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Entrepreneurship in the electric vehicle sector: Past, present and future directions

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Abstract

This study examines the literature on entrepreneurship related to electric vehicles (EVs) to guide future research and influence sustainable transportation policies by identifying key contributions, trends, and gaps. Based on 71 studies from the Scopus database, the United States and the United Kingdom are identified as leading contributors to EV entrepreneurship research, with significant publications in *the Research Policy* journal. Thematic mapping highlights popular themes such as sustainability and electric vehicles and specific themes like disruptive innovation. Emerging themes include startups and sustainable mobility. Insights from this study can inspire researchers and help policymakers address critical issues in the EV industry, promoting sustainable transportation solutions. This study is the first to conduct a comprehensive bibliometric and thematic analysis of electric vehicles within the context of entrepreneurship.

Keywords: Electric vehicle, Entrepreneurship, Innovation, Start-ups, Green business investment.

Paper type: Review paper

1. Introduction

The transportation industry is undergoing a significant transition driven by the urgent need to combat climate change, reduce greenhouse gas emissions, and decrease reliance on fossil fuels (Asif et al., 2021). Automakers are adopting more environmentally conscious practices and experimenting with innovative business models such as vehicle-to-grid technology, opening new opportunities for the energy sector (Costa et al., 2022). This shift necessitates a comprehensive framework integrating technology, entrepreneurship, and ecological sustainability for green technology business models (Trapp & Kanbach, 2021). The importance of collaboration among the public, private, and social sectors cannot be overstated. It is the key to developing innovative solutions that effectively address the United Nations' sustainable development goals within the transportation industry (Günzel-Jensen & Rask, 2021). This transition towards green business models is further bolstered by significant advancements in electric vehicle adoption, supply chain improvements, increased consumer acceptance, investment in charging infrastructure, policy incentives, and a host of other factors (De Rubens et al., 2020). The increasing use of electric vehicles highlights the need to understand the entrepreneurial environment supporting this growth. The lack of viable business models hinders the expansion of the electric mobility market, forcing businesses to take risks and learn from mistakes. However, academic research supporting effective market growth for electric mobility is expanding (Ziegler & Abdelkafi, 2022). Startups and entrepreneurs play a crucial role in encouraging innovation, establishing new business models, and accelerating the adoption of electric vehicle

technologies. Despite their limitations, transport sector startups contribute creatively to greening initiatives. While large corporations invest heavily in research and development, startups focus on small but potentially significant changes at the business level (Skala, 2022). The dynamic interaction between entrepreneurs and technology fosters a thriving environment that facilitates electric vehicle commercialization and mainstream integration. Although interest in electric vehicles is growing, there remains a need for a thorough analysis of research trends, contributions, and prospects in this area, particularly from an entrepreneurial perspective. Despite previous studies examining various aspects of electric vehicle technology and market dynamics, a notable gap exists in understanding the entrepreneurial activities and business-related innovations driving the electric vehicle industry. More research is needed to map the theoretical domain of electric vehicle entrepreneurship using bibliometric and thematic assessment methods. This gap complicates our understanding of this rapidly growing field's contributions, patterns, and emerging areas. Therefore, this study aims to address the following research questions:

RQ1: What significant contributions have made the most impact electric vehicle entrepreneurial endeavors?

RQ2: How have entrepreneurial research trends in electric vehicles changed over time?

RQ3: What new topics and themes are emerging in this field, and in what direction is the research progressing?

This study makes several contributions to electric vehicles and entrepreneurship through review analysis and thematic and conceptual evaluation. It provides

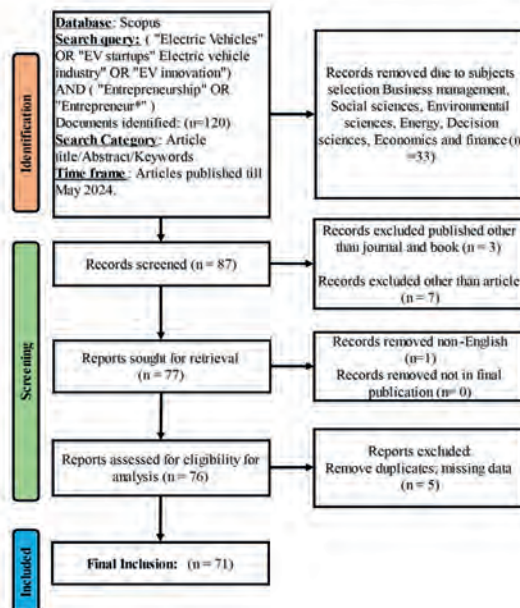
an overview of the extensive scope of electric vehicle entrepreneurship research, presenting the development and applicability of different research ideas and revealing the connections between primary and specific domains within the research area. The study identifies significant patterns and emerging fields, offering valuable insights for policymakers and practitioners. This knowledge aids businesses in making strategic decisions that encourage innovation and long-term sustainable growth in the electric vehicle industry.

2. Research Methods

Initial search in Scopus databases resulted into 120 studies. Following various inclusion and exclusion criteria, 71 studies

were selected for further analysis (Figure. 1). This search approach aimed to capture a broad spectrum of relevant studies, minimizing the risk of overlooking important research material (Jaiswal & Gupta, 2024). The article selection process adhered to PRISMA principles to ensure a transparent identification, filtering, and collection of documents for final analysis. Bibliometric analysis, performed using R Biblioshiny and VOSviewer, identified key players in the field (Prakhar et al., 2024; Jaiswal et al., 2024a; Jaiswal et al., 2024b; Jaiswal et al., 2024c; Jaiswal et al., 2022; Jaiswal & Gupta, 2024). Additionally, this study assesses newly developed ideas and themes through factorial and topic maps. Based on these findings, the paper offers recommendations and implications for further research.

Figure 1: Data inclusion criteria (based on PRISMA guidelines)



3. Results and discussions

3.1 Bibliometric landscape

3.1.1 Influential authors, journals, and countries

Based on the total number of citations, the table analyses the leading contributors in entrepreneurship and electric vehicles, highlighting key authors, countries, and journals. It provides insight into the

influence of different researchers in this area. Bohnsack R., Pinkse J., and Kolk A. have made a significant impact in the field with a single article that has not just garnered an impressive 414 citations but has also shaped further research. This high citation count is a testament to the profound impact of their work. Nosratabadi S., despite having only one publication, ranks second with 279 citations, demonstrating substantial influence, although nearly half of the first-ranked authors. With one publication and 157 citations, Brown H.S. and co-authors also show considerable research influence. These variations in citation counts highlight the differing levels of impact among these influential single publications. United Kingdom stands out among countries with 13 publications and the highest total of 828 citations, indicating a significant research presence. The Netherlands follows with six articles and 679 citations, showcasing strong research output with notable citation impact. The United States, despite having the highest number of publications (16), ranks fourth in total citations (342), indicating a vast but moderately referenced body of research. Other noteworthy contributors include France (5 publications, 514 citations) and

Australia (4 publications, 280 citations). Hungary, Lithuania, and Vietnam each have a single publication but nearly equal citations to Australia, with 279 citations.

Research policy has the most significant impact in journals, as evidenced by a single publication that received 414 citations. This journal's influence is not just in the number of citations but also in the direction of further research. Sustainability (Switzerland) ranks second with three publications and 308 citations. Technology Analysis and Strategic Management, with three articles and 221 citations, and Energy Policy, with four publications and 114 citations, show a substantial interest in publishing articles related to electric vehicle business innovation, though with lower citation counts. The Journal of Cleaner Production ranks last with two publications and 44 total citations, comparable to Progress in Planning, Nature Communications, Transportation Research Part D: Transport and Environment, IEEE Transactions on Engineering Management, and Business Horizons, each having a single publication but higher citation counts. This analysis underscores the varying levels of influence and research impact across authors, countries, and journals in electric vehicle entrepreneurship.

Table.1: Top 10 Authors, Countries, Journals on the basis of citation

| Author | TP | TC | Country | TP | TC | Journals | TP | TC |
|--|----|-----|----------------|----|-----|------------------------------|----|-----|
| Bohnsack R.; Pinkse J.; Kolk A. | 1 | 414 | United Kingdom | 13 | 828 | Research Policy | 1 | 414 |
| Nosratabadi S.; Mosavi A.; Shamshirband S.; Zavadskas E.K.; Rakotonirainy A.; Chau K.W. | 1 | 279 | Netherlands | 6 | 679 | Sustainability (Switzerland) | 3 | 308 |

| | | | | | | | | |
|---|---|-----|---------------|----|-----|---|---|-----|
| Brown H.S.; Vergragt P.; | 1 | 157 | France | 5 | 514 | Technology Analysis And Strategic Management | 3 | 221 |
| Green K.; Berhicci L. Cooke P. | 1 | 98 | United States | 16 | 342 | Energy Policy | 4 | 114 |
| Hao H.; Geng Y.; Tate J.E.; Liu F.; Chen K.; Sun X.; Liu Z.; Zhao F. | 1 | 73 | Hong Kong | 2 | 281 | Progress In Planning | 1 | 98 |
| Luna T.F.; Uriona- Maldonado M.; Silva M.E.; Vaz C.R. | 1 | 70 | Australia | 4 | 280 | Nature Communications | 1 | 73 |
| Van Der Zwaan B.; Keppo I.; Johnsson F. | 1 | 70 | Hungary | 1 | 279 | Transportation Research Part: D Transport and Environment | 1 | 70 |
| Gurca A.; Ravishankar M.N. | 1 | 53 | Lithuania | 1 | 279 | Ieee Transactions on Engineering Management | 1 | 53 |
| Ferràs-Hernández X.; Tarrats-Pons E.; Arimany- Serrat N. | 1 | 51 | Viet Nam | 1 | 279 | Business Horizons | 1 | 51 |
| Dyerson R.; Pilkington A. | 1 | 49 | Sweden | 4 | 133 | Journal Of Cleaner Production | 2 | 44 |

Table 2 provides an overview of the top researchers in entrepreneurship and electric vehicles, highlighting their publication output and patterns. Notably, Khan S. is the most productive author with three publications, all completed in 2022. This surge of publications indicates a recent, significant focus on this field, suggesting novel or highly relevant insights. Bhakat A. and Ketsmur V. each have two publications, with Bhakat's contributions appearing in 2022 and Ketsmur's in 2019 and 2020. This reflects the latest advancements in the field. Similarly, Bohnsack R. has shown consistent contributions over time, with publications in 2014 and 2017 demonstrating sustained interest in the topic. Early contributors include

Brown H.S. and Cohen N., each with two publications. Brown H.S. published in 2003 and 2004, laying foundational understandings for further research, while Cohen's publications in 2013 and 2014 continued to build on this foundation. Recently, authors such as Crescimanno M. and Fries M. have shown interest, with works published in 2019, 2021, 2017, and 2018 indicating increasing scholarly engagement and new research directions. Galati A. and Giacomarra M. each published one article in 2021, reflecting their growing interest in and contributions to the field. The collective work of these and other authors indicates that the body of knowledge about entrepreneurial innovation and electric vehicles is expanding and becoming more diverse.

Table 2: Top 10 Contributing Authors and their Productivity Year on Year

| Author/ years | 2003 | 2004 | 2013 | 2014 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | TP |
|------------------|------|------|------|------|------|------|------|------|------|------|----|
| Khan S. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 |
| Bhakat A. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Ketsmur V. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Bohnsack R. | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Brown H.S. | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Cohen N. | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Crescimanno M. | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| Fries M. | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| Galati A. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Giacomarra M. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

Table 3 overviews the most prominent journals in entrepreneurship and electric vehicle research, highlighting their productivity patterns, publishers, and H-index values. *Technology Analysis and Strategic Management* stands out for its early involvement in the topic, with its first paper published in 2003. Despite its early start, it currently ranks fourth with a total productivity of 3, indicating a specialized yet significant contribution. *Energy Policy*, published by Elsevier, has the highest overall productivity with four publications. Its notable output in 2013 underscores its significant role in technological innovations in sustainable transportation. Elsevier's prominence as a publisher is further demonstrated by *Energy Research and Social Science* and *Journal of Cleaner Production*, contributing significantly with total productivity values of 2 and high H-index values of 113 and 309,

respectively. MDPI publications, such as the *World Electric Vehicle Journal* and *Sustainability (Switzerland)*, have overall productivity values of 2 and 3, respectively, highlighting MDPI's expanding influence in disseminating research in the rapidly developing electric vehicle industry. Notably, since 2019, ***Sustainability (Switzerland)*** has been a platform for discussing sustainable transportation industries. *Procedia CIRP*, published by Elsevier, and *Advanced Materials Research* by TransTech Publications, each has a total productivity of 2. The wide range of journals and publishers involved in this research underscores the extensive interdisciplinary engagement with electric vehicles and entrepreneurship. The distribution of contributions across several prominent publications further highlights the interdisciplinary nature of this research area and its significance in numerous academic and practical domains.

Table 3: Top 10 contributing journals and their productivity year on year

| Journals/ Year | 2003 | 2005 | 2009 | 2010 | 2013 | 2014 | 2016 | 2017 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | T P | Publisher | H- index |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|--|-------------|
| Energy Policy | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | Elsevier | 27 |
| | | | | | | | | | | | | | | | | | 2 |
| Automotive Industries AI | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | Diesel and gas turbine publication | 5 |
| Sustainability (Switzerland) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 3 | MDPI | 16 |
| | | | | | | | | | | | | | | | | | 9 |
| Technology Analysis and Strategic Management | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | Routledge | 84 |
| Advanced Materials Research | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | Trans Tech publication | 52 |
| Communications In computer and information on Science | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | Springer Science and business media Deutschland GmbH | 69 |
| Energy Research and Social Science | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | Elsevier | 11 13 |
| Journal Of Cleaner Production | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | Elsevier | 30 9 |
| Procedia CIRP | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | Elsevier | 10 3 |
| World Electric Vehicle Journal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | MDPI | 32 |

3.1.2 Most Productive Countries

Table 4 highlights significant patterns and the evolution in emphasis across various countries, providing essential insights into global research productivity

in electric vehicles and entrepreneurial innovation over the years. The United States stands out as a leader, being the first nation to publish in this field as early as 1984. It continued to build on its early involvement, reaching 27 articles in 2024

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Italy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 9 | |
| | | | | | | | | | | | | | | | | | 0 | 0 | 4 | 4 | 4 | 4 | 2 | |
| Belgium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 7 | 1 | 1 | 1 | 1 | 1 | 8 | |
| | | | | | | | | | | | | | | | | | 0 | 1 | 1 | 1 | 1 | 1 | 8 | |
| China | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 1 | 1 | 2 | 2 | 8 | |
| | | | | | | | | | | | | | | | | | 1 | 1 | 4 | 0 | 0 | 0 | 3 | |
| Mexico | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 7 | 1 | 1 | 1 | 1 | 6 | |
| | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 2 | 3 | |
| India | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 4 | 4 | 8 | 1 | 3 | |
| | | | | | | | | | | | | | | | | | | | | | | | 3 | 5 |
| Bangladesh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 | 3 | |
| | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | |

3.1.3 Top Cited documents

Table 5 provides an overview of the most influential documents in electric vehicles and entrepreneurship, highlighting their citation counts, publication details, and the H-index values of the journals in which they were published. Bohnsack et al. (2014) explore the impact of the growth of electric vehicle business models, examining the sequence of entrepreneurial business capabilities. It identifies four patterns and traces their convergence over time. Nosratabadi et al. (2019) review notable achievements, identify areas requiring further investigation, and discuss the growing acceptance of innovative technologies for improving sustainability performance. Brown et al. (2003) investigate higher-order learning within limited socio-technical experiments for sustainable transportation. It emphasizes the importance of interactive learning and societal shifts toward sustainability while highlighting the need for further

research. Cooke (2011) examines several political frameworks, focusing on transition regions leading the switch to renewable energy. It aims to present successful eco-innovations in devolved areas for international observation and analysis. Hao et al. (2019) addresses the often-overlooked realm of heavy-duty vehicles in transportation electrification. It reveals the increased demand for lithium due to large batteries and replacements, urging caution regarding mass electrification. Van Der Zwaan et al. (2013) explore decarbonizing transport, comparing hydrogen versus electric vehicles' emissions and infrastructure considerations. It highlights the growing popularity of hydrogen for long-term transportation plans. Luna et al. (2020) examine the impact of an e-carsharing program on carbon emissions and the uptake of electric vehicles in metropolitan areas. It emphasizes government support to reduce emissions and increase public

awareness and adoption of electric vehicles. Ravishankar and Gurca (2016) analyze the role of bricolage in business technology and product development. They focus on how bricolage helps overcome resource limitations and drives innovative, affordable electric vehicles in the face of disruptive technologies and market unpredictability. Ferràs-Hernández et al. (2017) examine 156 venture-backed

automotive businesses, revealing an unstable period marked by digital rivalry, disruptive outsiders, and the potential for a dominant design to emerge. Dyerson and Pilkington (2005) investigate California's electric vehicle laws as a disruptive factor. They suggest cooperation between new and established automakers to successfully enter the market.

