growth achieved.

Scalability of Operations

An AI system allows scalable solutions adapted according to a growing business needs and warehouse sizes, thereby being able to support any organisational expansion without letting go of efficiency, enabling flexibility within dynamic market conditions.

Data Security Issues

AI integration requires the establishment of robust data privacy and security systems that guarantee confidentiality of business-sensitive information. The need to protect against risks posed by data breaches and cyber-attacks calls for secure infrastructure investments.

RECOMMENDATION

Invest in the Training and Skill Development:

The corporations should invest in programs upskilling the employees accordingly. This way, they could be prepared to work effectively, and the changeover in the process would be smoother. It would help achieve even higher productivity in AI-integrated warehouses.

Gradual Implementation of AI Solutions:

Businesses should adopt a phased approach when implementing AI technologies, starting with smaller pilot projects to assess their effectiveness and gradually scaling up based on results.

Focus on Data Quality:

In order for the AI to really provide what is desired, the companies shall ensure that the data feeding to the AI systems is of best quality, up-to-date, well-structured, and the issues regarding data inconsistencies should not be seen.

Cyber Security Boost:

Companies using AI require being highly stringent about cyber security, preventing them from threats in cyberspace. Hence, they will be subject to routine audit encryption, as well as having controls with regards to safe access.

AI for Predictive Analytics:

Organizations should make full use of AI in terms of predictive analytics to predict demand, optimize levels of inventory, and improve the efficiency of supply chains. This would reduce stockouts and overstocking, saving costs.

Encourage Co-operative Interaction between AI and Human Labor:

Create a cooperative environment in which AI assists human workers; the repetitive tasks are left to AI, while human labour performs critical problem-solving and decision-making activities, thereby leading to better productivity and employee satisfaction.

Routine Maintenance and Upgrades:

AI systems should be updated and maintained regularly to keep in sync with technological advancements and evolving business needs. This will make sure that the long-run efficiency and continued relevance of AI solutions are maintained. 8. Monitor and Evaluate: Continuous assessment and monitoring of AI in its implementation will be required to track performance and identify areas for improvement. Organisations must set proper metrics to track the influence of AI on warehouse operations and inventory management.

LIMITATIONS OF THE STUDY

High Implementation Costs:

The amount of capital needed to deploy AI technologies, including infrastructure, software, and skilled people, could be too costly for most SMEs, thus discouraging adoption.

Data Dependency:

High-quality, accurate data are required for AI systems to make optimal predictions. Flawed predictions arise from incomplete or inaccurate data. This lowers the effectiveness of AI-based solutions in warehouse operations.

Technological Complexity:

Establishing and managing AI systems requires high-order expertise and knowledge. In all likelihood, firms face massive challenges in terms of finding or developing the right personnel for proper management of these technologies.

Integration Challenges:

This often becomes challenging and time-consuming due to integration with existing warehouse management systems and legacy infrastructures, often causing operations disruption during the transition process.

REFERENCE

- Ivanov, D., Tsipoulanidis, A., & Schönberger, J. (2019). Global supply chain and operations management: A decision-oriented introduction to the creation of value. Springer.
- Wang, Y., Gunasekaran, A., Ngai, E. W. T., & Papadopoulos, T. (2016). Big data analytics in logistics and supply chain management: Certain investigations for research and applications. *International Journal of Production Economics*, 176, 98–110.
- Waller, M. A., & Fawcett, S. E. (2013). Data science, predictive analytics, and big data: A revolution that will transform supply chain design and management. *Journal of Business Logistics*, 34(2), 77–84.
- Kshetri, N. (2018). The roles of artificial intelligence in supply chain management: Potential, challenges, and research opportunities. *International Journal of Information Management*, 39, 80–89.

- Ren, S., Zhang, Y., Liu, Y., Sakao, T., & Huisingh, D. (2019). A comprehensive review of big data analytics throughout product lifecycle to support sustainable smart manufacturing. *Journal of Cleaner Production*, 210, 1343–1365.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature*, 521(7553), 436–444.
- Baryannis, G., Validi, S., Dani, S., & Antoniou, G. (2019). Supply chain risk management and artificial intelligence: State of the art and future research directions. *International Journal of Production Research*, 57(7), 2179–2202.
- Choi, T. M., Wallace, S. W., & Wang, Y. (2018). Big data analytics in operations management. *Production and Operations Management*, 27(10), 1868–1884.
- Azadeh, A., Shojaeiyan, M., & Yazdani, H. (2017). Integration of artificial intelligence and data envelopment analysis for optimization of supply chain management. *Journal of Manufacturing Systems*, 43, 120–136.
- Verma, P., & Bhattacharya, A. (2017). Artificial intelligence in operations management: The role of machine learning in predictive maintenance. *Procedia Computer Science*, 122, 524–531.

CONCLUSION

The integration of Artificial Intelligence (AI) in warehouse operations and inventory management has transformed traditional supply chain processes, delivering significant improvements in efficiency, accuracy, and cost optimization. AI-powered tools, including robotics, IoT sensors, and predictive analytics, streamline tasks such as inventory tracking, order fulfilment, and demand forecasting. These technologies automate repetitive processes, reduce human error, and provide real-time data, enhancing decision-making capabilities for warehouse managers. The AI predicts demand correctly for the business, reducing stockouts and overstocking while optimizing the usage of resources. Automation of warehouses has resulted in quicker processing of orders, leading to improved delivery timelines and, hence, customer satisfaction. There is also space utilization, as AI ensures proper storage and warehouse organization, leading to reduced operational costs. However, the adoption of AI is not without its share of challenges. High implementation costs, integration issues with legacy systems, and workforce resistance on fears of job displacement deter its widespread adoption.

A STUDY ON RECENT DEVELOPMENTS IN BANKING SECTOR

MR. CHIPPOLU NAGARAJA, (Research Scholar)

DR. RAVI B, Associate Professor

Vijayanagara Sri Krishnadevaraya University , Ballari, (Karnataka)

Abstract:

E-banking i.e., Electronic banking in India has become very popular and plays a prominent role in every banking customer economic and social life due to advancement in Information Technology. The current study is conducted to know the recent developments in E-banking and to analyze the key factors focused in order to control cyber-crime and to protect the interest of customers who are using digital banking products and services regularly.

Introduction:

E-Banking or Digital Banking emerged as a major part of operations in the banking sector. Most banking transactions are done based on the digital platform. The process of delivering banking products and services to their customers on time is the first priority of any bank. The Govt. of India enacted the IT Act 2000 with effect from October 17, 2000 which provides legal recognition to electronic transaction and other means of E-commerce the Reserve Bank of India is monitoring and reviewing the legal and other requirements of E-Banking on a continues basis to ensure that E-banking would develop on sound lines and E-Banking related challenges would not pose a threat to financial stability. Digital banking can be operated through any mode such as mobile, Internet banking, laptop, desktop and other mode of electronic gadgets. It has been a challenging year for banks. Despite pressure from NPAs, banks operating Digital India, utilizing the latest technology and introducing a number of products and applications to improve customer functionality. After the monetary campaign, the Government has been looking for a low-income community and banks have been actively supporting digital investment efforts- POS machines, portfolios, mobile banks, Aadhar-enabled payment systems, etc.

Recent Developments in the Banking Sector:

1. Cyber Security

The banking industry manages vast volumes of sensitive customer and transactional data, making its IT infrastructure an attractive target for cybercriminals. To address these challenges, startups offer security protocols and data compliance solutions specifically designed for banking systems, helping institutions protect their sensitive information.

Data encryption tools add an extra layer of protection by minimizing the risk of data breaches. AI-driven fraud detection systems proactively identify and prevent suspicious activities like identity theft and phishing. Additionally, banks utilize anti-hacking software to secure networks against unauthorized access. These advanced measures enhance banks' ability to detect and respond to threats effectively.

2. Customer Experience

In 2024, customer experience (CX) is set to take the spotlight, powered by technologies that assess every aspect of the customer journey. These tools aim to minimize friction and boost satisfaction. Immersive technologies, such as virtual reality (VR), are also gaining popularity, providing innovative and engaging customer interactions. As CX increasingly influences purchasing decisions, financial service businesses focus on strategies to capitalize on this critical connection.

3. Neo-banking

Neo-banking facilitates a fully digital banking model, significantly reducing capital and operational costs. By leveraging technologies like cloud computing and open APIs, it delivers a seamless and integrated banking experience to customers. Neo-banks also offer diverse services, including automated reconciliation, payroll management, and integrated workflow solutions.

Digital-only banks prioritize customer convenience, providing on-demand services accessible across multiple platforms. With lower capital and operational requirements compared to traditional banks, neo-banks can offer more affordable fees, making banking more cost-effective for users.

4. Internet of Things (IoT)

The Internet of Things (IoT) is a transformative innovation poised to reshape both our lifestyles and the banking industry.

IoT refers to a network of interconnected devices—such as smartphones, home appliances, wearables, and vehicles—that collect and transmit data over the internet. Banks can harness IoT in several impactful ways:

Payments: IoT technology allows consumers to make payments effortlessly by simply bringing wearables like smartwatches near a point-of-sale terminal. These devices can also facilitate transactions anytime and anywhere.

Notifications: Wearables can receive real-time alerts and notifications from banks, such as monthly statement availability or promotional offers.

Wallet of Things: Digital wallets embedded in smartphones, smartwatches, or even car dashboards enable customers to make payments directly from their devices, enhancing convenience and accessibility.

5. Biometric technology

Customers entrust banks with their personal information and expect the highest levels of security and protection.

Biometric technology enables financial institutions to deliver a seamless customer experience by combining security, speed, and convenience. Biometrics utilize physical human traits—such as fingerprints, iris patterns, or voice—to verify customer identity.

Unlike PINs or passwords, biometric identifiers cannot be lost or forgotten and are significantly harder to hack. By 2023, the demand for secure and efficient authentication methods is expected to drive the adoption of biometric payments to nearly 2.6 billion users. Offering ease of use and accessibility, biometric technology is poised to deliver a unified, superior customer experience across various payment channels, including smartphones, ATMs, and smart home devices.

Here's how banks are leveraging biometric technology to enhance remote experiences:

- **Mobile Banking:** Financial institutions integrate biometrics into their mobile apps, enabling customers to securely transfer funds or access accounts on the go.
- **Digital Onboarding:** Biometric authentication simplifies and accelerates due diligence and KYC processes, reducing risks and enhancing onboarding experiences.
- **ATM Transactions:** Biometric identifiers, such as fingerprint scanners, ensure that only authorized individuals can access ATM services.

6. Generative AI

Fintech, a field dedicated to technologies that assist consumers in managing, spending, and investing money, is poised to harness the transformative power of generative AI. One of its key applications will be advanced chatbots, enabling users to interact with banking apps and online financial services through natural language.

Leading financial institutions are already adopting generative AI to drive innovation. This technology is set to enable highly personalized financial planning and customized investment strategies by analyzing customer profiles and behavioral data, enhancing the overall financial experience.

7. E-Cheques:

E-cheques involve five key entities: the consumer, the merchant, the consumer's bank, the merchant's bank, and the e-mint, along with the clearing process. This system utilizes network services to issue and process payments, replicating traditional cheque transactions. The payer issues a digital cheque to the payee, with the entire transaction conducted over the internet. These electronic cheques are created, received, and processed digitally, streamlining the payment process. A typical Electronic cheque transaction takes place in the following manner:

1. The customer accesses the merchant's server, where the available goods are displayed.
2. The customer selects the desired items and completes the purchase by sending an e-cheque to the merchant.

3. The merchant validates the e-cheque with its bank for payment authorization.
4. The merchant then electronically forwards the e-cheque to its bank.
5. The merchant's bank submits the e-cheque to the clearinghouse for processing.
6. The clearinghouse, in collaboration with the customer's bank, clears the cheque
7. and transfers the funds to the merchant's bank.
8. The merchant's bank updates the merchant's account with the credited amount.
9. Simultaneously, the customer's bank updates the customer's account, reflecting the withdrawal.

E-chequing is highly beneficial for both large corporations and small retailers. Most major banks now accept e-cheques, offering a secure method for collecting payments, transferring funds.

8. Electronic Funds Transfer (EFT):

Many modern banks have automated their cheque processing systems using computer networks and electronic equipment, reducing reliance on paper-based methods. The Electronic Fund Transfer (EFT) system facilitates the seamless transfer of money between accounts. This system enables faster electronic fund transfers between branches, regardless of whether the sender and receiver are in different cities or banking with different institutions. Transfers within the same city are also supported.

EFT has been operational in India since February 7, 1996. An essential feature of the EFT system is automated clearing houses, which are computer centers that manage bills for deposits and payments, ensuring efficient transaction processing.