Table 5: Top 10 Contributing Documents on the basis of their Citation

| Paper | Title | DOI | TC | Journal | Publisher | H-index |
|---------------------------------|---|------------------------------|-----|--|--|---------|
| (Bohnsack et al., 2014) | Business models for sustainable technologies: Exploring business model evolution in the case of electric vehicles | 10.1016/j.respol.2013.10.014 | 414 | Research Policy | Elsevier | 289 |
| (Nosratabadi et al., 2019) | Sustainable Business Models: A Review | 10.3390/su11061663 | 279 | Sustainability | MDPI | 169 |
| (Luna et al., 2020) | The influence of e-car-sharing schemes on electric vehicle adoption and carbon emissions: An emerging economy study | 10.1016/j.trd.2020.102226 | 70 | Transportation Research, Part D: Transport and Environment | Elsevier | 135 |
| (Ravishankar and Gurca, 2016) | A Bricolage Perspective on Technological Innovation in Emerging Markets | 10.1109/TEM.2015.2494501 | 53 | IEEE Transactions on Engineering Management | Institute of Electrical and Electronics Engineers Inc. | 112 |
| (Ferràs-Hernández et al., 2017) | Disruption in the automotive industry: A Cambrian moment | 10.1016/j.bushor.2017.07.011 | 51 | Business Horizons | Elsevier | 118 |
| (Dyerson and Pilkington, 2005) | Gales of creative destruction and the opportunistic incumbent: The case of electric vehicles in California | 10.1080/09537320500357160 | 49 | Technology Analysis and Strategic Management | Routledge | 84 |

| | | | | | | |
|------------------------------|---|--------------------------------------|-----|--|-------------------------|-----|
| (Brown et al., 2003) | Learning for Sustainability Transition through Bounded Socio-technical Experiments in Personal Mobility | 10.1080/09537320310001 | 157 | Technology Analysis and Strategic Management | Routledge | 84 |
| (Cooke, 2011) | Transition regions: Regional-national eco-innovation systems and strategies | 60149610.1016/j.progress.2011.08.002 | 98 | Progress in Planning | Elsevier | 57 |
| (Hao et al., 2019) | Impact of transport electrification on critical metal sustainability with a focus on the heavy-duty segment | 10.1038/s41467-019-13400-1 | 73 | Nature Communications | Nature Publishing Group | 522 |
| (Van Der Zwaan et al., 2013) | How to decarbonize the transport sector? | 10.1016/j.enpol.2013.05.118 | 70 | Energy Policy | Elsevier | 272 |

3.1.4 World cloud, Co-occurrence Network and country collaboration analysis

The word cloud map in Figure 2 illustrates electric vehicles' prevalent themes and concepts: innovation, sustainable development, sustainability, and entrepreneurship. The frequencies of the significant keywords are as follows: electric vehicle (28), innovation (10), sustainable development (9), sustainability (8), and commerce and investment (6). These frequencies indicate a growing emphasis on leveraging innovation to address the challenges of sustainable development and entrepreneurship in the electric vehicle sector. The prominence of terms like electric automobile (6), sustainable mobility (4), and hybrid vehicles (4) signifies the increasing importance and growth of sustainable

transportation solutions. This suggests a shift towards environmentally friendly modes of transportation and a heightened concern for reducing carbon emissions (3), promoting the use of renewable energies (3), and exploring alternative energy sources (2). The word entrepreneur (6) also points to a burgeoning interest in innovative entrepreneurial initiatives within the sustainable transportation sector. It highlights the entrepreneurial opportunities and potential economic impacts within this domain. Thus, the word cloud reflects the evolving landscape of sustainable transportation, emphasizing sustainable development, technological innovation, and entrepreneurial endeavors. It underscores the growing significance of these themes in recent publications and their role in shaping the future of transportation.

Figure 2: Word cloud



Figure 3 shows a co-occurrence network analysis which involves identifying the frequency and patterns of terms that appear together in the scholarly literature. By analysing and examining the frequency and relationship between key terms within the articles it includes connection, visualization and density between keywords and their link strength Ullah et al., (2023). The figure depicts interconnection of various clusters related to electric vehicle. The prominent nodes include solar energy, three-wheeler, product design, sustainable development, automotive industry, internal combustion engines, innovation, strategic approach, investments, commerce and charging are directly and indirectly interconnected with highlighted cluster electric vehicle. One of the significant co-occurrence networks signifies a

convergent focus on entrepreneur, business, technology, students, sustainability, sustainable transportation, in automotive sector. Another highlighted network includes hybrid vehicle, digital store, automotive testing, internal combustion engines suggest an emphasis on automotive technology advancement research endeavours aimed at enhancing the efficiency and sustainability of automotive technologies. Furthermore, the clustering of nodes related to technological development, stakeholder, strategic approach mainly focused on innovation in the field of electric vehicle business. Overall, this co-occurrence network reflects a multidimensional approach towards sustainable automotive innovation and technological development in electric vehicle industry, with a strong emphasis on sustainability, entrepreneurship, and technological advancement.

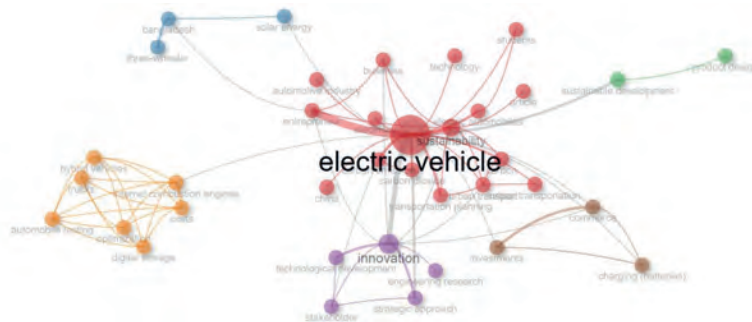


Figure 3: Co-occurrence Network

Figure 4 illustrate research collaboration globally, with highlighted blue colour indicate research cooperation among nations and pink linking lines showing the extent of collaboration among authors. It is captivating to observe how countries leading in electric vehicle business entrepreneurship publications. Countries such as China, Germany, United states,

to Korea, United Kingdom, Israel engage in ample collaborations. Australia, Brazil, France, Hong Kong, India, Italy, Netherlands, Portugal, Spain, Sweden, Switzerland, Thailand, Lithuania, Bangladesh, Denmark, Ecuador can be considered as second most significant collaborator countries in the particular field of electric vehicle and entrepreneurship.



Figure 4: Country collaboration *map*

3.2 Thematic analysis of studies

This section employs factorial analysis (Figure 5) and thematic mapping (Figure 6) to uncover key themes and elements within the research. This classification distinguishes areas that have received extensive investigation from those that have not, revealing niche topics, emerging trends, declining areas of interest, and fundamental themes. Thematic mapping showcases the evolution of research focus over time, while factorial analysis integrates variables to illustrate the primary research motivations. Together, these analytical tools provide insights into the field's dynamic nature and intellectual framework, guiding researchers toward valuable opportunities for further investigation.

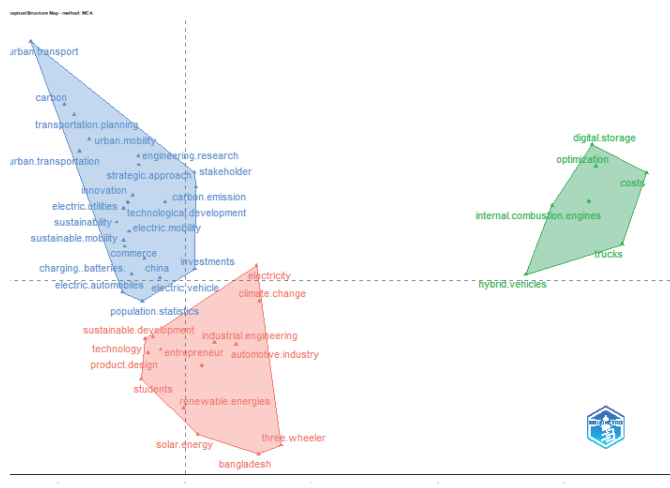
3.2.1 Conceptual structure Analysis

Figure 5 presents a factorial analysis to assess the probability of specific variables within entrepreneurship and electric vehicles. The figure depicts three clusters represented by different colours. The first cluster, depicted in blue, encompasses variables such as electric vehicles, innovation, sustainability, investments, and electric mobility. For instance, Brown et al. (2003) conducted a case study focusing on sustainable mobility through higher-order learning within a bounded socio-technical experiment. Their study emphasized the importance of participant and societal learning for achieving sustainable transitions. Similarly, Cooke (2011) investigated transition regions facilitating eco-innovation in the shift towards renewable energy, categorizing

regions based on political models and highlighting successful eco-innovations and governmental roles for sustainable transitions. Luna et al. (2020) explored the impact of an e-carsharing scheme on carbon emissions and the adoption of electric vehicles using system dynamics modeling. Their findings underscored the effects of emissions and the subsequent impact on electric vehicle adoption. In contrast, the red cluster stands out with its unique variables, such as sustainable development, entrepreneurship, solar energy, renewable energy, and automotive energy. Bohnsack et al. (2014) examined how sustainable technologies impact business models for electric vehicles, identifying archetypes and recognizing a trend toward service-oriented business models. Nosratabadi et al. (2019) reviewed sustainable business models across

diverse application areas, emphasizing their increasing popularity and success in improving organizational sustainability. Hao et al. (2019) examined the global lithium resource impacts from heavy-duty vehicle electrification, cautioning against mass electrification due to increased lithium demand. Thomas and Maine (2019) analyzed Tesla Motors' entry into the automotive market, focusing on architectural innovation and the attacker's advantage. Günzel-Jensen and Rask (2021) conducted a case study highlighting the incompatible outcomes of stakeholder engagement in environmental entrepreneurship, emphasizing the need for new organizational structures to bring about significant change. Lastly, Fries et al. (2018) optimized hybrid truck powertrain operation, achieving fuel savings while maintaining vehicle performance.

Figure 5: Factorial analysis



3.2.2 Thematic map analysis

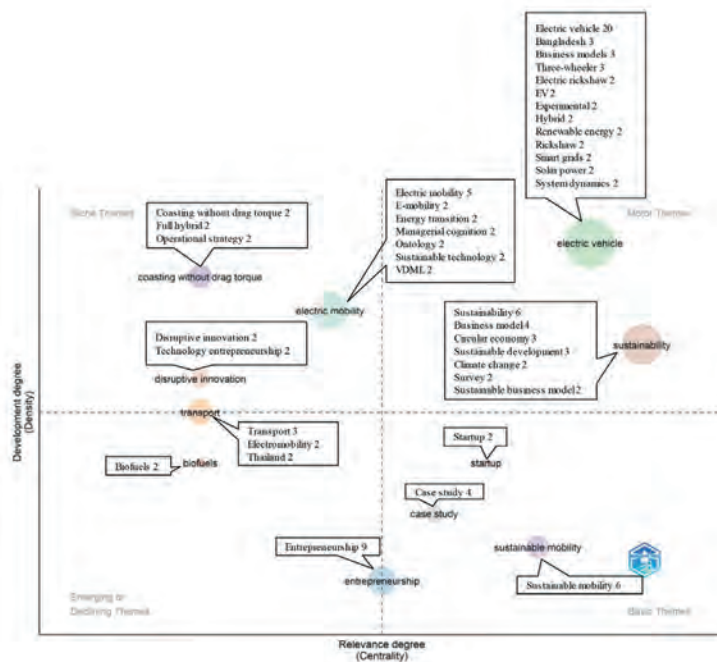
Figure 6 illustrates the predominant themes related to entrepreneurship in the electric vehicle industry. The graphical representation categorizes themes into

four sections based on author keywords and their frequencies: niche themes, motor themes, emerging or declining themes, and basic themes. Niche themes encompass specific and focused areas

within the related fields, such as “Coasting without drag torque,” “Electric mobility,” and “Disruptive innovation.” For example, Fries et al. (2018) utilized a MATLAB/Simulink model to develop an optimal operating strategy for hybrid electric vehicle powertrain parts, achieving theoretical fuel savings. Thomas and Maine (2019) analysed Tesla’s strategy, emphasizing architectural innovation for commercializing electric vehicles effectively. Antonio et al. (2023) examined how entrepreneurial ventures innovate their value propositions to disrupt existing market players. Emerging or declining themes mainly revolve around biofuels, with transport and entrepreneurs covering half of the basic themes. Relevant documents in this section include Wesseling et al. (2020), which explored the impact of business model innovation within socio-technical systems, focusing on constraints and opportunities in the electric vehicle industry in the

Netherlands. Cohen and Naor (2017) conducted a case study on Better Place’s failed sustainability policy, revealing the challenges of long-term governmental backing for sustainability initiatives. Motor themes highlight well-developed and significant themes, such as electric vehicles and sustainability. Nosratabadi et al. (2019) explored the success of sustainable business models across various application areas, emphasizing their increasing popularity and impact. Luna et al. (2020) evaluated the impact of an e-carsharing scheme on carbon emissions and electric vehicle adoption, emphasizing the role of government support. Finally, the fourth quadrant showcases basic themes like startup and sustainable mobility. Relevant documents include Galati et al. (2021), which studied the implementation of Electric Freight vehicles in Short Food Supply Chains to enhance sustainability, emphasizing collaboration among stakeholders for efficient urban mobility.

Figure 6: Thematic Map



4. Implications, limitations and future research areas

4.1 Contribution to literature

By presenting an academic review of the current state of research on electric vehicles and entrepreneurship, this work significantly contributes to academic knowledge. It is a valuable resource for researchers aiming to deepen their understanding of this field by identifying key patterns, notable documents, and emerging concepts. The findings highlight notable gaps in the literature, particularly regarding the entrepreneurial aspects of innovation in electric vehicles. It encourages further scholarly exploration of these overlooked areas, facilitating a deeper comprehension of how entrepreneurship drives technological advancement and commercial adoption in the electric vehicle industry. Moreover, the methodology employed in this study sets a benchmark for bibliometric analysis in similar domains, laying the groundwork for future research endeavors.

4.2 Practical Implications

This study offers industry professionals valuable insights into the factors influencing business innovation and entrepreneurial success. Tracking the thematic evolution of research identifies key areas where startups and established businesses can focus their efforts to gain a competitive advantage. Thematic, factorial, and conceptual analyses uncover unexplored areas within the automotive electric vehicle business ecosystem, such as charging infrastructure, battery technology, solar energy integration, and renewable energy sources. This information equips entrepreneurs with the knowledge to make informed strategic

decisions, driving innovation and market competitiveness. Moreover, the study's examination of significant contributors and influential studies guides industry experts to stay updated on the latest developments and implement best practices in their business operations. This proactive approach ultimately fosters innovation and competitiveness.

4.3 Policy Implications

From a policy perspective, this study underscores the importance of fostering regulatory frameworks that support innovation and entrepreneurship in the electric vehicle sector. Disparities in innovation and research activity between countries highlight the need for targeted governmental initiatives to address this imbalance. Policymakers can leverage these insights to develop plans that support startup ecosystems, incentivize investment in electric vehicle technology, and facilitate collaboration between the public and private sectors. By addressing research gaps and emerging trends, policies can promote the sustainable growth of the electric vehicle industry, aligning with both environmental and economic objectives.

4.4 Limitations

Including single databases such as Scopus excludes relevant studies not indexed in these databases, potentially skewing the representation of the field's current state. Secondly, the focus on English-language publications may need to pay more attention to significant contributions from non-English regions, warranting further exploration. Thirdly, while the study conducts thorough bibliometric analyses,

additional evaluations using various databases and methodologies could provide further insights. Lastly, since this study primarily relies on bibliometric perspectives, future research could benefit from a systematic review to complement and validate the findings.

4.5 Future research avenues

This section details future research areas for entrepreneurship in the electric vehicle sector. These future research areas (FRA) are at the forefront of entrepreneurial innovation in the electric vehicle sector and have the potential to drive significant advancements in technology, business models, and sustainable mobility solutions.

FRA1. E-mobility infrastructure innovation: To explore innovative business models and technologies for e-mobility infrastructure, including charging stations, battery swapping solutions, and smart grid integration. Research could focus on addressing challenges such as scalability, interoperability, and financial viability to accelerate the adoption of electric vehicles.

FRA2. Circular economy and sustainable supply chains: To investigate entrepreneurial opportunities for implementing circular economy principles in the electric vehicle industry, including closed-loop battery recycling, remanufacturing of vehicle components, and sustainable materials sourcing. Research in this area could explore business models, regulations, and technological innovations to create a more sustainable and resource-efficient electric vehicle ecosystem.

FRA3. Electric vehicle sharing and mobility-as-a-Service (MaaS): To explore entrepreneurial ventures in the emerging electric vehicle sharing and mobility-as-a-service (MaaS) platforms market. Research could focus on business models, user behavior analysis, regulatory frameworks, and technological innovations to optimize electric vehicle utilization, reduce congestion, and enhance the sustainability of urban mobility.

FRA4. Energy Storage and Grid Integration Solutions: To investigate entrepreneurial opportunities for integrating electric vehicles into the energy grid through vehicle-to-grid (V2G) technologies, vehicle-to-home (V2H) systems, and decentralized energy storage solutions. Research in this area could explore business models, regulatory frameworks, and technological advancements to leverage electric vehicles as distributed energy resources and enhance grid stability and resilience.

FRA5. Cross-Sector Collaborations and Ecosystem Partnerships: To explore entrepreneurial strategies for fostering cross-sector collaborations and ecosystem partnerships within the electric vehicle industry and beyond. Research could focus on identifying synergies between electric vehicle manufacturers, energy utilities, innovative city initiatives, and other stakeholders to drive innovation, expand market opportunities, and address societal challenges related to transportation electrification and sustainability.