9. Telebanking

Telebanking refers to phone-based banking services, allowing customers to access their account information via a telephone call by providing a secure Personal Identification Number (PIN). This service is highly user-friendly and efficient.

Customers can leave instructions for specific banking tasks in the form of messages. Telebanking offers a range of services, including:

- Stopping payment on request.
- Checking the status of a cheque.
- Obtaining information about current interest rates.
- Accessing foreign exchange rate details.
- Requesting a demand draft (DD) or pay order.
- Availing services related to DeMat accounts.
- And various other similar banking services.

Conclusion:

Indian state-owned banks, which hold approximately 75% of the market share, have made significant strides in the IT sector. These banks benefit from a highly skilled workforce and a growing awareness of IT advancements. However, what is needed is a concerted push, similar to the expansion efforts seen during the post-colonial period, to fully realize their potential.

India has become synonymous with IT, whether as an export destination or a development hub—a topic often debated. While Indian banks may not yet match the technological sophistication of their counterparts in developed countries, they adopt many international best practices and remain ahead in IT integration.

The strength of Indian banks lies in their resilience to challenges and their ability to adapt and exceed expectations across sectors. It is only a matter of time before they align with global standards in every aspect.

References:

1. Reserve Bank of India, Annual reports, Various years
2. Reserve Bank of India (1991) Report of the Financial Planning Committee
3. Reddy Y V (1998) “Financial Sector Changes: Reviews and Prospects”. RBI Bulletin.
4. Bakshi S “Corporate Governance in Transformation Times”, IBA Bulletin, 2003.
5. Reddy Y V (2000), Changes in the Financial and Financial Sector in India.
6. IBA reports.

The Impact of AI and ML on Financial Decision-Making, Fraud Detection, and Personalized Financial Services Ethical Challenges and Integration with Blockchain Technologies

R.SHYAM SUNDAR

2nd Year, Management Studies, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi.

Email – Vtp3988@veltech.edu.in

Dr. LUMINA JULIE.R

Assistant Professor, Department of management studies, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi

Abstract

The pace of Artificial Intelligence (AI) and Machine Learning (ML) has revolutionized financial services. This paper addresses three of the most impacted domains of finance- processes of decision-making, mechanisms of fraud detection, and personalized financial services-through multifaceted impacts by AI/ML technologies. We are going to explore how accuracy in risk assessment can be enhanced and complex decision-making processes automated using these technologies for real-time fraud detection with unprecedented precision. The study takes into consideration the current implementation and the emerging trends, therefore centering the research on how blockchain technology meets AI/ML systems as the latter enhances security, transparency, and efficiency of financial operations. However, some ethical concerns do stand against this technological revolution- algorithmic bias, data privacy, and financial inclusion. Our work addresses all these challenges through a holistic framework that balances the innovative technology with ethical considerations and regulatory compliance of the entire system. Findings have pointed toward substantial improvement in the efficiency of operations as well as the customer experience coming out of AI/ML integration, but the approach taken by financial institutions while implementing the technology is critical.

KEYWORDS:-Artificial Intelligence, Machine learning, Financial Technology, Fraud Detection, Data privacy.

Future of Digital Banking in India: Trends and Transformations

Mr. S. RAMESHKUMAR, Research Scholar cum Assistant Professor,
Research Scholar, Department of Commerce, College of Science and Humanities, SRM Institute
of Science and Technology, Vadapalani Campus, Chennai.
Assistant Professor, School of Commerce, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of
Science and Technology, Chennai.

Dr. V. PRABAKARAN, Assistant Professor & Head, Department of Commerce (Honours)
(IAF), College of Science and Humanities, SRM Institute of Science and Technology,
Vadapalani Campus, Chennai

ABSTRACT

Digital banking in India has evolved rapidly over the past decade, propelled by technological advancements, regulatory support, and growing consumer demand for seamless financial services. This paper explores the future of digital banking in India, focusing on emerging trends and transformations that are reshaping the banking landscape. Key areas such as mobile banking, artificial intelligence (AI), blockchain, and fintech innovations are examined, highlighting how they are enhancing accessibility, convenience, and security for consumers. The paper also discusses the role of government initiatives and regulatory frameworks in promoting a digital-first banking ecosystem. The study aims to provide a comprehensive overview of the digital banking sector in India, analyze its current state, and predict future trends that will define its growth trajectory.

Key words: Digital banking, AI, block chain, Fin tech innovations, Mobile banking.

INTRODUCTION:

India is at the forefront of digital transformation, especially in the banking sector. Over the last decade, digital banking in India has evolved rapidly, driven by technological advancements, regulatory initiatives, and shifts in consumer behavior. This article explores the current trends and potential transformations that will shape the future of digital banking in India.

REVIEW OF LITERATURE:

Kumar and Garg (2020) several studies have highlighted the transformative role of emerging technologies in banking. Discuss how technologies like AI and machine learning are enhancing credit scoring, risk management, and personalized services. Similarly, Das and Singh (2019) emphasize the integration of blockchain for improving the security and transparency of financial transactions.

Sharma (2016) the evolution of digital banking in India highlights the progression from traditional banking to online platforms, with the early 2000s marking a shift towards ATM usage and internet banking. Research by illustrates that the initial phase of digital banking in India was marked by the adoption of basic online services like balance checks and money transfers.

Mishra and Sinha (2020) By 2014, with the launch of initiatives like **Pradhan Mantri Jan Dhan Yojana (PMJDY)**, financial inclusion became a key objective, and mobile banking saw rapid adoption. argue that these developments laid the foundation for mobile banking and e-wallets.

Rao and Gupta (2022), Studies have pointed out that India's shift towards fintech and digital banking is largely driven by **Blockchain, Artificial Intelligence (AI), and Machine Learning (ML)**. According to AI has enabled predictive analytics for customer behavior, which allows banks to offer personalized services, while blockchain ensures enhanced security and transparency.

Patel et al. (2021) the growing use of **UPI (Unified Payments Interface)** is one of the most significant innovations, contributing to seamless real-time transactions across a wide range of platforms. Research by emphasizes that UPI's scalability and user-friendliness have contributed to its widespread adoption, making digital payments more accessible and efficient.

STATEMENT OF THE PROBLEM

India's banking sector is undergoing a profound transformation, with digital banking playing a pivotal role in reshaping the financial landscape. Despite significant strides in financial inclusion and the rapid adoption of digital banking services, several challenges remain. These include concerns about cyber security, digital literacy, regulatory frameworks, and the digital divide

between urban and rural populations. Furthermore, the fast-evolving technological environment, including the rise of fintech innovations, poses both opportunities and risks to traditional banking models. As India moves toward a cashless economy, it is crucial to understand how these trends will influence the accessibility, security, and sustainability of digital banking services, especially in underserved regions. This study seeks to explore these challenges and identify strategies to overcome them, ensuring a robust and inclusive digital banking ecosystem for the future.