5. Conclusion

This study highlights the burgeoning entrepreneurial spirit driving innovation, reshaping business models, and accelerating technological progress within the electric vehicle (EV) ecosystem. It emphasizes EV entrepreneurship's global reach, with contributions from diverse geographic regions and scholarly publications, reflecting a rich tapestry of intellectual engagement. Notably, the United Kingdom emerges as a significant contributor, with publications garnering substantial citations, while Research Policy stands out as a notable journal with maximum citations. Thematic evaluation uncovers crucial themes such as sustainable transportation business innovation, the rise of EV startups, and the imperative for renewable energy sources in transportation. It underscores the evolving focus towards environmentally sustainable mobility solutions and the pivotal role of entrepreneurship in driving

this transformative shift. The analysis underscores the urgent need for advanced charging infrastructure, fostering an entrepreneurial ecosystem conducive to EV innovation, and mobilizing investments in green transportation initiatives. These challenges represent significant opportunities for entrepreneurs to lead transformative change in the EV sector, heralding an era of sustainable mobility. The proposed Future Research Areas (FRAs) serve as guiding beacons for future research endeavors, facilitating deeper exploration into the dynamic landscape of EV entrepreneurship and paving the way for novel insights and breakthroughs. Overall, this study underscores the pivotal role of entrepreneurship in catalysing innovation, sustainability, and growth within the electric vehicle sector. By contributing to broader environmental and economic objectives, EV entrepreneurship shapes the future of mobility and drives positive change on a global scale.

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Greening MSME service firms: A study of green practices adoption and the mediating role of green culture using PLS-SEM approach

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Abstract

The study is a predictive model for exploring the adoption factors of green practices and the influence of green culture (GC) as a mediator in West Bengal service sector MSMEs. The study used partial least square structural equation modelling (PLS-SEM) to assess an integrated framework using Technological-Organisational-Environmental theory, Innovation Diffusion Theory, Upper Echelon theory, and the influence of GC as a mediator. The technological, organisational, and environmental dimensions influencing the top management initiative (TMI) to implement the green practices and influence of GC as a mediator of TMI and green practices adoption (GPA) were assessed. Test result indicated that the technological and organisational factors which are compatibility (COM) and skilled workforce (SW) respectively, significantly impact the GPA while the organisational factor-government regulation (GR) was found to be non-significant for GPA. Test result also indicated that GC partially mediates between TMI and GPA.

Keywords: Green practices, green culture, Technological Innovation, top management initiative, sustainability.

1. Introduction

The issue of environmental degradation is a big concern globally and has made citizens, governments and organizations function in a way that supports environmentally, economically, and socially. It is reported that there is not much improvement in the waste disposal management and other environmental issues in India and even though, over the last two decades, several laws governing environmental

regulations and waste disposal have been enacted (Bhamu & Sangwan, 2015). It has been reported that India is a major greenhouse gas (GHG) emitter and the 2nd largest generator of e-waste globally. Also, India is facing mammoth issues of waste disposal management, air and water pollution and energy shortage crisis. There is an urgent need to mitigate the environmental crisis. It is not just the role of governments and climate activists but also organizations and every individual

to take up immediate and strong actions and incorporate best practices which supports environmental concerns. Green sustainability business practices ensure responsible business practices which aligns environmental-social-economic concerns. Green practices refer to environmentally-friendly and sustainable business practices that lessen the adverse effect by the industry on the environment. Some common green practices in the service sector include energy efficiency, reducing waste, employee education and engagement, sustainable transportation and procurement and conservation of water.

The Micro, small and medium enterprises (MSMEs) has been the leading contributor to the economy and growth of India. Both the manufacturing and services MSMEs contribute to local economies and as well as GDP growth (Satya, 2018). MSME sector contributes 37 % of Indian GDP and supports 80 % of the employment. The MSMEs' individual impact on environment may be small but collectively, MSMEs contribute to around "70 percent of the total industrial pollution in India", according to the Ministry of Environment and Forests (MoEF) report (M. Singh et al., 2014). Studies indicate manufacturing sector of SMEs contribute to environmental degradation (Chakraborti & Mishra, 2018). The service sector constitute significant part of economy with research findings as a "silent" environment hazards because its impact is less visible (Alvarez et al., 2001). Many large corporates in India have now integrated with the agendas on environmental efforts. But, it is limited to internal business activities and excludes external supply chains (Das, 2017) and

also the MSME organizations have not been aligned. There have been numerous ambitious climate commitments by many large, publicly-listed companies to set net-zero emissions targets, but the MSME sector has no support from government and hence will struggle to catch up without support (Mitra, 2021).

Greening the MSMEs should be of high priority to meet sustainable goals. West Bengal has 2nd highest number of MSMEs in India (approximately 88.67 lakhs) and the state is one of the worst affected by environmental degradation and therefore their contribution to greener environment is vital.

The study aims to identify the factors of green practices adoption in West Bengal service sector companies and to determine the impact of GC on green practices of service sector companies of West Bengal.

2. Literature review and hypothesis

The present study uses the integrated framework of Technology-Organization-Environment (TOE) theory (L. Tornatzky & Fleischer, 1990), Upper Echelon (UE) theory (Hambrick & Mason, 1984), Innovation Diffusion (ID) theory (Tornatzky & Fleischer, 1990) along with the green culture's impact on the implementation of green practices in MSME service sector.

2.1. TOE Theory

The study of innovation acceptance is supported by the TOE framework (L. Tornatzky & Fleischer, 1990). It classifies: 1) Technological characteristics include firm-related technological issues.

- 2) Organizational characteristics which are descriptive parameters pertaining to organisations like human resources.
- 3) Environmental characteristics are external environment where businesses are conducted, like competitors, resource availability, setting of industry and laws and regulations of government (L. Tornatzky & Fleischer, 1990).

2.2. ID theory

ID theory (Rogers, 2003; Tornatzky & Fleischer, 1990) states that diffusion of innovation process or technology must take into account various considerations that can influence an organization's proclivity for utilization of innovation in "technological, organisational, and environmental contexts". Diffusion is the procedure of the innovation being transferred to an organization or social structure over time via specific channels (Rogers, 2003a).

2.3. UE theory

The UE theory (Hambrick & Mason, 1984) states that performances of organizations are related to the strategic decisions that are defined by the values of top management (Hambrick & Mason, 1984). The theory states that the upper managers are the firms' platform that connects internal and external factors influencing the firms and hence the leadership and initiative of top management has an impact on organizational decision-making results (Hambrick & Mason, 1984). The leadership and initiatives by upper managers is a very important motivator for environmental efforts (Tachizawa et al., 2015).

2.4. GC

Research by Perron et al.(2006) revealed supporting the adoption of GC by organizations are very essential to reorient the entire organizational behaviour and also their attitude to commit to achieving new objectives and also suggests the significance of understanding the environmental effects and organizational policies that induces long term commitment and knowledge through training in awareness programs. There are many studies on green practices emphasis on the manufacturing sector. But, there are very few researches in service sector firms in Indian states and mediation factors like GC (M. P. Singh et al., 2018; Rizvi & Garg, 2020), which is a significant influencer of green practices adoption. Further, there have been no study tested so far, that have conceptualized integrated framework of TOE theory, ID Theory, UE theory, and the influence of GC as a mediator. Therefore, research study on green practices by the service sector of West Bengal and the role of GC is pertinent and will contribute in promoting sustainability/green practices in the service sector MSMEs of West Bengal.

2.5. Conceptual framework and hypotheses

2.5.1. Technological factor Compatibility (COM)

In the literature on technical innovation, technological factors are frequently considered. Their effects on green practise adoption, nevertheless, have received little attention. Compatibility has always been observed to be more significant

influencer of adoption behaviour of technical innovation (Rogers, 2003b; L. G. Tornatzky & Klein, 1982). The alignment of new technology with the existing operation is a critical element that impacts technical innovation (Chau & Tam, 1997). Adoption of green practices is also influenced by compatibility. Therefore, compatibility will positively impact on GPA has been hypothesized.

H1: COM positively influence on TMI in service companies.

2.5.2. Organizational factor- Skilled workforce (SW)

The extent to which a company is open to innovative ideas influences its willingness to implement innovative technologies (Lin & Ho, 2011). A company with a higher level of employees' innovation and skilled human resources has higher possibility of implementing environmental actions and policies (Christmann, 2000).

Therefore, the following is hypothesized:

H2: SW positively influence on TMI in service companies.

2.5.3. Environmental factor Government regulation (GR)

Various researchers have proposed the significance of government assistance as an important environmental factor influencing technological innovation. The connections between firm's environmental initiatives and regulatory pressure have been researched (Christmann, 2000; Lee, 2008). Therefore, the following is hypothesized:

H3: GR positively influence on TMI in service companies.

2.5.4. Top management initiative (TMI), Green culture (GC) and Green practices adoption (GPA)

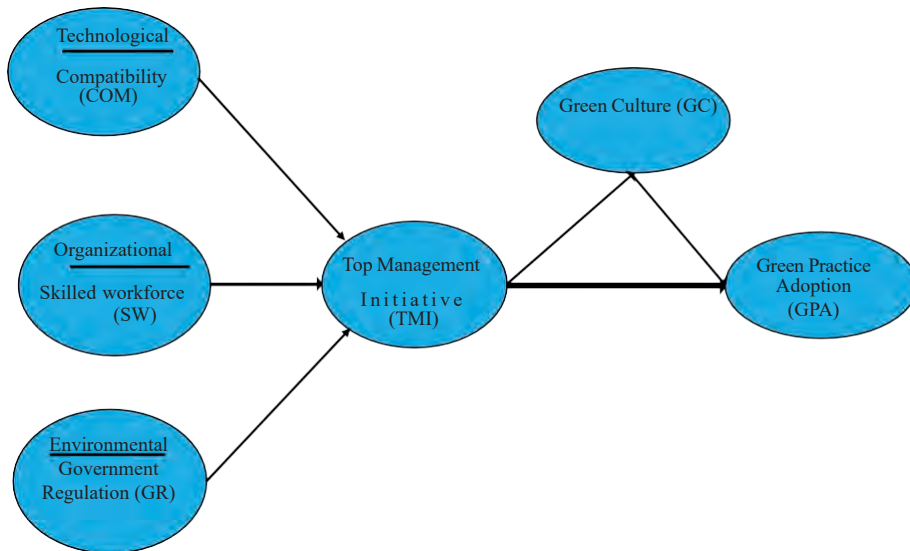
The green initiatives are typically supported by the higher management. TMI is responsible to strategic actions taken up for environmental efforts and also influences the opportunity and swiftness of acceptance of GPA (Branzei et al., 2004; Dubey et al., 2015). This is supported by the UE theory where TMI influences green initiatives.

H4: TMI positively impacts on GPA in service companies. Top management is accountable for changing the firm culture which then infuse the firm to direct behaviour of staffs (Liang et al., 2007). Accordingly,

H5: TMI positively influence on GC in service companies. The GC drives and supports employees to take part in environmental efforts and employees comprehend how their behaviour and decisions affect environmental performance. (G.M. Perron et al., 2006). The attitude of environmental orientation must be incorporated by the firms at every stage (Sarkis et al., 2010).

Accordingly, GC is expected to positively impact GPA:

H6: GC positively influence GPA in service companies. Study on literature review and by synthesizing previous research, and expert opinion and MSME owners-managers' opinion, an integrated conceptual framework for green practices adoption in small firms has been developed.

Figure 1. Conceptual model

3. Research Methodology

3.1. Sample size determination

The power analysis program called G*Power as developed by Erdfelder et al. (1996) was utilized for deriving the “sample size”. The “G-Power 3.1 software” was used (Faul et al.

,2007). Assumptions of analysis are: alpha level = 0.05, f square = 0.05, power = 0.95, mean effect size, maximum predictors = 5 (maximum number of items of a construct).

Minimum sample size, $N = 262$ was calculated. For the purpose of obtaining better results, the research has taken a slightly bigger sample size of 300.

3.2. Data collection

The study considered the service firms from the MSMEs of West Bengal. The database of the list of MSMEs in service sector are obtained from State Government department of MSME&T of West Bengal. The sampled firms are primarily from:

IT service providers, logistics, saloon service, laundry service, electrical repair, photocopying, event management firm, restaurant, consultancy firm, real estate, training center, and diagnostic center. These firms selected are those which are in operations for more than 10 years. The sampling frame consists of Kolkata, Howrah, North 24 Parganas, South 24 Parganas and Hoogly. A cross-sectional survey was conducted. 650 firms were approached and 300 valid responses were received (46.15 percent valid responses).

3.3. Preliminary study

Preceding the pilot study, measurement items were discussed for content validity with experts from varied areas of Industrial practitioners and academic experts with the relevant knowledge and experience. The experts include: 2 Environmental and Sustainability Consultants, Research Officer from the Directorate of Environment & Climate Change, 3 Senior Managers of National Small Industries

Corporation Ltd (A Government of India Enterprises) ,4 professors with research work from sustainability and 13 MSME owners/managers of service sector. A pilot study was done with 50 MSME owners-managers from selected regions of North 24 Parganas and Kolkata.

3.4. Measures of the construct

The Measurement items were selected through literature review and preliminary study from opinions of experts and MSME owners-managers. Likert's scale on 7-point was used. The items for compatibility and skilled-workforce are designed from Ho et al.(2014). The 3 items of government regulations are designed from Ho et al.(2014) and 1 new item on perception of enforcement of regulations was introduced in the study. The 4 items of TMI are adapted from (Chatterjee, D., Grewal, R. and Sambamurthy, 2002; Álvarez-Gil et al., 2007) and 1 item on Top manager priority was a new item of the study. The 3 items for GC was built on the previous study by (G.M. Perron

et al., 2006) and 1 new item on improved working was introduced. The items of the GPA were taken based on discussion with experts from institutions and academics and with some MSME owners-managers. The study focused on disposal of waste responsibly, reduction of energy consumption, reduction of solid/water waste and emissions, use of recyclable packaging/containers and purchase of ecological products. The table of the latent variables with their Measurement Items are given in Appendix A.

3.5. Tools used for analysis

The software SmartPLS (v3) has been used for testing the model. IBM SPSS 25 was used for doing EFA.

4. Data Analysis

The section describes the quantitative data analysis.

4.1. Descriptive statistics

The following is the demographic profile of respondent MSMEs:

Table 1: Demographic profile

| | | Frequency | Percentage |
|--------|---------------------|-----------|------------|
| Sector | Logistics | 26 | 8.6 |
| | Consulting | 19 | 6.3 |
| | Diagnostic centre | 21 | 7 |
| | Real estate | 13 | 4.3 |
| | Training centre | 16 | 5.3 |
| | Saloon | 40 | 13.3 |
| | Restaurant | 43 | 14.3 |
| | Xerox and printing | 39 | 13 |
| | Event management | 15 | 5 |
| | IT service provider | 30 | 10 |
| | Repair | 20 | 6.6 |
| | Laundry | 18 | 6 |

| | | | |
|----------------------------|--------------------------|-----|------|
| Position | Founder/Director/CEO | 153 | 51 |
| | Top/Senior manager | 99 | 33 |
| | Middle/assistant manager | 48 | 16 |
| Age of organization | 10-15 years | 103 | 34.3 |
| | 16-20years | 122 | 40.6 |
| | Above 20 years | 75 | 25 |

The following is the descriptive statistics of constructs:

Table 2: Mean and Std. Deviation

The descriptive statistics showed that SW (mean =6.65) followed by TMI

(mean=5.86) and GC (mean= 4.94) are highly perceived by MSMEs service sector in West Bengal. The GR (mean= 1.16) is least perceived.

| Constructs | Mean | STD. Deviation |
|-------------------|-------------|-----------------------|
| COM | 3.28 | 0.89 |
| SW | 6.65 | 1.003 |
| GR | 1.16 | 0.528 |
| TMI | 5.86 | 0.663 |
| GC | 4.94 | 0.538 |
| GPA | 4.056 | 0.626 |

4.2.PLSSEM

Partial least squares structural equation modelling (PLS-SEM) using the software SmartPLS 3 was computed. The study is exploratory and is focused on prediction of the model. Thus, SmartPLS 3 was used. A 2-steps analysis : 1)measurement model and 2) structural models were assessed (Anderson & Gerbing, 1988). To evaluate the measurement model's quality and suitability, exploratory factor

analysis (EFA) and then consequently confirmatory factor analysis (CFA) were computed.

4.2.1. Measurement model

Principal Component Analysis and Varimax rotation were used to analyse the factor structure and correlation between items included in the scale to compute EFA. The Kaiser-Meyer- Olkin (KMO) and Bartlett's Test of Sphericity were computed:

Table 3: KMO and Bartlett's Test of Sphericity

| | | |
|-------------------------------|---------------------|----------|
| Kaiser-Meyer-Olkin Adequacy. | Measure of Sampling | .746 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1965.989 |
| | df | 630 |
| | Sig. | .000 |

The KMO value of 0.746 of sampling adequacy (>0.70) ; Bartlett's Test of Sphericity of $p=0.000$ ($p < 0.05$) are significant (Tobias & Carlson, 1969). There is substantial correlation in data and factor analysis could be progressed.

Table 4: Rotated Component Matrix

| | Component | | | | | |
|------|-----------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| GPA1 | | | | | .881 | |
| GPA2 | | | | | .981 | |
| GPA3 | | | | | .881 | |
| GC1 | .538 | | | | | .784 |
| GC2 | | | | | | .853 |
| GC3 | | | | | | .892 |
| COM1 | | | | .965 | | |
| COM2 | | | | .972 | | |
| COM3 | | | | .972 | | |
| SW1 | | .983 | | | | |
| SW2 | | .980 | | | | |
| SW3 | | .980 | | | | |
| SW4 | | .983 | | | | |
| GR1 | | | .992 | | | |
| GR2 | | | .967 | | | |
| GR3 | | | .967 | | | |
| GR4 | | | .992 | | | |
| TMI1 | .941 | | | | | |
| TMI2 | .902 | | | | | |
| TMI3 | .941 | | | | | |
| TMI4 | .965 | | | | | |
| TMI5 | .949 | | | | | |

The items whose factor loadings are below 0.50 are deleted: GPA4, GPA5, GC4. GC1 has cross-loading in factor 1 and factor 6 but loading on factor 6 $>$ factor loading on factor 1.

($0.784 > 0.538$), therefore lesser factor loading of 0.538 can be ignored. After deletion of items GPA4, GPA5, GC4, 22 items loading into 6 components were

identified for further analysis. The rotated factor matrix is provided in (table 4). The 6 factors explain 76.592 % of variance based on Eigen value. The results of exploratory factor analysis (EFA) show satisfactory level of validity (Appendix B). CFA evaluation is done to validate and confirm the factors. The following reliability and validity tests were assessed:

4.2.1.1. Composite Reliability

The test results (table 5) indicates Cronbach's Alpha > 0.7 , which is above the recommended threshold value (Cronbach, 1951). Also Composite Reliability (CR) value > 0.7 , which satisfies the recommended threshold value (J.F. Jr Hair et al., 2016). Therefore model has internal consistency reliability.

4.2.1.2. Indicator reliability

The outer loadings of the measurement

items > 0.708 which satisfied indicator reliability (table 5) (Haier et al., 2014).

4.2.1.3. Convergent validity

According to (J.F.J. Hair et al., 2017), convergent validity is satisfied when outer loadings

> 0.708 , and the average variance extracted (AVE) value > 0.5 . The conditions are satisfied (table 5) and confirms the model has convergent validity status.

Table 5: Measurement model: Reliability and Convergent validity

| Constructs | Item | Factor Loading | Cronbach's Alpha | AVE | CR |
|------------|------|----------------|------------------|-------|-------|
| COM | | | 0.942 | 0.845 | 0.942 |
| | COM1 | 0.939 | | | |
| | COM2 | 0.871 | | | |
| GC | COM3 | 0.946 | | | |
| | | | 0.918 | 0.789 | 0.918 |
| | GC1 | 0.859 | | | |
| GPA | GC2 | 0.91 | | | |
| | GC3 | 0.895 | | | |
| | GPA1 | 1 | 0.929 | 0.816 | 0.929 |
| GR | GPA2 | 0.877 | | | |
| | GPA3 | 0.823 | | | |
| | | | 0.942 | 0.802 | 0.942 |
| SW | GR1 | 0.915 | | | |
| | GR2 | 0.96 | | | |
| | GR3 | 0.905 | | | |
| | GR4 | 0.795 | | | |
| TMI | | | 0.956 | 0.843 | 0.956 |
| | SW1 | 0.878 | | | |
| | SW2 | 0.957 | | | |
| | SW3 | 0.94 | | | |
| | SW4 | 0.895 | | | |
| | | | 0.954 | 0.807 | 0.954 |

| | |
|------|-------|
| TMI1 | 0.892 |
| TMI2 | 0.932 |
| TMI3 | 0.844 |
| TMI4 | 0.914 |
| TMI5 | 0.908 |

4.2.1.4. Discriminant validity

The discriminant validity was evaluated using the following 2 methods:

Method 1: Fornell and Larcker's states

that the square root of AVE of each construct must be larger than the inter construct correlation values (Fornell & Larcker, 1981). Thus, discriminant validity was established (table 6)

Table 6: Fornell and Larcker's criterion test

| Constructs | COM | GR | GC | GPA | SW | TMI |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| COM | 0.919 | | | | | |
| GR | 0.215 | 0.896 | | | | |
| GC | 0.369 | 0 | 0.888 | | | |
| GPA | 0.647 | 0.177 | 0.75 | 0.903 | | |
| SW | -0.025 | -0.394 | 0.757 | 0.423 | 0.918 | |
| TMI | 0.185 | -0.149 | 0.888 | 0.559 | 0.862 | 0.898 |

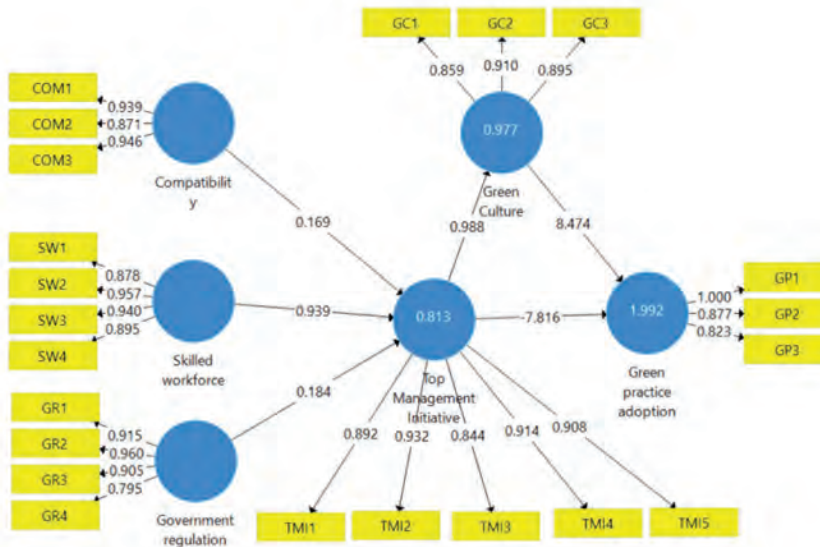
Method 2: Heterotrait-Monotrait (HTMT) was found to be better than Fornell & Larcker (1981) criterion as this method does not have the ability to test the satisfactory discriminant validity in most

of the research conditions. The HTMT ratio value must be less than 0.85. In this study it was found that the HTMT ratio correlation values were well below 0.85 for all the constructs (table 7) (Voorhees et al. 2016).

Table 7: Heterotrait-Monotrait Ratio Method (HTMT)

| Constructs | COM | GR | GC | GPA | SW | TMI |
|------------|-------|-------|-------|-------|-------|-----|
| COM | | | | | | |
| GR | 0.217 | | | | | |
| GC | 0.37 | 0.108 | | | | |
| GPA | 0.65 | 0.182 | 0.745 | | | |
| SW | 0.039 | 0.393 | 0.755 | 0.42 | | |
| TMI | 0.183 | 0.15 | 0.788 | 0.553 | 0.761 | |

Figure 2: Measurement model



4.2.2. Structural model

Table 8 shows the standardized path coefficient (Beta), t-statistics. The theoretical model forms the basis of the relationship existing among the constructs. The relationships between COM and TMI (H1: Beta = 0.72, p < 0.01); GC and GPA (H6:

Beta = 1.45, p < 0.01); SW and TMI (H2: Beta = 0.885, p < 0.01); TMI and GC (H5: Beta = 0.926, p < 0.01) and TMI and GPA (H4: Beta = 0.812, p < 0.05) were all found significant. The relationship between GR and TMI (H3: Beta = 0.144 and p > 0.05) was found non-significant.

Table 8: Path analysis

Note: ***p<0.001; **p<0.01; *p<0.05; ns=not significant

| Path | Beta | SD | t-value | Result |
|------------|---------|-------|---------|---------------|
| COM-> TMI | 0.172** | 0.057 | 3.038 | Supported |
| GR -> TMI | 0.144ns | 0.095 | 1.517 | Not supported |
| GC -> GPA | 1.45** | 0.323 | 4.496 | Supported |
| SW -> TMI | 0.885** | 0.056 | 15.802 | Supported |
| TMI -> GC | 0.926** | 0.03 | 31.249 | Supported |
| TMI -> GGA | 0.812* | 0.324 | 2.504 | Supported |

4.2.2.1. R square:

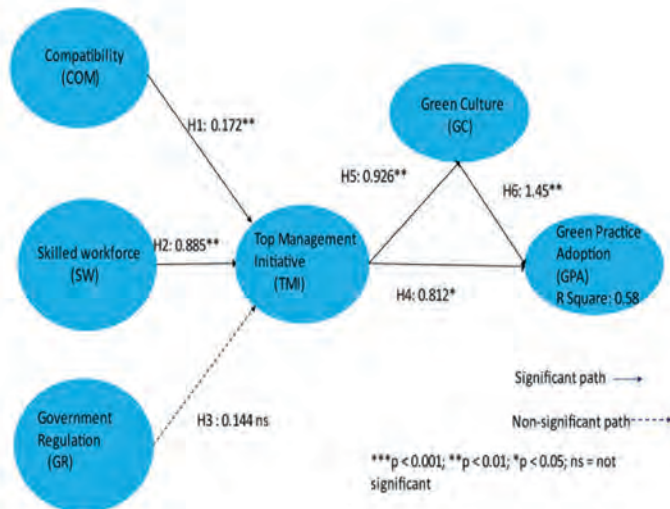
The model's predictive power was assessed by the coefficient of determination (R square) values of the endogenous constructs besides assessing the significance of path coefficients. (J.F.J. Hair et al., 2017). Adjusted R square excludes the impact of non-significant variables' path coefficients. The Adjusted

R square of GC is 0.856, which implies the model explains 85.6% of the variance in GC. Similarly, Adjusted R square of GPA is 0.58, which implies the model explains 58% of the variance in GPA; Adjusted R square of TMI is 0.731, which means the model explains 73.1% of the variance in TMI. (Adjusted R square should be minimum 50% for a good explanation)

Table 9: R Square and Adjusted R square

| Constructs | R square | Adjusted R square |
|------------|----------|-------------------|
| GC | 0.857 | 0.856 |
| GPA | 0.583 | 0.58 |
| TMI | 0.734 | 0.731 |

Figure 3: Structural Model



4.2.2.2. Cohen's f square:

The Cohen's f square rule of thumb signified the level as 0 (none), 0.02 (small), 0.15 (moderate), and 0.35 (large)

respectively to measure the effect of independent construct on the dependent construct (J.F.J. Hair et al., 2017). Hence, the path TMI → GC was found to have the largest effect size in the model (table 10).

Table 10: Effect siz

| Construct indicators | f square |
|----------------------|----------|
| COM -> TMI | 0.108 |
| GR-> TMI | 0.063 |
| GC-> GPA | 0.721 |
| SW -> TMI | 2.463 |
| TMI -> GC | 5.99 |
| TMI -> GPA | 0.226 |

4.2.2.3. Predictive Relevance (Q^2):

Predicative relevance (Q^2) can be measured for the items in the measurement model using blindfolding procedure and Q^2 values > zero showed that there was

predictive relevance (J.F.J. Hair et al., 2014) . The Q^2 values for constructs GC, GPA and TMI were considerably above zero. Therefore, predictive relevance is established (table 11).

Table 11: Predictive Relevance (Q^2)

| Constructs | Q^2 |
|------------|-------|
| GC | 0.716 |
| GPA | 0.49 |
| TMI | 0.576 |

4.2.2.4. Model fit Analysis with SmartPLS:

Standardized Root Mean Square Residual (SRMR) measure is suggestive to be a good fit as it was found to be less than 0.08 (Hu & Bentler, 1999).

4.2.2.5. Mediation Analysis:

The indirect effect of TMI on GPA through GC was found significant (beta = 1.342; t = 4.339; p = 0). The direct effect of TMI on GPA was also found significant (beta = -0.812; t = 2.53; p = 0.011). Therefore, TMI and GPA adoption are partially mediated by GC.

Table 13: Mediation Analysis

Note: ***p < 0.001; **p < 0.01; *p < 0.05; ns = not significant

| Path | | Effect | SD | Mediation |
|----------------|-----------------|----------|-------|-----------|
| TMI-> GC-> GPA | Indirect effect | 1.342*** | 0.309 | Yes |
| | Direct effect | -0.812* | 0.321 | Yes |

5. Discussion

The study confirmed the development and predictive power of the integrated

framework. The main findings are discussed below:

First, the technological factor of COM

(0.72) has shown significant positive impact on the TMI by service sector MSMEs of West Bengal.

Second, the organizational factor of SW (0.885) has also indicated a positive impact on the TMI by service sector MSMEs of West Bengal.

Third, the environmental factor of GR (0.144) on TMI was found non-significant. Therefore, support from local government, state government and federal government on environmental issues to ensure proper enforcement of environmental regulations are very important.

Fourth, the relationship between TMI and GPA (0.812) was found to be significant.

Fifth, the relationship between TMI and GC (0.926) was found to be significant, the relationship between GC and GPA (1.45) was found to be significant. Since direct as well as indirect effect of TMI on GPA was also found significant, the relationship between TMI and GPA are found to be partially mediated by GC. The owners-top managers characteristics and decisions are influential for the incorporation of GC in firms, where all employees are encouraged to participate and practice environmental efforts. GC creates a favourable environment within the firms and encourages all employees to adopt green practices. Therefore, top management support is instrumental for employees' green behaviour for sustainable businesses.

Hence hypotheses related with technological and organizational factors

(H1, H2) are supported which indicates that the study provides evidence that the technological factor-compatibility and organizational factor-the SW influences the green practices' decisions. Also, TMI positively impacts on adoption of green practices of a firm(H4), TMI positively influence on GC of a firm (H5), GC positively influence adoption of GPA (H6) are supported by the present study. GR positively influence on TMI (H3) is not supported indicating that in West Bengal MSMEs service sector government regulations needs improvement and effective laws and regulations and actions need to implemented to encourage and support environmental efforts. The West Bengal government should develop and implement well-designed and firmer policies which positively influences environmental actions in MSME sector.

6. Conclusion

The study supported to understand adoption of green practices by service sector MSMEs in West Bengal which has the second highest presence of MSMEs in India. Most of the research study are on the organizational and environmental factors and very less research has been done on technological factor for green innovation. Also, there are few research to study GC as mediator in the service sector MSMEs. The study revealed that technological factor-compatibility and organizational factor-SW have significant positively influence on GPA by service sector MSMEs of West Bengal. But, the environmental factor-GR is non-significant factor for GPA. Also,

GC partially mediates TMI and GPA.

The study recommends several courses of actions:

Compliance of environmental regulations should be made mandatory by MSME service sector. The government can give provision for subsidies, tax benefits etc for waste management (Möllemann, 2016). A mixed policy of reduced costs and tax benefits, regulation and carbon tax will help in commitment by small

firms towards green practices (Revell et al., 2010). Sensitization through green education and awareness must be given in all institutions.

The study is limited to only small firms in service sector in West Bengal. The study can be extended to other states and the entire country and it can be tested in other countries in the service sector small firms. Also, study can be conducted to find the role of size of MSME impacting the GPA.