OBJECTIVE OF THE STUDY:

1. To analyze the impact of digitalization on India's banking sector.
2. To examine emerging trends in digital banking.
3. To evaluate the role of government and regulatory frameworks in digital banking.
4. To predict the future trajectory of digital banking in India.

CONCLUSION:

The future of digital banking in India is poised for significant growth and transformation. Driven by technological innovations, regulatory support, and evolving consumer expectations, digital banking is set to redefine the financial landscape in the country. However, challenges like cyber security risks, digital literacy, and infrastructure gaps must be addressed for this vision to be fully realized. With a focus on financial inclusion, personalized services, and emerging technologies like blockchain and AI, India's digital banking sector has the potential to become one of the most dynamic and accessible in the world.

REFERENCES:

1. Bansal, V. (2023). *Regulatory Framework and Digital Banking in India*. Journal of Financial Technology.
2. Kumar, R. (2022). *Enhancing Customer Experience through Digital Banking in India*. International Journal of Digital Banking.
3. Mehta, N., & Singh, P. (2021). *Consumer Expectations in Digital Banking*. Journal of Banking and Financial Services.
4. Mishra, R., & Sinha, D. (2020). *The Role of Mobile Banking in Financial Inclusion in India*. Indian Journal of Finance.

5. Patel, A., Raghunathan, P. (2020). *Cybersecurity in Indian Digital Banking: Challenges and Solutions*. Journal of Cybersecurity in Finance.
6. Rao, S., & Gupta, M. (2022). *Artificial Intelligence in Digital Banking: A Case Study of Indian Banks*. Indian Journal of AI & Finance.

**A STUDY ON QUALITY OF WORK LIFE OF POWER LOOM WEAVERS IN
THIRUPARKADAL VILLAGE, RANIPET DISTRICT**

**Mr Ponnurangam B, Research Scholar, Department of Commerce, SRMIST
Vadapalani, Chennai - 600026**

**Dr. G Dhamodharan, HOD, Department of Commerce (Shift I), SRMIST, Vadapalani
Chennai - 600026**

Abstract: The power loom weavers in Thiruparkadal, Ranipet District, plays a significant role in the local economy, providing employment to a substantial number of weavers. However, the quality of work life for these weavers has been a concern. This study aims to assess the various factors affecting the quality of work life of power loom weavers in Thiruparkadal. The lower-order QWL comprised of health/safety needs and economic/family needs whereas the higher-order QWL is comprised of social needs, esteem needs, self-actualization needs, knowledge needs, and aesthetic needs. The study highlights the need for significant improvements in the quality of work life of power loom weavers in Thiruparkadal. Addressing issues related to a professionalism, employment of workers recognition by the employer, recognition by the subordinates, recognition by the society, socializing with the friends, Co-operation by subordinates, Co-operation by administrative staff, A personal growth of my family, a purchase of two weavers, Television and other electronic items etc. and government support is crucial for ensuring the well-being of these workers and the sustainability of the industry. Recommendations include implementing stricter labor laws, providing adequate healthcare and safety measures, promoting skill development, and increasing government support for the power loom sector

Keywords: Job satisfaction of power loom weavers, Power loom industry, Self-actualization needs.

Introduction

The term quality of work life refers to the job satisfaction of the employees. Quality of work life refers to the favorableness or unfavorableness of the work environment, a scholarly website defines QWL as the level of (satisfaction/ happiness) or dissatisfaction with one's career. Various authors have proposed models of quality of working life which include a wide range of factors. Hack man & Othman (1976) drew attention to psychological growth needs as necessary considerations in QWL. These needs include skill variety, task identity, task significance, autonomy and feedback.

Taylor (1979) came up with components such as extrinsic job factors (eg. Wages, hours of work & working conditions) and intrinsic job factors. He states that quality of work life must have considerations such as: Employee participation in management, Fairness and equity, social support, Self-development, Meaningful future at work. Mirvis and Lower (1948) suggested that QWL was associated with: Satisfaction of wages, Hours and working conditions, Safe working environment, Equitable wages, Equal employment opportunities, Opportunities for advancement.

The researcher has selected the quality of work life factors like professionalism, employment of workers, recognition by the employer, and recognition by subordinates, recognition by the society, socializing with the friends, cooperation by subordinates, cooperation by administrative staff, personal growth, and purchase of two whalers, television and electronics items etc.

Review of Literature

The quality of work life (QWL) as a human resource intervention has gained significance in the USA and Scandinavia during the 1960s to 1970s. The impact of computer technology and increased automation led to a greater de-skilling, dehumanization, and alienation at workplace. Though developed economies and their industrial organizations have become affluent, the benefit of such affluence was not passed on to the working class.

Instead, measures like outsourcing were adopted to reduce reliance on domestic labor and reduce costs in the name of gaining competitive cost advantage. As a result, the workers faced heavy workloads, significant stress for meeting targets and deadlines, greater control, less autonomy and less job security than ever before. Also the emergence of high tech jobs and the employment of 24/7 knowledge workers in IT sectors, has drawn the attention of researchers from various disciplinary backgrounds to explore ways to create better work life conditions.

The objectives of such exercise were finding ways of motivating workers towards achieving high performance, enhancing job satisfaction and reducing threat of employee attrition (Hannifin & et.al. 2008, 272).

Danna & Griffin (1999) argues that Quality of work life is a wider concept that incorporates not only work based factors as pay and relations at work but also reflect on life satisfaction and general feeling of well-being.

Job and Career Satisfaction (JCS) of quality work life is said to reflect on employee's feelings and their satisfaction and contentment with their jobs and the training they receive to do it. It has been proposed that positive job satisfaction has been influenced by factors such as: -

- ❖ Clarity of goals and role ambiguity,
- ❖ Appraisal,
- ❖ Recognition and reward,
- ❖ Personal development career benefits,
- ❖ Enhancement and training needs.
- ❖ Training and Development is aimed at nurturing employee talent and enable them perform more difficult tasks.