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Appendix

Appendix A: Measurement constructs

| | |
|----------|---|
| 1 | Green practice adoption (GPA) |
| GPA1 | We reduce solid/water waste and emissions |
| GPA2 | We reduce energy consumption |
| GPA3 | We use recyclable/reuse packaging/containers |
| GPA4 | We purchase ecological products |
| GPA5 | We dispose waste responsibly |
| 2 | Green Culture (GC) |
| GC1 | Employees understand and identify with environmental issues. |
| GC2 | Employees take an active part in activities conducive to environmental improvement. |
| GC3 | A favourable environmental atmosphere is created in our company |
| GC4 | Our employees look for new and improved ways to do their work |
| 3 | Compatibility (COM) |
| COM1 | The green practices are compatible with our existing operations. |
| COM2 | The green practices are consistent with our company's values. |
| COM3 | Integrating the green practices with company's existing system is easy. |
| 4 | Skilled workforce (SW) |
| SW1 | Employees are capable of using new technologies to solve problems easily. |
| SW2 | Employees are capable of providing new ideas for our company. |
| SW3 | Employees are capable of learning new technologies easily. |

| | |
|----------|--|
| SW4 | Employees are capable of sharing knowledge with each other. |
| 5 | Governmental Regulation (GR) |
| GR1 | Government provides financial support for adopting green practices. |
| GR2 | Government helps training manpower with green skills. |
| GR3 | Government provides technical assistance for adopting green practices. |
| GR4 | I feel that there is enforcement of the laws and regulations of the Environment Act |
| 6 | Top management initiative (TMI) |
| TMI1 | Top managers having important influences on our company values green practices in strategy and operations |
| TMI2 | Top management integrate green practices into our company's strategic planning. |
| TMI3 | Top managers believe the implementation of green practices will be conducive to enhancing our company's competitiveness. |
| TMI4 | Top management support the implementation of green practices. |
| TMI5 | Top managers are willing to invest in the implementation of green practices |

Appendix B: Total variance explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 17.231 | 47.863 | 47.863 | 17.231 | 47.863 | 47.863 | 10.732 | 29.811 | 29.811 |
| 2 | 3.446 | 9.572 | 57.436 | 3.446 | 9.572 | 57.436 | 7.077 | 19.657 | 49.469 |
| 3 | 2.377 | 6.604 | 64.040 | 2.377 | 6.604 | 64.040 | 2.729 | 7.580 | 57.049 |
| 4 | 1.819 | 5.054 | 69.093 | 1.819 | 5.054 | 69.093 | 2.586 | 7.182 | 64.231 |
| 5 | 1.456 | 4.045 | 73.138 | 1.456 | 4.045 | 73.138 | 2.370 | 6.582 | 70.814 |
| 6 | 1.243 | 3.454 | 76.592 | 1.243 | 3.454 | 76.592 | 2.080 | 5.778 | 76.592 |
| 7 | .972 | 2.699 | 79.290 | | | | | | |
| 8 | .879 | 2.443 | 81.733 | | | | | | |
| 9 | .760 | 2.111 | 83.844 | | | | | | |
| 10 | .750 | 2.083 | 85.926 | | | | | | |
| 11 | .626 | 1.738 | 87.665 | | | | | | |
| 12 | .583 | 1.620 | 89.285 | | | | | | |
| 13 | .474 | 1.316 | 90.600 | | | | | | |

| | | | | | | | | | |
|--|------|-------|---------|--|--|--|--|--|--|
| 14 | .428 | 1.190 | 91.790 | | | | | | |
| 15 | .371 | 1.031 | 92.821 | | | | | | |
| 16 | .338 | .938 | 93.759 | | | | | | |
| 17 | .315 | .876 | 94.635 | | | | | | |
| 18 | .266 | .739 | 95.373 | | | | | | |
| 19 | .233 | .646 | 96.020 | | | | | | |
| 20 | .201 | .559 | 96.578 | | | | | | |
| 21 | .186 | .517 | 97.095 | | | | | | |
| 22 | .168 | .466 | 97.561 | | | | | | |
| 23 | .144 | .399 | 97.959 | | | | | | |
| 24 | .133 | .370 | 98.329 | | | | | | |
| 25 | .116 | .322 | 98.651 | | | | | | |
| 26 | .094 | .262 | 98.913 | | | | | | |
| 27 | .084 | .233 | 99.146 | | | | | | |
| 28 | .069 | .192 | 99.338 | | | | | | |
| 29 | .055 | .154 | 99.492 | | | | | | |
| 30 | .046 | .127 | 99.618 | | | | | | |
| 31 | .039 | .107 | 99.726 | | | | | | |
| 32 | .032 | .090 | 99.816 | | | | | | |
| 33 | .030 | .084 | 99.899 | | | | | | |
| 34 | .017 | .047 | 99.947 | | | | | | |
| 35 | .012 | .034 | 99.981 | | | | | | |
| 36 | .007 | .019 | 100.000 | | | | | | |
| Extraction Method: Principal Component Analysis. | | | | | | | | | |

Analysing Day-of-Week End Effects In The FMCG Sector: Angarch and Egarch Model Approach

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Abstract

Background: The financial environment has undergone significant change as a result of global economic issues. In this context, understanding the complexity of stock market activity is critical. The Fast-Moving Consumer Goods (FMCG) industry, which is extremely integrated into daily life, offers a distinct and understudied arena for investigating weekend effects anomalies.

Purpose: This study is useful to investors and experts as they navigate the volatility in a specific sector of the Indian stock market.

Methodology: A diverse set of five companies with a high volume of stock market activity, FMCG shares, and data are systematically evaluated from July 2008 to June 2023. To investigate the influence of different weekends on stock returns and volatility, GARCH, EGARCH, and linear regression models were utilised.

Findings of the study: Mondays have a little higher return trend, but skewed return distributions emphasise the importance of risk management. The “Monday” and

“Friday Effects” are statistically significant. The influence of weekends on returns differs for every FMCG company, providing significant information for future trading strategies.

Implication: The study will deliver data-driven insights to stakeholders, helping them to make better-informed decisions, particularly when navigating the volatile Indian stock market.

Conclusion: It highlights the need for sensible investing and risk management while also acknowledging that the impact of weekends on returns differs for every FMCG company.

Keywords: Calendar anomalies, EGARCH, FMCG, GARCH, Volatility Patterns.

Introduction

In recent years, significant changes have unfolded in the financial world, influencing major global events. While extensively examining the consequences of the global financial crises from 2007 to 2009, a more recent and unique challenge has emerged in the form of the global pandemic. This unparalleled crisis has directly impacted economic activities, causing temporary suspensions in the manufacturing and service sectors due to lockdowns and restrictions. As a result, businesses have been compelled to make substantial alterations to their financial structures, both in terms of cost and revenue (Dinesh and Janet, 2021).

During these shifting economic conditions, the stock market and the ever-changing index and stock prices continue to attract the interest of various stakeholders.

Understanding the intricate mechanisms driving stock price fluctuations has long intrigued researchers. They have explored a variety of methods for predicting stock prices. Traditionally, this endeavour leaned on fundamental analysis, which delves into a stock’s inherent value by scrutinising financial statements, profitability, capital structure, dividend policy, and industry-specific factors (Shilpa Lodha et al., 2015).

On the other hand, technical analysis contends that stock prices already incorporate all available financial and market information, with predictions relying on an understanding of the interplay between supply and demand forces, often closely tied to price and volume data. This duality in approach has shaped the field of stock price prediction, with both fundamental and technical

analyses providing valuable insights. As the financial landscape has evolved, researchers have developed more advanced analytical techniques, including those addressing calendar anomalies and seasonal trends in stock markets. One fascinating phenomenon among these is the “Day-of-Week End Effect,” suggesting that stock returns might display variations depending on the day of the trading week. Extensive research has revealed noteworthy patterns and implications, particularly in various industries. Notably, the Fast-Moving Consumer Goods (FMCG) sector distinguishes itself with unique characteristics and economic significance. Consequently, understanding the influence of the day of the week holds particular significance in this industry due to its distinguishing role in consumers’ routines. While calendar anomalies like the “January Effect” or “Monday Effect” have received substantial attention in the field, the day-of-week-end effect for FMCG companies remains relatively unexplored.

This study embarks on an in-depth analysis of day-of-week-end effects within the FMCG sector, using the GARCH and EGARCH models. This approach allows for the quantification of patterns of volatility, the assessment of their statistical significance, and the evaluation of their

practical implications. The GARCH model provides a comprehensive investigation of the day-of-week-end effects on FMCG sector stocks with the goal of providing valuable insights that empower investors, analysts, and policymakers to navigate the ever-evolving financial landscape more effectively.

Literature Review

In comparison to the most identified calendar anomalies, research evidence on the effects of the week’s days’ on specific sectors such as FMCG is rarely observed. Arago and Salvador (2016) used GARCH models to investigate volatility and gave significant insights for individuals interested in the link between trade volume, calendar anomalies, and GARCH modelling. Nandha and Faff (2008) investigated the influence of the day of the week on the Australian stock market using the GARCH model. They identified evidence of negative Monday returns, proving the weekend impact. Frijns and Tourani-Rad A. (2013) emphasised how these anomalies influence financial markets and the need to utilise GARCH models to examine associated volatility patterns. This inquiry uncovered calendar inconsistencies and their financial effects. Mendes and Sousa (2016) discovered that Mondays had lower returns than other days of the week, but Fridays had better returns. These statistics illustrate that a day-of-week impact exists in the Portuguese stock market.

Bora D. and Basistha D. (2021)

experimentally analysed the data, which revealed higher stock market volatility during the epidemic. A comparison of the pre-COVID and COVID-19 periods revealed that the indexes performed better before the pandemic. Srinivasan and Kalaivani (2013) used GARCH models to investigate the impact of the day of the week on Indian stock returns and volatility from July 1997 to June 2012. After accounting for persistence and asymmetry, the study found that Tuesday had a negative influence on volatility. Wan Mohd Farid et al. (2023) investigated whether the volatility of daily stock returns remained consistent after being impacted by earlier shocks. The investigation discovers diverse effects on various markets but no firm evidence of a significant overall impact.

Alex Plastun et al. (2019) found a 'golden age' of calendar anomalies in the mid-20th century, but all such anomalies have disappeared since the 1980s, aligning with the Efficient Market Hypothesis. Carl and Izani Ibrihim (2009) analysed the study and discovered a distinct daily pattern in the RTSI, with findings lowest on Wednesdays and highest on Fridays, possibly reflecting a three-day "weekend" influence from Thursday to Monday.

Tajinder Jassal and Babli Dhiman (2017) found a Friday effect in banking indices

and positive Wednesday, Monday, and Tuesday returns in specific sectors. Other sectors follow a random walk pattern, confirming sector-specific market behaviour and the ongoing 'Day of the Week

effect. Caporale, G.M., et al. (2016) conducted an analysis based on a trading robot that simulates their behaviour and incorporates variable transaction costs. The results show that trading strategies aimed at exploiting daily patterns do not generate additional profits. Shraddha Mishra (2017) indicates that the day of the week effect generally shows positive results in emerging stock markets. Regarding volatility, a few markets show that it significantly increases after a negative return.

Ali A. Shehadeh and Min Zheng (2023) employed GJR-GARCH (1,1) techniques to provide insights and evidence on the nature, existence, and persistence of seasonal patterns in emerging stock market returns. Overall, results contradict the efficient market hypothesis (EMH). Harshita et al. (2019) found weaker evidence of the December effect in value-sorted portfolios. Pramath Nath Acharya et al. (2022) examine the September effect in the return series of both the stock market and Additionally, asymmetric GARCH models were found to be the

best-fit models for estimating conditional volatility.

It employs a robust ARCH model to extend the analysis over a longer time period. Its goal is to give vital insights to investors and regulators, resulting in a better understanding of calendar anomalies. This study emphasises the need to understand how large disturbances, such as economic crises or natural catastrophes, influence financial markets and their anomalies, providing critical information for stakeholders. It fills a research gap in FMCG by exploring the link between day-of-week end impacts on volatility and market efficiency.

Research Questions

1. How do volatility patterns change over the week, and how much effect do they have on the FMCG sector?
2. What are the implications of the observed day-of-week end volatility impacts on market efficiency in the FMCG sector?

Objectives of the study

1. To assess the impact of weekly volatility patterns on FMCG companies.
2. To investigate the consequences for market efficiency in the FMCG sector as well as the observed effects of day-of-week end volatility.

Research Methodology Sample Size and Data

A diverse collection of FMCG stocks from the Indian stock market was chosen to demonstrate the sector's variety and market importance. Stocks were chosen based on market capitalization, trading volume, and industry representation to provide a well-rounded sample that covers many aspects of FMCG companies. The final sample is made up of five FMCG stocks that were carefully chosen to strike a balance between representation and analysis feasibility.

Study Period

Data collected from July 2008 to June 2023 offers an extensive fifteen-year time frame to analyse volatility patterns and day-of-week-end effects in the FMCG sector within the Indian stock market, encompassing diverse market trends and economic situations.

Tools for analysis

The GARCH model is a statistical tool for analysing time series data. It focuses on volatility patterns and captures how volatility changes over time. This model is vital for risk assessment, option pricing, and forecasting market behaviour.

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where, P_t is the index value in period and

P_{t-1} Dividends are not included because the trading strategy is considered daily.

a) The OLS Regression

The Ordinary Least Squares (OLS) regression model is a foundational statistical method used to analyse relationships between variables and to find the best-fitting linear equation that minimises the sum of squared differences between observed data points and predicted values. The simple linear regression model, which has one independent variable, can be expressed as:

$$Y = \beta_0 + \beta_1 X + \epsilon$$

Where,

Y is the dependent variable. X is the independent variable. β_0 is the intercept (constant).

β_1 the independent variable's coefficient

ϵ the error term accounts for unaccounted-for variability in the dependent variable.

b) The GARCH Model

The Generalised Autoregressive Conditional Heteroskedasticity (GARCH) model is used to analyse and forecast time series data with variable volatility.

$$\sigma_t^2 = \omega + \alpha r_{t-1}^2 + \beta \sigma_{t-1}^2$$

Where:

σ_t^2 the time series' conditional variance at point t .

ω the constant term in the model.

r_{t-1}^2 the return squared at time $t-1$.

α is the lagged (squared) return coefficient that captures the short-term impact of historical volatility.

β is the coefficient for delayed conditional variance, which represents volatility's long-term persistence.

σ_{t-1}^2 the conditional variance at time $t-1$.

c) The EGARCH Model

The Exponential Autoregressive Conditional Heteroskedasticity (EARCH)

model is used to analyse and forecast conditional volatility in time series data. The GARCH model includes exponential terms to describe time-varying volatility.

The E-ARCH (p, q) model's formula is as follows:

$$\sigma_t^2 = \omega + \sum_{i=1}^p (\alpha_i r_{t-i}^2 + \beta_i \sigma_{t-i}^2) + \sum_{j=1}^q (\gamma_j |r_{t-j}|)$$

σ_t^2 the time series' conditional variance at time t .

ω the constant term in the model that represents the long-term average of the conditional variance.

α_i and β_i are the coefficients for the lagged (squared) return and lagged conditional variance terms, respectively, for $i=1, 2, \dots, p$.

r_{t-i}^2 is the squared return at time $t-i$.

σ_{t-i}^2 is the conditional variance at time $t-i$.

γ_j is the coefficient for the absolute value of the lagged return term, for $j=1,2,..,q$.

$|r_{t-j}|$ is the absolute value of the return at time $t-j$.

Hypothesis

The null hypothesis is based on the objectives as follows:

Null Hypothesis (H0): There is no significant difference in volatility patterns across different days of the week, and these patterns have no substantial impact on the FMCG sector.

Data Analysis Interpretation

The tables from 1 to 4 attempt to identify irregular patterns associated with certain calendar weekday impacts in order to comprehend their impact on stock market returns and economic indicators.

Descriptive Statistics

Table 1 indicates that the “Day-of-the-Week End Effect” in the FMCG sector and the BSE Sensex demonstrates modest but substantial changes in stock returns dependent on the trading

week’s end day. Mondays had marginally positive returns on average, potentially indicating a “Monday Effect,” in which the market starts the week with small gains.

However, these advantages are marginal. The median returns fluctuate and might be positive or negative, suggesting that the return distribution is asymmetric. Extreme returns on specific days’ peak times of outstanding performance in the FMCG sectors have relatively constant returns, which might be attributed to their concentration on necessary and non-cyclical items. Return distributions are tilted, according to skewness metrics. Britannia Industries Ltd. has positive skewness on Mondays, indicating a bias for positive returns. High kurtosis suggests the possibility of extreme returns. Godrej Consumer Products Ltd. shows big outliers on specific days. The Jarque-Bera test demonstrates that the returns in the FMCG industry vary considerably from a normal distribution, exhibiting distinct features.

GARCH Model

Table 2 depicts the GARCH(1,1) estimates for the day-of-the-week end effect in the FMCG sector, and the BSE Sensex provides a comprehensive understanding of how stock returns vary across different trading days. For Hindustan Unilever Limited (HUL), the analysis reveals that on Mondays, the coefficient is positive but relatively small (0.000563), indicating a modest “Monday Effect” with slightly positive returns. However, this effect is

statistically significant with a p-value of 0.0001, suggesting that Mondays do exhibit distinct behavior. On Fridays, HUL displays a smaller positive coefficient (0.000333) with a high p-value, indicating less statistical significance. Other trading days exhibit a larger positive coefficient (0.000954) with significant statistical significance, indicating that these days have a more pronounced impact on returns.

In the case of ITC, Mondays show a very small positive coefficient (0.000158) with relatively low statistical significance. Fridays, however, exhibit a substantially higher positive coefficient (0.002635), but it lacks statistical significance due to a high p-value. Other trading days for ITC display a moderately positive coefficient (0.000354) with a moderate level of statistical significance. The pattern is somewhat similar for Nestle India Ltd., where Mondays and Fridays have positive coefficients, but only the coefficient for Fridays is statistically significant. The GARCH estimates for Britannia Industries Ltd. and Godrej Consumer Products Ltd. indicate positive coefficients for Mondays and Fridays, with varying levels of statistical significance. Finally, for the BSE Sensex, Mondays show a positive coefficient (0.000405) but lack statistical significance, while Fridays display a

positive coefficient (0.000865) with statistical significance.

EGARCH Model

Table 3 reveals that the EGARCH (1,1) estimates further light on the day-of-the-week end effect within the FMCG sector and the BSE Sensex. Examining Hindustan Unilever Limited (HUL), the analysis reveals that on Mondays, the coefficient is positive (0.000833), indicating a slightly higher conditional volatility compared to other days. However, this effect is not statistically significant, with a relatively high p-value. Fridays, on the other hand, display a smaller positive coefficient (0.000284) with an even higher p-value, suggesting limited statistical significance. Other trading days show a larger positive coefficient (0.000935) with statistical significance, indicating that these days have a more notable impact on volatility. For ITC, Mondays exhibit a very small positive coefficient (0.000108) with no statistical significance. Fridays display a positive coefficient (0.000875) but again lack statistical significance. Other trading days show a moderately positive coefficient (0.000201) with no statistical significance. Nestle India Ltd. exhibits a similar pattern, with Mondays and Fridays showing positive coefficients, but only other trading days' exhibit statistical significance.

Britannia Industries Ltd. and Godrej Consumer Products Ltd. have similar findings, with positive coefficients on Mondays and Fridays but limited statistical significance. Other days, these companies exhibit more substantial positive coefficients with statistical significance. Finally, the BSE Sensex data indicates positive coefficients for Mondays and Fridays, suggesting slightly higher conditional volatility on these days. Fridays exhibit statistical significance, indicating a potential “Friday Effect” on volatility.