Alan Price (2007) states that empowering frontline employees and emphasis on team work helps to harness intelligence & energies of employees thus creating potential for success and quality results This is achieved through giving knowledge and competencies to handle high performance work through team work, team briefings, interpersonal skills, appraisal and information sharing. Reward and compensation systems must also be aligned to satisfy, motivate and retain employees. Several reward criteria proposed include Rewards based on performance, effort, skill, seniority, job difficulty and discretion time.

DeCenzo and Robbin (2004)

The above contributions are largely based on the need theories e.g. as identified by Maslow in his Hierarchy of needs theory, all the five needs must be attended to in order to achieve a quality working life. The needs are: -

Physiological: These are basic physical comfort or bodily needs: food, sex, drink, and sleep.

In the workplace, these needs translate into a safe, ergonomically designed work environment with appropriate base salary compensation.

Security/safety: People want to feel safe, secure, and free from fear they need stability, structure, and order.

In the workplace, job security and fringe benefits, along with an environment free of violence.

Belongingness and love: This is a need for friends, family, and intimacy-for social acceptance and affection from one's peers.

In the workplace, this need is satisfied by participation in work groups with good relationships among co-workers and between workers and managers.

Esteem: People want the esteem of others and they want to be regarded as useful, competent, and important. People also desire self-esteem and need a good self-image.

In the workplace, increased responsibility, high status, and recognition for contributions satisfy these needs.

Self-actualization: This highest motivation level involves people striving to actualize their full potential, to become more of what they are capable of being. They seek to attain self-fulfillment. In the workplace, people satisfy this need by being creative, receiving training, or accepting challenging assignments.

Quality of Work Life – Concept and Dimensions

The concept “quality of work life” was first discussed in 1972 during an international labor relations conference. It received more attention after United Auto Workers and General Motors initiated a QWL program for work reforms. Robbins (1989) defined QWL as “a process by which an organization responds to employee Needs by developing mechanisms to allow them to share fully in making the decisions that design their lives of work (p.207)

In other words, it refers to the relationship between the work and environment, that can be broken down and different dimensions like the social, technical and economic, in which the work is normally viewed and designed. It is a complex multi dimensions generic concept (Hsu & Kernigan, 2006) Most of the literature on the QWL originates from the discipline of Industrial Labor Relationships (Hsu & Kernohan, 2006).

OWL has been defined by researchers in different ways. This has brought about certain equivalents such as work quality. Function of job content, employee’s well-being, the quality of the relationship between employees, working environment, and the balance between job demands and decision on autonomy or the balance between control need and control capacity (Korunka, Hoonakker, & Carayon, 2008; Lewis, Brazil, Krueger, Lohfeld, & Tjam, 2001; Schouteten, 2004, Van Laar, Edwards, & Easton, 2007) QWL is thus recognized as a multi-dimensional construct and the categorization is neither universal or eternal. Different researchers. Have come up with different categories and factors to define and measure quality of life.

Walton (1980) divided QWL main components into four categories. According to him, the affecting factors on OWL include work meaningfulness, work social and organizational equilibrium, work challenge and richness. Kyat, Burdick and Schuster (1985) have identified eleven dimensions of QWL in the year.

They are: pay, occupational stress, organizational health programmers, and alternative work schedule. Participate management and control of work, recognition, superior-subordinate relations, grievance procedure, adequacy of resources, seniority and merit in promotion and development and employment on permanent basis Winter et al., (2000) viewed OWL for attitudinal response among the employees which includes role stress, job characteristics, and supervisory, structural and social characteristics to directly and in directly shape academicians' experiences, attitudes and behaviors.

Mosharraf (2000) analyzed the security of employment, job/role clarity, understanding supervisors, work not stressful, access to relevant information and social and welfare facilities to measure the QWL in banks

According to Nadler & Lawler the types of QWL activities can be listed as:

- (i) Participative problem solving,
- (ii) Work restructuring,
- (iii) Innovative rewards systems and

(iv) Improving the work environment. Bhanugopan & Fish (2008) suggested indicators like lack of job stress, lack of job burnout, lack of turnover intentions and job satisfaction. They included measures like job satisfaction, earning money, membership successful teams, job security & job growth. in

(v) Connell & Hannil (2009) reported three factors -

(vi) Job content

(vii) Working hours and work-life balance, and Managerial/supervisory style and strategies. They believe key concepts tend to include job security, reward systems, pay and opportunity for growth among other factors

(viii) Measures of Quality of Work Life according to Adhikari & Gautam (2010) are: adequate pay and benefits, job security, safe and health working condition, meaningful job and autonomy in the job. Measures of Quality of Work Life include-

(ix) (i) increased worker involvement, participation and power,

(x) (ii) Increased emphasis on employee skill development,

(xi) (iii) Increased autonomy for action and decision Making at worker level and (iv) reduced status Distinctions among levels in hierarchy. (xii) Mirsepasi, (2006), having examined the different views and observed that QWL is explained by the Following factors:

(i) Fair and proper payment for good performance

(ii) Safe and secure work situation,

(iii) The possibility of learning and using new skills,

(iv) Establishing social integration in the organization,

(v) Keeping individual rights,

(vi) Equilibrium in job divisions and unemployment and

(vii) Creating work and organizational commitment. According to Casio (1998) quality of work life comprises both the mental and objective aspects of work life. The objective ones emphasize the circumstances and procedures relating to promotion policies, participatory supervision, and safe working conditions, whereas the subjective relate to supervision, communication, leadership etc. He identified 8 factors that determine quality of work life as given under Communication, employee involvement, desire and motivation to work, job security, career progress, solving problems, salary, and pride of a job.

Schermernhorn & John (1989) opined that the following factors must exist in the organization - fair and adequate pay, health and safety of working conditions creating opportunities to learn, growth in the professionalism path, professional integrity in the organization, support of individual rights and proud of the job. Hsu and Kernighan (2006) carried out a descriptive study with a convenience sample. They selected 16 focus groups, each containing 3-5 registered nurses with at least 2 years of experience in one medical centre and five regional hospitals.

They identified 56 QWL categories and fitted into 6 dimensions namely, socio-economic relevance, demography, organizational aspects, work aspects, human relation aspects and self-actualization. Major issues emphasized by focus groups are managing shift work within the demands of family life; accommodation; support resources; and nurses' clinical ladder system and salary system. Sirgy and et al (2001) categorized QWL into two major categories: lower- and higher order needs.

The lower-order QWL comprised of health/safety needs and economic/family needs whereas the higher-order QWL is comprised of social needs, esteem needs, self-actualization needs, knowledge needs, and aesthetic needs. For measurement, they suggested review in terms of the following seven categories of needs.

1. Health and safety needs (protection against disease and injury within and outside the workplace)

2. The needs of family economy (wages, job security and etc.)

3. The need for social (cooperative work between colleagues, and having free time in the workplaces)

4. Social needs (having the cooperative work between colleagues and spare time at work place.

5. The need for self-esteem (recognition and appreciation of the work inside and outside the organization).

6. The need for training (training to improve job skills).

7. The aesthetic needs (creativity workplace and personal creativity and general aesthetics.

Donald, et al, (2005) investigated QWL indicators in six Canadian Public Health Care Organizations (HCO's) by reviewing documentation relevant to QWL and conducting focus group or team interviews. Group interviews were taped and analyzed with qualitative data techniques. They found employee well being and working conditions are important indicators of QWL. They found vagueness in defining QWL indicators and they suggested increased HCO resources, integration of HCO management systems will help to access the relevant information.

Zare, Hamid, Haghighooyan, Zolfa and Asl, Zahra Karimi (2012) undertook a study on quality of work life to identify its dimensions Library method was used to gather information on theoretical basics, literature and to identify aspects and scales. Field study method was used to gather information through questionnaires distributed among 30 experts. The data so collected was analyzed using Analytical hierarchy process (AHP); it is found that QWL can be explained by four factors as given under.

1. Work life balance Fair working hours, Work-life atmosphere, Opportunity for doing religious ceremonies, Ergonomics, No physical and mental damages, Distance between workplace and home
2. Social factors The importance of work in the society, social integration in organization, Social networks in work, Respecting employees. Self-esteem feeling in the organization, Good colleagues
3. Economic factors Salary, Health service, Insurance, Retirement, Job security.
4. Job content Team working, independence, meaningful work. Rich and challenging work, ownership feeling in work, the need of creativity in work, growth opportunity.

From the above expositions, we can arrive at two conclusions

(i) QWL is a multi-dimensional concept.

(ii) Due to its multi-dimensional nature, it is a relative concept which cannot be precisely defined and measured.

When it comes to categorization, the following classifications can be found (i) The mental and objective aspects of work life (Casio, 1998), (ii) lower- and higher order needs (Sirgy and et al, 2001) and (iii) job characteristics, and supervisory, structural and social characteristics (Winter et al., 2000). The factors that were stated by different researchers are grouped and stated in Table The key concepts captured and discussed in the existing literature include job security. Better reward systems, higher pay, opportunity for growth, and participative groups, among others (Havlovic, 1991;

Objectives of the Study

1. To study the conceptual framework of QWL.
2. To know the QWL based on factors of power loom weavers.
3. To study the factors of job satisfaction of power loom weavers in Thiruparkadal village, Ranipet district.

Research Methodology

- This research study is based on convenient sampling.

- 50 samples were selected for this study from small scale industrial area in Thiruparkadal village, Ranipet district.
- Data analysis - Statistical tools like averages, standard deviation, chi-square test.

Collection of Data:

Primary data from 50 respondents by supplying the questionnaire and through direct interview method. Secondary data are those data which are already collected by some through books, Magazines and through internet for some other purpose. The data collected during the project on which the information where derived from so many sources.

Primary Data: They are predominantly collected from the survey instrument the questionnaire contained qualitative data as well as quantitative data. Some questions were closed ended and some others were close ended for the study 50 respondents were selected. The researcher personally questioned all these respondents.

Secondary Data: Secondary data for the study collected from the published and unpublished sources annual reports, research, journals and various related website

Analysis and Interpretation of Data

Quality of work life refers to the favorableness or unfavorableness of the work environment for people. The basic purpose is to developed jobs that are excellent for people as well as for production.

Table -1.1 A professionalism and satisfaction of workers.

Particulars	No. of respondents	Percentage
Highly satisfied	28	28%
Satisfied	61	61%
Dissatisfied	8	8%
Highly dissatisfied	3	3%
TOTAL	100	100%

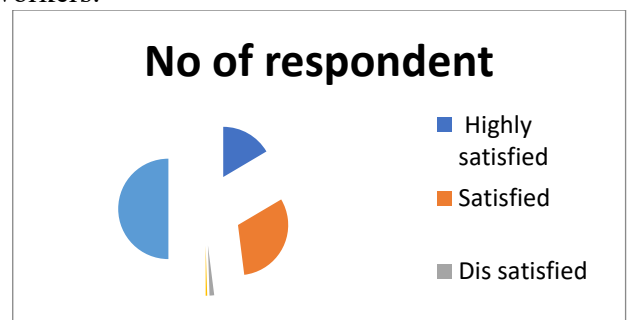


Table – 1. 2 Employments of workers and satisfaction of workers.

Particulars	No. of respondents	Percentage
Highly satisfied	33	33%
Satisfied	61	61%
Dissatisfied	5	5%
Highly dissatisfied	1	1%
TOTAL	100	100%

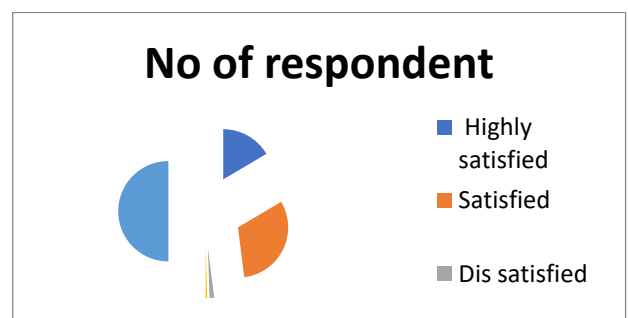


Table 1.3. Recognition by the employer and workers

Particulars	No. of respondents	Percentage
Highly satisfied	33	33%
Satisfied	63	63%
Dissatisfied	3	3%
Highly dissatisfied	1	1%
TOTAL	100	100%

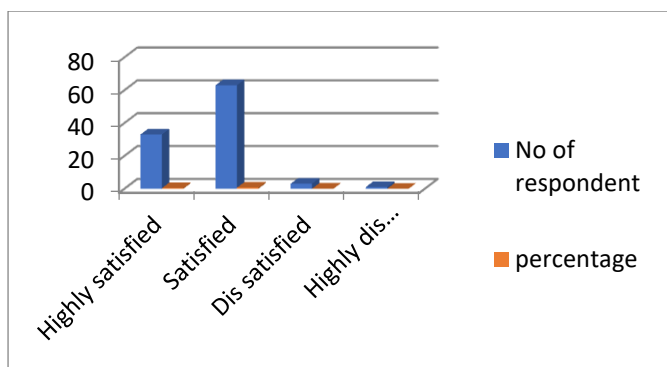


Table – 1.4 Recognition by a subordinates and satisfaction of workers

Particulars	No. of respondents	Percentage
Highly satisfied	40	40%
Satisfied	50	50%
Dissatisfied	8	8%
Highly dissatisfied	2	2%
TOTAL	100	100%