Regression Analysis

Table 4 presents the results of a linear regression analysis that aims to assess the relationship between the day of the week (Monday, Friday, and other days) and overall returns for various companies in the FMCG sector and the BSE 100 (Sensex). The coefficients for the constant term and each day of the week are essential in understanding the impact of these days on returns. For Hindustan Unilever Limited (HUL), the constant coefficient is 0.000786, indicating the expected return when neither Monday nor Friday is considered. Both Monday and Friday coefficients are negative, -0.005993 and -0.050703, respectively. This suggests that Mondays and Fridays are associated with lower returns compared to week days.

The statistical not significance of these coefficients is indicated by the asterisks, with Monday and Friday showing not significance at the five per cent level.

Similar analyses were conducted for ITC, Nestle India Ltd., Britannia Industries Ltd., and Godrej Consumer Products Ltd. For ITC, none of the day coefficients are statistically

significant, suggesting that returns are not significantly different on these days. However, for Nestle India Ltd., the constant coefficient is significant at the five per cent level, while the Monday, Friday and other days’ coefficients are not significant. This implies that week days have a significant impact on returns for Nestle India Ltd. In contrast, none of the coefficients are statistically significant for Britannia Industries Ltd. and Godrej Consumer Products Ltd., indicating no significant day-of-the-week effect on returns for these companies.

Finally, for the BSE 100 (Sensex), the constant coefficient is 0.000657, indicating the expected return when neither Monday nor Friday is considered. While none of the day coefficients are significant, Friday exhibits a negative coefficient (-0.091065) that approaches statistical not significance (p -value = 0.0970), suggesting a potential negative effect on returns on Fridays. The

impact of days of the week on returns varies across different FMCG companies and the BSE 100 (Sensex). For some companies like HUL and Nestle India Ltd., Mondays and Fridays significantly affect returns, while for others like ITC, Britannia Industries Ltd., and Godrej Consumer Products Ltd., the day-of-the-week effect is not significant. The BSE 100 (Sensex) also exhibits a potential negative Friday effect on returns, although not statistically significant.

Findings of the Study

While Mondays had somewhat greater average returns, the frequency of skewness, kurtosis, and deviations from normality underlines the significance of sensible risk management and investing techniques in the FMCG business. These findings contribute to a better understanding of market anomalies and may be valuable for investors and analysts navigating the unpredictable Indian stock market. The GARCH (1,1) estimates show that Mondays and Fridays frequently have positive coefficients, indicating the occurrence of the “Monday Effect” and, in certain situations, the “Friday Effect.” The statistical significance, however, fluctuates, with some days exhibiting more dramatic impacts than others. These findings emphasise the need to take day-of-week influences into account when

developing investment strategies and risk management practices in the FMCG industry and the larger stock market.

Estimates of EGARCH (1,1) demonstrate that Mondays and Fridays frequently have positive coefficients, indicating a potential influence on conditional volatility, although the statistical significance differs between firms and the BSE Sensex. Other trading days can have an even greater influence on volatility. These findings emphasise the nature of day-of-week impacts on volatility in the FMCG industry and the stock market, emphasising the importance of cautious planning in risk management and investing strategies.

The findings of a linear regression analysis of the influence of various weekdays (Monday, Friday, and other days) on the total returns of major FMCG businesses and the BSE 100 (Sensex) index. Notably, Hindustan Unilever Limited (HUL) demonstrates that both Monday and Friday have lower returns, and these findings are statistically significant. This means that HUL may have trading chances on select weekdays. The FMCG companies, with Nestle India Ltd. showing large Monday effects while others show no significant day-of-week effects. Furthermore, the BSE 100 (Sensex) reveals a probable Friday influence on returns; however, this is not statistically significant. Overall,

this research emphasises the need to take weekdays into account when developing investing strategies, since they can have a considerable influence on returns, depending on the individual company or index under consideration.

Conclusion

This study examines into the fascinating world of financial anomalies, particularly day-of-the-week effects, within the FMCG sector of the Indian stock market. Against the backdrop of global economic crises, understanding how stock markets behave during extreme conditions is more critical than ever. This analysis reveals that while Mondays often show slightly positive average returns in the FMCG sector, the distribution of returns is skewed, indicating the need for cautious risk

management. The GARCH and EGARCH models suggest the presence of “Monday” and “Friday Effects” in some cases, but the significance varies. The linear regression analysis shows significant negative effects on returns for HUL on Mondays and Fridays, while other companies exhibit mixed results and highlight the varying impact of weekdays on returns, aiding stakeholders in making informed decisions. Overall, this study emphasises the importance of considering weekdays when crafting investment strategies, as they can impact returns differently across various FMCG companies and the broader stock market. Ultimately, this analysis empowers stakeholders to navigate the Indian stock market with data-driven strategies.

Descriptive Statistics – FMCG Sectors – Day of the Week-End Effect

| Particulars | Mean | Median | Max | Min | SD | Skewness | Kurtosis | JB | P-value | Obs |
|-------------------------------------|-----------|-----------|----------|-----------|----------|-----------|----------|----------|----------|------|
| HUL | | | | | | | | | | |
| Monday | 0.000768 | -0.000172 | 0.073830 | -0.087674 | 0.015781 | 0.174807 | 6.718569 | 430.7058 | 0.00000* | 741 |
| Friday | 0.000268 | -0.000471 | 0.117524 | -0.075627 | 0.015810 | 0.939813 | 10.26905 | 1714.652 | 0.00000* | 730 |
| Other days | 0.001019 | 0.000401 | 0.172830 | -0.072803 | 0.015317 | 1.318169 | 14.83937 | 13743.56 | 0.00000* | 2242 |
| ITC | | | | | | | | | | |
| Monday | -0.000148 | -0.000243 | 0.087520 | -0.120478 | 0.018991 | -0.249662 | 8.052706 | 795.9315 | 0.00000* | 741 |
| Friday | 0.000722 | 0.000508 | 0.083977 | -0.314453 | 0.019556 | -5.532673 | 94.97876 | 261052.1 | 0.00000* | 730 |
| Other days | 0.000560 | 0.000580 | 0.099053 | -0.507274 | 0.019194 | -8.267907 | 222.9742 | 4545.851 | 0.00000* | 2242 |
| Nestle India Ltd | | | | | | | | | | |
| Monday | 8.66E-05 | -0.000188 | 0.069230 | -0.085798 | 0.014963 | -0.149280 | 6.358699 | 351.0486 | 0.00000* | 741 |
| Friday | 0.001109 | -0.000458 | 0.079352 | -0.051733 | 0.015545 | 0.610717 | 6.010264 | 321.0049 | 0.00000* | 730 |
| Other days | 0.000992 | 0.000162 | 0.123591 | -0.090541 | 0.014243 | 0.603153 | 8.674749 | 3144213. | 0.00000* | 2242 |
| Britannia Industries Ltd | | | | | | | | | | |
| Monday | 0.000859 | 0.000427 | 0.159109 | -0.136715 | 0.019292 | 0.508197 | 14.70782 | 4258.269 | 0.00000* | 741 |
| Friday | 0.000740 | -0.000233 | 0.093525 | -0.054039 | 0.015409 | 0.689124 | 6.661167 | 465.4879 | 0.00000* | 730 |
| Other days | 0.000659 | -1.68E-05 | 0.107437 | -0.772263 | 0.024763 | -16.85534 | 494.4891 | 22672036 | 0.00000* | 2242 |
| Godrej Consumer Products Ltd | | | | | | | | | | |
| Monday | -0.001409 | -0.001108 | 0.073114 | -0.107743 | 0.018778 | -0.437190 | 5.442455 | 207.5122 | 0.00000* | 741 |
| Friday | 0.000452 | 0.000368 | 0.155784 | -0.078000 | 0.020379 | 0.716663 | 8.465535 | 969.7673 | 0.00000* | 729 |
| Other days | -0.000109 | -0.000418 | 1.035158 | -0.181584 | 0.031310 | 17.30772 | 553.3190 | 28415939 | 0.00000* | 2242 |
| BSE Sensex | | | | | | | | | | |
| Monday | 0.000271 | 0.001156 | 0.173393 | -0.131526 | 0.015983 | 0.738145 | 29.74973 | 22159.84 | 0.00000* | 741 |
| Friday | 0.000531 | 0.000598 | 0.082210 | -0.109564 | 0.013600 | -0.362767 | 12.83477 | 2957.996 | 0.00000* | 730 |
| Other days | 0.000598 | 0.000538 | 0.089749 | -0.081778 | 0.011893 | 0.029015 | 9.560056 | 4020.439 | 0.00000* | 2242 |

Source: Computed from Primary data

Note: JB - Jarque-Bera; P - Probability; Obs - Observations; * Significant at 5% Level.

GARCH (1,1) Estimate for the Day of the Week End Effect

| Particulars | Co-efficient | Std. Error | Z-Stat | R ² | P Value | Log likelihood | Durbin-Watson | Akaike Criterion | Schwarz Criterion |
|-------------------------------------|--------------|------------|-----------|----------------|---------|----------------|---------------|------------------|-------------------|
| HUL | | | | | | | | | |
| Monday | 0.000563 | 0.000140 | 4.007844 | 0.009028 | 0.0001 | 2054.147 | 2.042266 | -5.538235 | -5.507109 |
| Friday | 0.000333 | 0.000608 | 0.547268 | 0.001243 | 0.5842 | 1997.458 | 1.992959 | -5.466278 | -5.434785 |
| Other days | 0.000954 | 0.000286 | 3.334061 | 0.005810 | 0.0009 | 6247.787 | 2.013789 | -5.595526 | -5.582776 |
| ITC | | | | | | | | | |
| Monday | 0.000158 | 0.000648 | 0.244240 | 0.009556 | 0.8070 | 1927.441 | 1.949115 | -5.193084 | -5.155733 |
| Friday | 0.002635 | 0.000621 | 4.240935 | -0.000520 | 0.0000 | 1879.533 | 2.057861 | -5.142751 | -5.111258 |
| Other days | 0.000354 | 0.000451 | 0.784643 | 0.002464 | 0.4327 | 5685.608 | 1.963820 | -5.069708 | -5.056958 |
| Nestle India Ltd | | | | | | | | | |
| Monday | 0.000576 | 0.000581 | 0.992010 | 0.000669 | 0.3212 | 2075.772 | 2.064004 | -5.596546 | -5.565420 |
| Friday | 0.001215 | 0.000611 | 1.989263 | 0.002024 | 0.0467 | 2005.827 | 2.082411 | -5.489236 | -5.457743 |
| Other days | 0.001010 | 0.000253 | 3.994583 | 0.002408 | 0.0001 | 6420.352 | 2.022131 | -5.725437 | -5.712686 |
| Britannia Industries Ltd | | | | | | | | | |
| Monday | 0.000975 | 0.000768 | 1.269316 | -0.000254 | 0.2043 | 1870.339 | 2.036186 | -5.048278 | -5.017119 |
| Friday | 0.000816 | 0.000579 | 1.410265 | 0.000597 | 0.1585 | 2012.404 | 2.013336 | -5.507282 | -5.475789 |
| Other days | 0.000940 | 5.50E-05 | 17.09587 | -0.004797 | 0.0000 | 5159.297 | 1.883366 | -4.599997 | -4.587247 |
| Godrej Consumer Products Ltd | | | | | | | | | |
| Monday | -0.001460 | 0.000726 | -2.011293 | 0.000191 | 0.0443 | 1892.149 | 2.043149 | -5.107305 | -5.076146 |
| Friday | 0.000291 | 0.000811 | 0.359377 | 0.003035 | 0.7193 | 1807.187 | 1.949232 | -4.951063 | -4.919537 |
| Other days | 0.475925 | 0.973499 | 0.488881 | 0.000076 | 0.6249 | 4638.980 | 1.991315 | -4.134683 | -4.130961 |
| BSE 100 (Sensex) | | | | | | | | | |
| Monday | 0.000405 | 0.000489 | 0.827259 | -0.021789 | 0.4081 | 2121.773 | 2.334816 | -5.721009 | -5.689883 |
| Friday | 0.000865 | 0.000396 | 2.181297 | 0.019224 | 0.0292 | 2209.917 | 1.867248 | -6.049155 | -6.017662 |
| Other days | 0.000561 | 0.000200 | 2.800343 | -0.003034 | 0.0051 | 6935.843 | 1.886701 | -6.185492 | -6.172741 |

Source: Computed from Secondary data

Note: * Significant at 5 % level.

Table 4 - Linear Regression Analysis

| Variable | Co-efficient | Std. Error | t- Sat | P Value | R ² Value | F-Sat | Mean Dept. Var. | Durbin-Watson |
|-------------------------------------|--------------|------------|-----------|---------|----------------------|--------|-----------------|---------------|
| HUL | | | | | | | | |
| Constant | 0.000786 | 0.000682 | 1.153540 | 0.2491 | | | | |
| Monday | -0.005993 | 0.043359 | -0.138226 | 0.8901 | | | | |
| Friday | -0.050703 | 0.043375 | -1.168944 | 0.2428 | 0.0030 | 0.7491 | 0.000808 | 1.968651 |
| Other days | -0.035037 | 0.038477 | 0.910584 | 0.3628 | | | | |
| ITC | | | | | | | | |
| Constant | 0.000543 | 0.001007 | 0.539133 | 0.5900 | | | | |
| Monday | -0.020923 | 0.052929 | -0.395302 | 0.6927 | | | | |
| Friday | -0.045078 | 0.051479 | -0.875670 | 0.3815 | 0.00198 | 0.4805 | 0.000540 | 2.067284 |
| Other days | -0.030695 | 0.040404 | 0.759698 | 0.4477 | | | | |
| Nestle India Ltd | | | | | | | | |
| Constant | 0.001489 | 0.000592 | 2.515644 | 0.0121* | | | | |
| Monday | 0.013428 | 0.039457 | 0.340327 | 0.7337 | | | | |
| Friday | -0.029664 | 0.037990 | -0.780829 | 0.4352 | 0.00108 | 0.2613 | 0.001465 | 1.888702 |
| Other days | 0.007517 | 0.042390 | 0.177330 | 0.8593 | | | | |
| Britannia Industries Ltd | | | | | | | | |
| Constant | -0.000407 | 0.001237 | -0.329024 | 0.7422 | | | | |
| Monday | 0.001393 | 0.063663 | 0.021888 | 0.9825 | | | | |
| Friday | 0.042001 | 0.080260 | 0.523306 | 0.6009 | 0.00067 | 0.1620 | -0.000381 | 2.021349 |
| Other days | 0.016713 | 0.038397 | 0.435279 | 0.6635 | | | | |
| Godrej Consumer Products Ltd | | | | | | | | |
| Constant | -0.000430 | 0.000665 | -0.645928 | 0.5178 | | | | |
| Monday | 0.013142 | 0.035293 | 0.372383 | 0.7097 | | | | |
| Friday | -0.037439 | 0.032668 | -1.146039 | 0.2522 | 0.00368 | 0.8915 | -0.000472 | 2.015647 |
| Other days | -0.031465 | 0.025630 | -1.227658 | 0.2200 | | | | |
| BSE 100 (Sensex) | | | | | | | | |
| Constant | 0.000657 | 0.000745 | 0.882543 | 0.3778 | | | | |
| Monday | 0.034116 | 0.046279 | 0.737176 | 0.4613 | | | | |
| Friday | -0.091065 | 0.054767 | -1.662780 | 0.0968 | 0.01227 | 3.0055 | 0.000662 | 1.868315 |
| Other days | 0.114083 | 0.049020 | 2.327252 | 0.0202* | | | | |

Source: Computed from secondary data * 5% at significant Level
 Constant: overall returns; Independent variables – Monday, Friday and other days

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Assessments of Determinants impacting Job Engagement: In Case of Inspiredge IT Solutions

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Abstract

Perspicuous employees are rated supreme for their job engagement is found to be high and so as the effectiveness. But, it is well noticed that such employees are rare and most of the employees discard absolute engagement due to many tangible and intangible factors. Absence of job engagement is evident in every sector and can be more witnessed in service sector since the employees are considered to be more imperative especially in software industry. The levels of job engagements are varying at the standpoint of the kind of the job as well as the mode of the work also. After Covid pandemic, the employees are accustomed to work from home and further both organisations and employees are connected to work through virtual mode which leads to job disengagement. The researchers intended to find the detrimental effects of job disengagement and carried out to analyse the determinants to impact on their performance. The aim of the paper is to assess the determinants of job engagement and its impact on job performance. The methodology used in this study is exploratory research design with qualitative approach. The secondary data was gathered from the literature of past and recent research documents. The study was also focused on the employees of Inspiredge IT Solutions and the employees were contacted for additional information. The researchers have concluded with some management implications. The paper in total explains the critical determinants influencing the job engagement which routes to job performance.

Keywords: Job engagement, Job performance, Quality Approach and Inspiredge IT Solutions.

1. Introduction

Engagement of employees has been an imperative issue being spread to all sectors of wherein the human resource activities are dynamic. Employees are in certain situations that categorically have exceptional and common grievances toward to get their personal objectives done. Managements have always been endeavoring to solve the problems occurred through non-engagement and put all efforts to lead the employees to get involved in the job properly and finally satisfied with the job.

Employee Engagement being an enormous concept has become a significant part of managing employees in an organization which should be practiced by the H R Departments to achieve the expected employee performance. Job engagement could be said as the origin point since the sequential job satisfaction and performance are highly related and dependent (Das & Padhy, 2015; Venugopal et al., 2023).