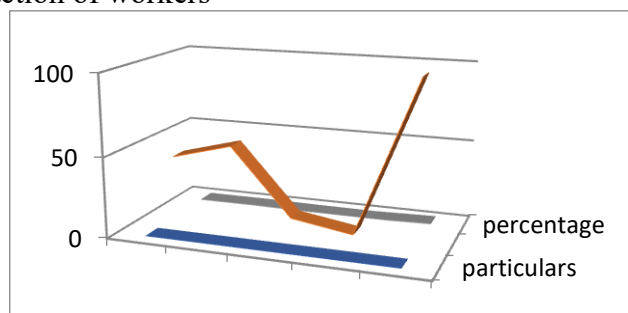


Table – 1.5 Recognition by a Society and satisfaction of workers

Particulars	No. of respondents	Percentage
Highly satisfied	45	45%
Satisfied	48	48%
Dissatisfied	7	7%
Highly dissatisfied	0	0%
TOTAL	100	100%

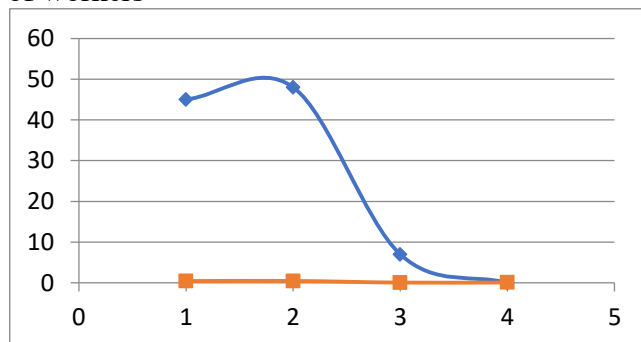
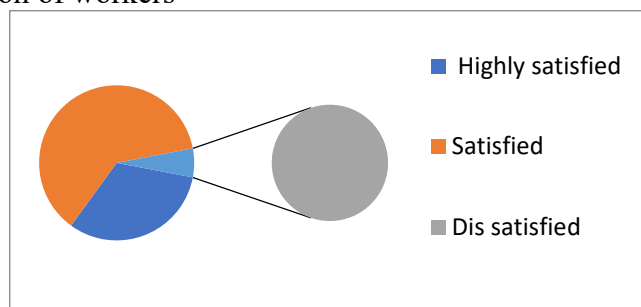


Table – 1.6 Socializing with the friends and satisfaction of workers

Particulars	No. of respondents	Percentage
Highly satisfied	32	32%
Satisfied	62	62%
Dissatisfied	6	6%
Highly dissatisfied	0	0%
TOTAL	100	100%



]Table – 1.7 Co-operation by subordinates and satisfaction of workers

Particulars	No. of respondents	Percentage
Highly satisfied	42	42%
Satisfied	50	50%
Dis satisfied	5	5%
Highly dis satisfied	3	3%
TOTAL	100	100%

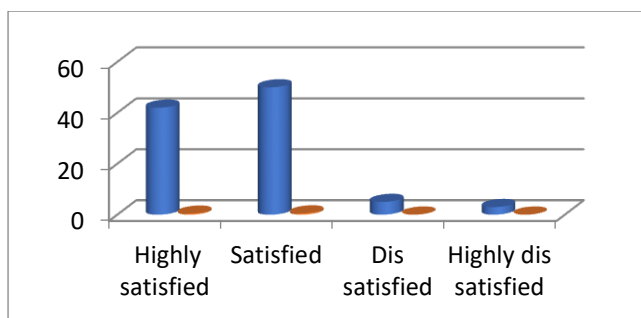


Table – 1.8 Co-operation by administrative staff and satisfaction of workers

Particulars	No. of respondents	Percentage
Highly satisfied	40	40%
Satisfied	52	52%
Dis satisfied	5	5%
Highly dis satisfied	3	3%
TOTAL	100	100%

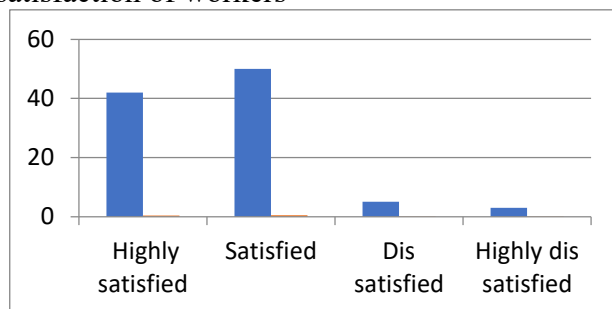


Table – 1.9 A Personal growth of my family and satisfaction of workers

Particulars	No. of respondents	Percentage
Highly satisfied	46	46%
Satisfied	54	54%
Dis satisfied	0	0%
Highly dis satisfied	0	0%
TOTAL	100	100%

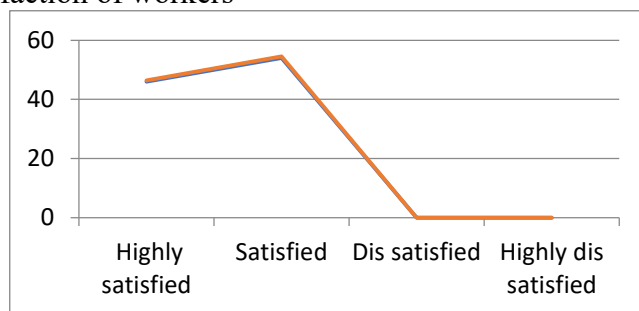
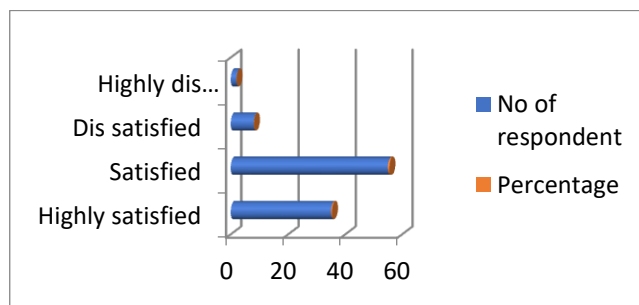