In certain situations, job engagement is highly required and the mal-behavior of the employees may lead to disastrous results. Management should focus on the reasons for the lack of job engagement and foster the workers toward performance. It is quite evident from a good number of cases that many organizations are unable to manage the situations associated with

the absence of job engagement which in turn results into job turnovers and burnouts.

Management should be highly interactive with the employees to know the determinants to have a significant impact on the increase in job engagement.

Organizations that have a good number of employees do get this kind of the problem in any sector. Especially, the researchers focused software sector wherein the job engagement problems are more and dynamic.

The factors influencing job engagement are Monetary Factors, Grievances Handling, Scheduling constraints, Training & Development and Employee Diversity which have been taken into consideration as independent variables for the study after going through many literature sources.

In general, monetary benefits provided and increased time to time by the company have a high impact on the employee total behavior which should absolutely be taken as an imperative variable since almost all employees focus on money and try to turn every benefit into monetary terms. Employees seldom communicate to their superiors the correlation between salary and performance and they show their contempt against low payment and high performance. It is evident that the

increase in any mode of monetary benefit would have a positive impact on the job engagement of employees.

Different employees categorized demographically have different grievances which may not exactly be alike. Though there are some generalized issues, specificity among the grievances should also be handled properly for the engagement of every employee is important. Effective manager tackles the issues appropriately and solve some specific problems such as salary cuts, humiliation, stress, favoritism, workplace environment etc.

Scheduling problems generally occur to the employees when the odd working hours are allocated to the undesired workers. Shift duties are the major reason for many conflicts among the employees which should be managed very carefully. Feasible timings to be allocated to the employees is challenging enough to the management where the employees show their dissatisfaction and discomfort towards work and thus show low level of job engagement. Management should take all the measures and impartial allocation of shift duties are to be allocated and at the same time certain sensitive situations are to be taken into consideration. Most of the times, employees feel annoyed of performing monotonous work which is

done every day in the same way. New methods and modern technologies in work environment energize the employees in the way of increasing the interest and developing the knowledge and skills. Besides the changes in the positions there should also be certain changes in the tasks given to the employees which create more enthusiasm. At the same time, there should be a mechanism in inculcating the newness in employees' mind without getting any kind of rejection and opposition. Training programmes with effective methodologies will enlighten the employees towards working with high determination and there by leads to job engagement.

Employee diversity with respect to the demographical, geographical and psychographic differences influence the cluster engagement who are made as groups and show divergence in their performances. The work culture with unique traits will subdue the employee's diversity and put all of them in a harmony which will route to high level of job engagement. Management should arrange some change agents in the companies to monitor the culture to be spread among the employees in the organization.

The research study has been carried out in a software company named Inspiredge IT Solutions situated at Hyderabad where 350 employees are working in different positions. The management is facing a

lot of problems with the job engagement issues and the expected productivity from the employees are not achieved for years and the employees feel that there are a number of reasons and grievances which should be solved by the management. Betwixt these two extremities, the research on the factors influencing job engagement was taken up in Inspiredge IT Solutions to know the level of impact of each factor on the dependent variable.

2. Objectives:

The specific objectives of the study are

1. To identify and extract the appropriate factors influencing the increase in job engagement at Inspiredge IT Solutions, Hyderabad.
2. To assess the impact of Monetary Factors, Grievances Handling, Scheduling constraints, Training & Development and Employee Diversity on employee engagement at Inspiredge IT Solutions, Hyderabad.

Hypotheses:

HO1: There is no significant impact of **Monetary Factors** on the increase of job engagement in InspiredgeIT Solutions

HO2: There is no significant impact of **Grievances Handling** on the increase of job engagement in Inspiredge IT Solutions

HO3: There is no significant impact of

Scheduling constraints on the increase of job engagement in Inspiredge IT Solutions

HO4: There is no significant impact of **Training & Development** on the increase of job engagement in Inspiredge IT Solutions

HO5: There is no significant impact of **Employee Diversity** on the increase of job engagement in Inspiredge IT Solutions

3. Literature Review

Employees productivity depends on certain factors such as compensation and scheduling which show high significance in the recent research conducted in Saudi Arabia (Abdullahi et al., 2023). Hendriks et al (2023) conducted a research through quantitative approach and concluded that organizational justice and work life balance have an impact on employee turnover. In general, employees want to shift to another company due to the imbalances in the organizational systems as well as their confined work life balance which also influence low level of job engagement reflected with mal performance. Saks (2022) explained in his study on caring human resource management and employee engagement that HR practices of the organizations have an imperative impact on job engagement and vice versa which is considered to be dependent

to each other. The pragmatic practices encourage the employees to work more and better which make the employees to get engaged in the work with added enthusiasm.

Vakira et al (2023) in their recent research on the inclusive leadership on employee engagement, have explored that hospital industry employees are much influenced by the leadership techniques imposed by the organization. Leadership dominance is worked out to some extent, but cannot give continues results since the employee involvement in the task fulfillment is to be highly encouraged with other elements such as salary, training and grievance handling.

Park et al (2022) have meticulously described the relationship among the vital factors of transformational leadership, organizational commitment and performance through SEM and concluded that the leadership has a significant relationship and association with employee commitment and performance. This routes to the key element of job engagement which in other terms amalgamated with commitment and performance. Whereas the organizational commitment was studied in an IT company in order to get influenced by job engagement in the recent study (Venugopal et al., 2023).

Consequently, Fulmore et al (2023)

examined in their research of employee turnover intentions in service sector, the practices of HRD being followed by the employees would have a significant impact on job engagement. On the other hand, a study on talent management impacting job engagement also reported that the psychological empowerment mediates the job engagement in telecom sector wherein the conclusions are effective enough with the significance of individual and mediating variable on job engagement (Salemet al., 2023).

Further, Kuzior et al (2021) also concluded that the factors influencing employee turnover are not materialistic, in addition, Boccoli et al (2023) exposed the strong association and explained the impact between employee engagement, satisfaction and performance with respect to the approaches of sociology, innovation and human centered. Besides, a very important element stimulating to the employer is the compensation which plays an important role in influencing the involvement and engagement while furnishing any task which is exposed in a study pertain to CEO compensation policies (Hendriks et al., 2023).

Verčič & Men (2023) confirmed that internal communication process mediated by employer attractiveness have a positive impact on employee job engagement.

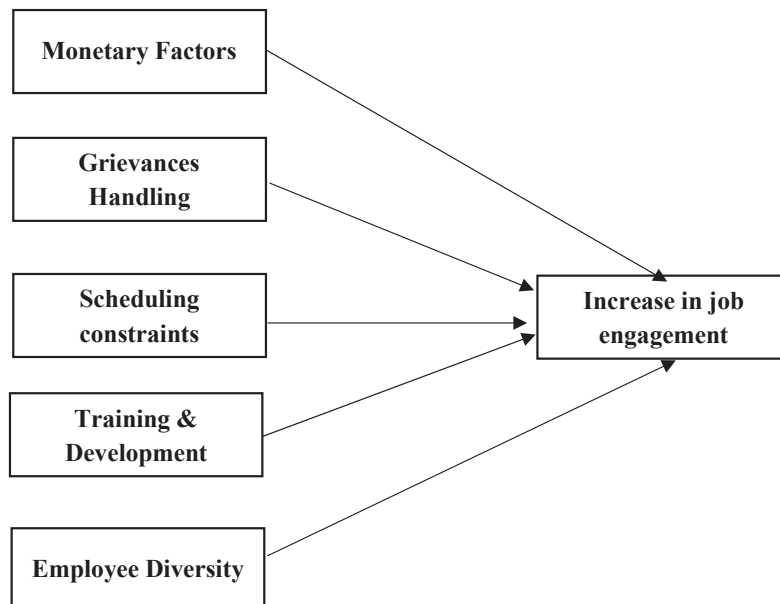
Communication through training programs to motivate the employees with dexterous methodologies will influence a lot and lead to job engagement.

Contrarily, spirituality as a base, a research conducted by Salem et al (2023) explored that the interactive effectiveness of both individual and work place spirituality has a significant effect on job engagement in IT Company which is considered to be quite conventional. Philosophical thought and Philanthropic ideologies cannot be taken as an epitome since they do not influence at all places

Ribeiro et al (2023) assessed that work family conflicts have significant impact on job engagement as well as performance which in turn leads to job turnover. Work life balance is also one of the factors that leads to family conflicts which causes low level of job engagement. Abdullahi et al (2023) in their research concluded that the job engagement plays an effective role in mediating employee relations and performance. Through an extensive literature review, a conceptual frame work stating the inference between independent variables and dependent variable as shown in the following figure-1.

Figure 1: Conceptual Framework of Hypothesis

Source: Authors' own contribution



4. Methodology

This research project used descriptive design and survey approach to serve the purpose of the study by scanning a wide field of issues and populations. To assess the factors influencing job engagement in a software company in Hyderabad, Telangana state, the researchers used multi stage sampling technique. This research was carried out with a blended approach of qualitative and quantitative. Data necessary for this study was generated from primary data sources by using firsthand information through survey questionnaire. Additionally, secondary data such as different literatures, journals, books, policy and administrative documents and company manuals were also employed to attain the desired objective. Data collected through various methods was processed and analyzed using the appropriate techniques in line with the sub theme objectives and the nature of the data. After

the data collection, the necessary data encoding and cleaning were made. For the quantitative data, entry and analysis was done by using social sciences statistical packages (SPSS) version 24. The accuracy of the data entered to the computer was controlled by conducting a proofreading, meaning that the data entered was compared with the data set in order to uncover mistakes, and take measures to correct them. Quantitative data was analyzed using ANOVA and Multiple Regression Analysis (MRA) techniques.

5. Analysis and Interpretation

The multiple regression analysis is carried out to exactly know the strength of the independent variables and can know its level of explaining the dependent variable. The analysis of Model Summary, ANOVA and Multiple Regression Analysis have been explored in this study

Table 1 : Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|--|-------------------|----------|-------------------|----------------------------|
| Monetary Factors | .486 ^a | .237 | .224 | .82708 |
| Grievances Handling | .415 ^a | .173 | .156 | .86249 |
| Scheduling Constraints | .484 ^a | .234 | .222 | .82849 |
| Training and Development | .482 ^a | .233 | .220 | .82926 |
| Employee Diversity | .459 ^a | .210 | .200 | .83980 |
| a. Predictors: (Constant): Monetary Factors, Grievances Handling, Scheduling constraints, Training & Development, Employee Diversity | | | | |

As shown in table 1.1, R Square value for the Monetary Factors, Grievances Handling, Scheduling constraints, Training & Development and Employee Diversity are 0.237, 0.173, 0.234, 0.233 and 0.210; it can be understood that the levels contribution by the variables i.e.

23.7 % in Monetary Factors, 17.3% in Grievances Handling, 23.4 % in Scheduling constraints, 23.3% in Training & Development and 21 % in Employee Diversity extended to the increase of job engagement of employees.

Table 2: ANOVA

| Model | Sum of Squares | Mean Square | F | Sig. |
|----------------------------|----------------|-------------|--------|-------------------|
| 1 Monetary Factors | 65.105 | 13.021 | 19.035 | .000 ^a |
| 2 Grievances Handling | 47.480 | 7.913 | 10.638 | .000 ^a |
| 3 Scheduling Constraints | 64.386 | 12.877 | 18.760 | .000 ^a |
| 4 Training and Development | 63.996 | 12.799 | 18.612 | .000 ^a |
| 5 Employee Diversity | 57.889 | 14.472 | 20.520 | .000 ^a |

Table 5.2 shows the relationship among the items of Independent Variables i.e. Monetary Factors, Grievances Handling, Scheduling constraints, Training & Development and Employee Diversity and dependent variable i.e. increase of job engagement of employees. The F

value between dependent variable and above stated independent variables are 19.035, 10.638, 18.760, 18.612, and 20.520 respectively. Significant values (p) of all variables are 0.00 which is highly significant at 0.05 and 0.01 levels.

Table 3: Hypothesis testing

| Hypothesis | Sig. | Hypothesis testing |
|--|-------------------|--------------------|
| HO1: There is no significant impact of Monetary Factors on the increase of job engagement in Inspiredge IT Solutions | .000 ^a | Rejected |
| HO2: There is no significant impact of Grievances Handling on the increase of job engagement in Inspiredge IT Solutions | .000 ^a | Rejected |
| HO3: There is no significant impact of Scheduling constraints on the increase of job engagement in Inspiredge IT Solutions | .000 ^a | Rejected |
| HO4: There is no significant impact of Training & Development on the increase of job engagement in Inspiredge IT Solutions | .000 ^a | Rejected |
| HO5: There is no significant impact of Employee Diversity on the increase of job engagement in Inspiredge IT Solutions | .000 ^a | Rejected |

Hence it can be concluded that factors Monetary Factors, Grievances Handling, Scheduling constraints, Training & Development and Employee Diversity have a significant influence on

the increase of job engagement of employees. Taking this as a parameter, the study is proceeded to Multiple Regression Analysis to assess each item of the variables explaining the dependent variable.

1. Monetary Factors Table 4: Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.142 | .195 | | 10.972 | .000 |
| | MF1 | .327 | .058 | .389 | 5.609 | .000 |
| | MF2 | .084 | .064 | .091 | 1.325 | .186 |
| | MF3 | -.013 | .061 | -.016 | -.208 | .836 |
| | MF4 | -.003 | .062 | -.004 | -.056 | .955 |
| | MF5 | .068 | .056 | .081 | 1.209 | .227 |
| | MF6 | -.077 | .076 | -.076 | -1.007 | .315 |

a. Dependent Variable: DV1

Increase in job engagement of employees = 2.142 + (0.327) MF1 + (.084) MF2 + (-.013) MF3 + (-.003) MF4 + (.068) MF5 + (-.077) MF6

Increase in job engagement of employees being influenced by the items of the first variable Monetary Factors, MF1 (I believe that the salary is the most important element to motivate the employee towards work) is 2.469(2.142 + 0.327); if MF1 is increased by one unit, job engagement of employees is increased by 2.469. Likewise, if the predictors MF2 (I feel that the salary increase leads to work engagement), MF3 (Any

reward and recognitions out of employee achievements should be compensated through money only), MF4 (I am ready to work and spare more time and energy if more money is given to me), MF5 (More pay will lead to high job satisfaction) and MF6 (More money will lead to more job engagement) are increased by one unit, Increase in job engagement of employees is there for MF2 by 2.326; MF3 by 2.155; MF4 by 2.145; MF5 by 2.212 and MF6 by 2.219.

Increase in job engagement of employees is explained by "I believe that the salary is the most important element to motivate the employee towards work" is the highest

with 2.469 followed by “I feel that the salary increase leads to work engagement” with 2.326. The least is explained by “I am ready to work and spare more time and energy if more money is given to me” with 2.145.

Table 5: Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 2.425 | .207 | | 11.708 | .000 |
| GH1 | -.045 | .064 | -.049 | -.703 | .483 |
| GH2 | .115 | .074 | .116 | 1.545 | .123 |
| GH3 | -.007 | .072 | -.007 | -.094 | .925 |
| GH4 | .357 | .064 | .397 | 5.598 | .000 |
| GH5 | .018 | .064 | .020 | .282 | .778 |
| GH6 | -.049 | .074 | -.052 | -.662 | .508 |

a. Dependent Variable: DV1

Increase in job engagement of employees = 2.425 + (-.045) GH1 + (.115) GH2 + (-.007) GH3+ (.357) GH4 + (.018) GH5 + (-.049) GH6

Increase in job engagement of employees being influenced by the items of the second variable Grievances Handling, GH1 (Grievances are quite common for any company) is 2.380(2.425 -0.045); if GH1 is increased by one unit, job engagement of employees is increased by 2.380. Likewise, if the predictors GH2 (I have a good number of grievances on many issues), GH3 (Grievances are well handled by this company), GH4 (We have all the freedom to express our grievances),

GH5 (Grievances handling of the company leads to job engagement by employees) and GH6 (All do not have the same grievances) are increased by one unit, Increase in job engagement of employees is there for GH2 by 2.543; GH3 by 2.418; GH4 by 2.782; GH5 by 2.443 and GH6 by 2.376.

Increase in job engagement of employees is explained by “We have all the freedom to express our grievances” is the highest with 2.782 followed by “I have a good number of grievances on many issues with 2.543. The least is explained by “All do not have the same grievances” with 2.376.

Table 6: Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.013 | .224 | | 8.981 | .000 |
| | SC1 | .369 | .078 | .376 | 4.757 | .000 |
| | SC2 | .115 | .072 | .114 | 1.597 | .111 |
| | SC3 | -.084 | .065 | -.089 | -1.280 | .202 |
| | SC4 | -.074 | .082 | -.071 | -.896 | .371 |
| | SC5 | .159 | .079 | .167 | 2.014 | .045 |

a. Dependent Variable: DV1

Increase in job engagement of employees = 2.013 + (.369) SC1 + (.115) SC2 + (-.084) SC3+ (-.074) SC4 + (.159) SC5

Increase in job engagement of employees being influenced by the items of the third variable Scheduling Constraints, SC1 (I am prepared to work in any schedule/shift) is 2.382(2.013 +0.369); if SC1 is increased by one unit, job engagement of employees is increased by 2.382. Likewise, if the predictors SC2 (Shift system is well planned and executed by the company), SC3 (I believe impartial shift system leads to more job engagement in this company), SC4 (Facilities are

good at all shifts similarly) and SC5 (No discrimination of gender, age and position when the shifts are allocated) are increased by one unit, Increase in job engagement of employees is there for SC2 by 2.128; SC3 by 1.929; SC4 by 2.087 and SC5 by 2.172.