Table – 1.9 A purchase of two weavers, television and other electronic item etc. and satisfaction of workers

Particulars	No of respondents	Percentage
Highly satisfied	35	35%
Satisfied	55	55%
Dis satisfied	8	8%
Highly dis satisfied	2	2%
TOTAL	100	100%



Mean and standard deviation of quality of work life factors

QWL factors	MEAN	Standard deviation
Professionalism	20.83	6.25
Employments of workers	21.34	5.63
Recognition by the employer	22.14	6.83
Recognition by a subordinate	21.23	6.75
Recognition by a Society	20.84	6.23
socializing with the friends	21.14	6.93
cooperation by subordinates	22.34	7.13
cooperation by administrative staff	20.14	6.04

A Personal growth of my family	19.14	5.13
A purchase of two weavers, television and other electronic item etc.	22.34	6.23

Summary of Findings

1. A professionalism and satisfaction of workers

61% respondents are satisfied with the professionalism. 28% respondents are highly satisfied with the professionalism, and 8% of respondents are dissatisfied. Remaining 3% of respondents are highly dissatisfied about their professionalism. Most of the workers are satisfied that they become professional at work

2. Employment of workers and satisfaction of workers

61% respondents are satisfied about the employment of workers. 33% respondents are highly satisfied about the employment of workers and 5% of respondents are dissatisfied. Remaining 1% of respondents are highly dissatisfied about their employment of workers. Most of the workers are satisfied about the employment.

3. Recognition by the employer and workers

63% respondents are satisfied about the recognition by the employer. 33% respondents are highly satisfied about the recognition by the employer and 3% of respondents are dissatisfied. Remaining 1% of respondents are highly dissatisfied about their recognition by the employer. Most of the workers are satisfied with the recognition given by the employer.

4. Recognition by the subordinates and satisfaction of workers

50% respondents are satisfied about the recognition by subordinates. 42% respondents are highly satisfied about the recognition by subordinates. 8% of respondents are dissatisfied. Remaining 2% of respondents are highly dissatisfied about their recognition by subordinates. Most of the workers are satisfied with the recognition by the subordinates.

5. Recognition by the society and satisfaction of workers

48% respondents are satisfied about the recognition by the society. 45% respondents are highly satisfied about the recognition by the society, and 7% respondents are dissatisfied about the recognition by the society. Most of the workers are satisfied with the recognition by the society.

6. Socializing with the friends and satisfaction of workers

62% respondents are satisfied about the socializing with the friends. 32% respondents are highly satisfied about the socializing with the friends, and 6% respondents are dissatisfied about the socializing with the friends. Most of the workers are satisfied with the friendship at work.

7. Co-Operation by subordinates and satisfaction of workers

50% respondents are satisfied about the co-operation by subordinates. 42% respondents are highly satisfied about the co-operation by subordinates and 5% of respondents are dissatisfied. Remaining 3% of respondents are highly dissatisfied about their co-operation by subordinates. Most of the workers are satisfied with the co-operation by subordinates.

8. Co-operation by administrative staff and satisfaction of workers

52% respondents are satisfied about the co-operation by administrative staff. 40% respondents are highly satisfied about the co-operation by administrative staff, and 5% of respondents are dissatisfied. Remaining 3% of respondents are highly dissatisfied about their co-operation by administrative staff. Most of the workers are satisfied with the administrative staff.

9. A personal growth of my family and satisfaction of workers

54% respondents are satisfied about the personal growth of my family. 46% respondents are highly satisfied about the personal growth of my family. So there is no

dissatisfied and highly dissatisfied about the personal growth of my family. Most of the workers are satisfied with the personal growth of the family.

10. A purchase of two weavers, television and other electronic items etc. and number of satisfied by workers

35% respondents are satisfied about the purchase of two weavers, television and other electronic items etc. 55% respondents are highly satisfied about a purchase of two weavers, television and other electronic items etc., and 8% of respondents are dissatisfied. Remaining 2% of respondents are highly dissatisfied about their purchase of two weavers, television and other electronic items etc. Most of the workers are satisfied with the purchase of durables.

Conclusion

The study highlights the need for significant improvements in the quality of work life of power loom weavers in Thiruparkadal. Addressing issues related to a professionalism, employment of workers recognition by the employer, recognition by the subordinates, recognition by the society, socializing with the friends, Co-operation by subordinates, Co-operation by administrative staff, A personal growth of my family, a purchase of two weavers, Television and other electronic items etc. and government support is crucial for ensuring the well-being of these workers and the sustainability of the industry. Recommendations include implementing stricter labor laws, providing adequate healthcare and safety measures, promoting skill development, and increasing government support for the power loom sector.





Dr. V. Prabakaran, M.Com., M.Phil., M.B.A., M.Sc. (Psy), PGDE-Com., Ph.D., is the Assistant Professor & Head of the Department of Commerce (Hons.), International Accounting and Finance at SRM IST, Vadapalani. With 19 years of teaching and research experience, he specializes in Accounting, Income Tax, and Financial Markets. He has published extensively in Scopus-indexed journals, presented at international conferences, and guided Ph.D. scholars. A SEBI & NISM-certified financial literacy trainer, he has conducted numerous investor awareness programs. He has also filed a patent on AI-driven corporate financial accounting systems, showcasing his expertise in fintech innovations.



Dr. S. R. Sathyanarayanan, Ph.D., M.Phil., M.Com., MBA, M.Sc. (Psy), M.A. (Eco) is an Assistant Professor in the Department of Commerce (Hons.), International Accounting and Finance at SRM IST, Vadapalani. With extensive experience in Banking, Finance, HRM, and Entrepreneurship, he has served in academic leadership roles, including Vice Principal and Dean of Commerce & Management. A prolific researcher and author, he has published in national and international journals and has been a resource person for financial literacy and entrepreneurship programs. His expertise extends to corporate law, investment strategies, and organizational psychology, making significant contributions to academia and industry.



Prof. C. Arun Kumar, Assistant Professor in Commerce (Honours - International Accounting and Finance) at SRM IST, Chennai, is a dedicated academician with expertise in UGC-NET coaching, financial management, and research methodologies. He has published 7 UGC-Care listed research articles, presented at national and international conferences, and organized 11 national seminars and 2 international conferences. A mentor in statistical tools like SPSS and Advanced Excel, he has guided 500+ students and delivered 60+ special lectures on commerce, finance, and career development. An author of 4 books, he actively contributes to academia through research, mentorship, and curriculum development.