Increase in job engagement of employees is explained by “I am prepared to work in any schedule/shift” is the highest with 2.382 followed by “No discrimination of gender, age and position when the shifts are allocated” with 2.172. The least is explained by “I believe impartial shift system leads to more job engagement in this company” with 2.376.

Table 7: Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.033 | .210 | | 9.662 | .000 |
| | TP1 | .295 | .072 | .319 | 4.075 | .000 |
| | TP2 | .179 | .085 | .173 | 2.098 | .037 |
| | TP3 | .027 | .093 | .026 | .289 | .773 |
| | TP4 | .076 | .080 | .076 | .952 | .342 |

a. Dependent Variable: DV1

Increase in job engagement of employees = $2.003 + (.295) TP + (.179) TP2 + (.027) TP3 + (.076) TP4$ Increase in job engagement of employees being influenced by the items of the fourth variable Training and Development, TP1 (Training programmes are regularly conducted to all of us) is 2.328(2.033 +0.295); if TP1 is increased by one unit, job engagement of employees is increased by 2.328. Likewise, if the predictors TP2 (Training sessions related to behavioral studies are provided by the company), TP3 (New things learnt in the training program

will lead to high job engagement) and TP4 (Job will be more interesting and engaged better if training sessions on new practices are conducted continuously) are increased by one unit, Increase in job engagement of employees is there for TP2 by 2.212; TP3 by 2.060 and TP4 by 2.109.

Increase in job engagement of employees is explained by "Training programmes are regularly conducted to all of us" is the highest with 2.328. The least is explained by "New things learnt in the training program will lead to high job engagement" with 2.060.

5. Employee Diversity

Table 8: Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.090 | .201 | | 10.419 | .000 |
| | EMP1 | .106 | .066 | .122 | 1.609 | .109 |
| | EMP2 | .273 | .075 | .280 | 3.649 | .000 |
| | EMP3 | .086 | .068 | .094 | 1.269 | .205 |
| | EMP4 | .025 | .072 | .026 | .344 | .731 |

Dependent Variable: DVI

Increase in job engagement of employees = $2.090 + (.106) EMP + (.273) EMP + (.086) EMP3 + (.025) EMP4$

Increase in job engagement of employees being influenced by the items of the fourth variable Training and Development, EMP1 (Different behaviours of employees make confusion in the work place) is 2.196(2.090

+0.106); if EMP1 is increased by one unit, job engagement of employees is increased by 2.196. Likewise, if the predictors EMP2 (I feel that different cultures of employees lead to low level of job engagement), EMP3 (Diversities among employees cannot be taken to a common line of understanding at work place) and EMP4 (Our management have good strategies

to generalize all differences among employees) are increased by one unit, Increase in job engagement of employees is there for EMP2 by 2.363; EMP3 by 2.176 and EMP4 by 2.115.

Increase in job engagement of employees is explained by “I feel that different cultures of employees lead to low level of job engagement” is the highest with 2.363. The least is explained by “Our management have good strategies to generalize all differences among employees” with 2.060.

6. Findings and Suggestions

- As expected, the employees are highly interested and without any hesitation exposed to the fact that the salary constraints pertaining to the amount of salary, timeliness and time to time increase in the salary will directly and positively correlated to job engagement. The more the monetary benefits are, the more the engagement would be. At the same time most of them are relevant to work more time even if additional money is given in software industry. So management should always focus on the commonsense applications at the standpoint of employee’s intentions on the monetary benefits. Promised and expected benefit should at any cost be given to the employees.
- It is good to note that the organization allows all categories of employees to submit the grievances with the maximum possible freedom which cannot be witnessed in all organizations for which the management may be appreciated, but at the same time many employees stated that there are good number of grievance on different issues which should not be remained unsolved. Proper negotiations are to be accomplished and effective outcomes. Personalized problems are also to be considered besides the common and generalized grievances which all do have.
- There is positive note that most of the employees are pragmatic enough to work in any shifts with an orientation of the task completion and determination of work. There is also a common opinion that there should not be any discrimination while allocating the shift such as gender, experienced, position etc., Most of the employees claimed that there is a slight impartiality while assigning the shifts which may be previewed by the management and see that there should not be any favourism.
- Training programs are conducted generally on a contagious base to the employees by every big organization which is in fact acknowledged by the employees. At the same time quite surprisingly that most of the employees are not interested to be trained with things. The management should check the quality standards

of the training session at the stand point of trainer's capabilities, facility management, methods and materials.

- Differentiation threshold among the cultural aspects of employees create diversity and mugged up with constricted attitudes which leads to

distract team playing and further leads to deviate job engagement. It is very important for the organization to have a special focus to prepare an exceptional strategy to generalize the differences among the employees which will tune up to job engagement at high level.

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Using Conversational Marketing to drive customer engagement: The era of AI and chatbots

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Abstract

Digital transformation has reshaped the business landscape, inundating us with data beyond our processing capabilities. Conversational AI, a facet of artificial intelligence, empowers machines to engage in human-like dialogues. This includes chatbots and virtual assistants capable of interactive and personalized responses. This paper explores the mechanics of conversational AI, highlighting Natural Language Processing (NLP), Machine Learning (ML), and Automatic Speech Recognition (ASR) as key components. Conversational AI often incorporates knowledge bases, either curated by experts or built through machine learning, to maintain context and better understand user intentions. This context awareness enables chatbots to offer personalized responses across various channels like websites, messaging apps, and voice interfaces. By harnessing these technologies, conversational AI enhances customer experiences, boosts lead generation, streamlines customer service, and refines personalized marketing efforts.

Keywords: Conversational AI, Chatbots, Virtual assistants, Customer experience, Human-machine interactions

The rise of AI

There are typical examples of most of us having conversations with chatbots, dissatisfied, preferred talking to an engineer or a manager. Times have phenomenally changed, chatbots fuelled by AI are able to hold entire conversations that give users the impression that they are speaking with an actual person. As conversational marketing becomes more popular, businesses recognize how important it is for them to provide human-

like treatment even when employing chatbots with, their customers. AI has the potential to assist and humanize automated brand interactions to a great extent, it adds emotions just like one would get from a genuine service representative. The conversational vendors have put several kinds of organic and inorganic growth methods into practice, including new product upgrades, collaborations, and agreements. To reinforce its new market, conversational tools are expanding and acquiring other businesses. In the

worldwide conversational AI market, the top players are IBM, Microsoft, Google, AWS, Baidu, Oracle, Open AI, Liveperson, SAP, Core.ai etc.

Yet other examples of Conversational AI include Amazon Alexa, Google Assistant, Siri, and Cortana which are frequently used in conversational marketing. A positive user experience with conversational AI, however, depends on a number of aspects. Tech companies are investing in natural language processing (NLP), machine learning (ML), automatic voice recognition (ASR), and other advances to effectively reach to the expectations of emerging conversational AI.

Wunderman Thompson (2022) suggests that from being a focused technology, artificial intelligence (AI) has developed into a potent tool for enhancing consumer experiences and streamlining corporate operations. Thompson propagates that approximately more than half of companies that have implemented AI use it for sales and marketing tasks including content management, personalization, churn analysis, and recommendation engines. Customer service, logistics, warehousing, employee experience, and company planning are further uses. Despite the high acceptance rate (77%), the survey found that up to 90% of organisations utilising AI think their use of the technology might be more efficient. The advantages AI technologies provide businesses are difficult for rivals to match. However, AI must be correctly built in order to be useful.

Every firm wants to increase consumer engagement through its marketing

initiatives since AI offers many positive effects on its bottom line. The voice of the consumer is represented through data obtained from customer interactions. Prior to the advent of artificial intelligence, it was challenging to gather and combine such data, but now that technology is available, it is simpler for organizations to analyse customer-related data (Perez-Vega et al., 2021). The link between artificial intelligence and client engagement is seen in its booming success.

How does Conversational AI work

Conversational marketing, often referred to as chat marketing and conversation marketing, refers to the capability of having one-on-one talks with the target audience across all of communication channels in real-time in order to boost lead generation while cutting the sales cycle. A whole army of reps may be engaged on audience of every platform, in every time zone. Or businesses might utilize AI chatbots as a component of the marketing arsenal to assist in doing this. In essence, one can utilize chatbots to interact with leads by sending them highly-targeted messages and ready-made replies made by staff.

By enhancing the “intelligence/knowledge” of the chatbot, the data from consumers may then be stored in a knowledge base, enhancing future customer encounters. By giving pertinent responses to their inquiries, this enables the chatbot to be really conversational and connect with leads (unlike static forms). This real-time, interactive discussion may take place anywhere the leads wish to connect a business, for example: On

a homepage or the website's numerous landing pages. Messenger applications including WhatsApp, Slack, and Facebook Messenger, SMS, messages, emails.

Customer-focused conversational marketing allows leads to engage with company on their terms and at their convenience. The CEO of Drift, Dave Gerhardt, coined the phrase "conversational marketing," and he suggests that it should be:

Instantaneous, with real-time replies, and scalable so businesses can communicate with more leads

- Customer involvement and utilisation as the primary objectives.
- Customised and adapted to the stage of sales funnel where prospects are pooled.
- Information gatherers for consumer opinion and comments.

Conversational Marketing Features

The benefits of conversational marketing will make the setup effort worthwhile even if this approach places the initiative in the leads' hands. By using an automated chat interface, a conversational marketing makes it simpler to communicate directly with a target audience. The advantages of having a two-way connection include higher lead capture conversion rates. Some leads may fill out a lead form to join an email list, while others may follow on social media, and many never do. However, even those who avoid filling out contact forms are likely to talk to a chatbot. That is because, in contrast to static pages, conversational landing pages (landing pages with chatbots) can engage with potential customers. A chatbot can

respond to many of the opening inquiries a prospect may have without their needing to wait for a call from someone or an email with further details.

A firm is far more likely to collect a visitor's information when a conversation is user-friendly and responsive. More ideal prospects will pass through the gates thanks to chatbot training that will pre-qualify leads. To do this, a chat interface is available round-the-clock so that employees may spend more time during business hours on higher-quality leads. This in turn boosts client satisfaction. As previously mentioned, chatbots give clients the option of receiving answers to their inquiries immediately rather than having to wait for a professional to respond. When a query can't be addressed, a chatbot can direct users to the appropriate resource, or in certain circumstances, giving prospects or customers answers right away has increased the capacity to grow reach to previously unheard-of levels.

When leads can connect with brands right away rather than waiting days for them to be added to an email list or fill out a capture form, they are more likely to do so. Hot leads get immediate support to close deals, and new leads do not have to go around for information because it's already been curated and provided to them by a friendly bot. It may even lower friction points, cross-sell, and upsell utilising information from leads about prior interactions or often bought things depending on what they are seeing.

There is useful information to employ in lead generation efforts since chat interfaces

on websites, messaging apps, social media, etc. all preserve a record of conversations. With casually programmed discussions, leads will divulge information about their motivations for visiting a website, their intended uses for the items, their pain spots, the qualities of the products they need or dislike, and more. Following that, businesses may use this data to customise and improve every lead engagement. Chat interfaces may also be customised to provide each lead with precisely what they need at their particular stage of the buying process. But does it mean that in order to employ conversational marketing, all lead capture forms must be totally removed? Absolutely no. An additional option in a lead generation toolbox is conversational marketing. A chat interface is simple to add to the existing techniques so they complement one another even better.

Conversational Marketing: How to Use It

The objectives of conversational marketing are the same as those of any other lead generation strategy: to qualify leads, connect with leads, and capture leads.

Automated chat speeds up the process in conversational marketing. Chatbots can now converse with leads in a more natural, sincere way owing to new technology, but they still need to write the scripts, keep an eye on how well they work, and analyse the data it generates to make the most of the interactions moving forward.

Here is a fundamental guide on how to incorporate conversational marketing into a lead generation plan. Website Chatbots

offer relevant solutions. A knowledge base, wiki, interactive FAQ that are readily available for chatbot. By feeding the chatbots with useful information or directing them to the next stage of a sales funnel, a chat interface on a website engages visitors effectively. In fact, compared to conventional landing pages, conversational landing pages frequently convert 2–3 times higher. A poll of more than 5,000 consumers from six different nations reveals that chatbots are generally well-received, which contributes to this belief.

Apps for mobile texting, according to the Harvard Business Review, “provide a continuous thread between customers and brands.” And the reason for that is that there are already leads. When compared to the most popular social media platforms, messaging applications are where

many users spend the most time. Each month, Facebook Messenger alone facilitates the exchange of almost 2 billion messages between businesses and customers. It is ideal to set up an automated chat on these channels because 53% of more than 12,000 respondents stated they are more inclined to purchase with a company they can communicate directly. Most widely used messaging apps HubSpot tested out content offerings via Facebook Messenger, and they saw 2.5 times as many opens and 6 times as many clicks as they did with emails.

There is a greater likelihood that leads who land on sites like price, services, and bottom-of-funnel landing pages will collaborate with and purchase goods. For this function, chatbots should be

knowledgeable with frequently asked questions (FAQs), pricing models, which services best meet customers' demands, and other responses to frequent reluctances since leads will probably have specific queries about this information. Additionally, businesses can use chatbots to route leads to sales representatives on a rotating basis or to set up a meeting or follow-up call with a representative. High-traffic pages, such as landing pages with videos, blog articles, and blog homepages, boost leads' perception of brand authority and brand recognition.

Here, chatbots should be designed in such a way that leads to more value by providing them with things like: supplementary material and information promotions for events, goods, and subscriber-only content. FAQs, demonstrations, or a testimonial page additionally, they may be utilised to filter leads or direct them to the right divisions. Message app prompts should be set up to connect to pertinent material, respond to frequently asked inquiries, and diagnose issues utilising a knowledge base. However, each of these statements has to reflect the tone of the brand.

Conversational AI and User Engagement

The potential financial benefit of systems created to give users an engaging experience is acknowledged by prior information systems research (O'Brien, H.L.; and Toms, E.G., 2021). Engaging experiences encourage greater levels of attention, involvement, and control, which improve users' perceptions of a system's functionality. Firms are progressively embracing innovative user engagement

strategies to keep their consumers' attention in an effort to increase their sales and profitability (O'Brien, H.L.; and Toms, E.G., 2008). Prior management research has demonstrated that improved customer involvement influences organisations' performance outcomes as well as customer retention (Hollebeek, L.D., 2011).

According to Chapman, P. et al. (1999), user engagement is the behavioural flow that a user experiences that is independent of their deliberate mindsets, such as control, attention, curiosity, focus, and intrinsic interest. Engagement is a happy and content mental state that can be represented by the three sub-constructs of vigour, absorption, and dedication (Schaufeli, W.B. et al., 2002). It is characterized by energy, involvement, and efficacy. In the context of information security, vigour denotes a high level of physical and mental stamina while utilising a system, the willingness to put forth effort in its use, and the perseverance to bear challenges while doing so. When a user is fully immersed in and paying attention to the system, they are said to be absorption. The passion, motivation, pride, and challenge the user experiences as a result of the system are all examples of dedication (Schaufeli, W.B. et al., 2002).

Researchers have also emphasized the necessity of using rich media, like animation and video, to increase interactivity and socialisation in the context of online consumer interactions. There have also been studies to provide internet consumers with an engaging experience, that have demonstrated that aesthetics and sensory appeal of the

underlying technology must be enhanced (O'Brien, H.L., and Toms, E.G., 2008). The ability of conversational AI agents, such as chat bots, to demonstrate human-like interactional abilities, which guarantee natural and engaged communication (Turing, A., 1950), is what determines the unique context in which they operate. Studies have also proved that it would be ideal for conversational AI to be able to comprehend, react to, interact with, and organically speak with humans (Benbya, H., et al., 2021).

Human-like Interactions facilitated by AI Competencies

Building on the preceding section's ideas, the ideal capabilities for conversational AI should enable users to engage in conversations with less cognitive work, less communication ambiguity, and higher levels of physiological arousal. Systems with these capabilities would maintain smooth and interesting interactions between AI agents and their users. Human competences are the taught ability to carry out activities, duties, or roles in a specific work situation, including various forms of knowledge, skills, and attitudes (Hertel, G., et al., 2006). Conversational AI should have the interpersonal skills that are typically expected of humans because it is frequently assumed that it would replace humans. As important predictors of favourable user outcomes in digitally mediated interactions, perceived task and social abilities have been emphasised as being critical in prior research (Brown, S., et al., 2016). Additionally, research has emphasized the importance of the emotions exhibited by conversational AI

in promoting successful exchanges in which AI mimics a human being (Ho, C.-C., and Mac Dorman, K.F., 2017). In the current article it is proposed that the three ideal interacting abilities in conversational AI are cognitive, relational, and emotional, drawn from extensive literature.

According to (Eschenbrenner, B., et al. (2014), cognitive competency is the mental activity of digesting all available information and employing it in the active interpretation of events to maximise task performance. Cognitive competency in the context of conversational AI would be the capacity of an AI agent to consider and utilise their problem-solving and decision-making skills to successfully perform given tasks (Brown, S., et al., 2016). For instance, Grammarly's writing abilities demonstrate its cognitive ability as an interactive writing tool powered by AI.

Cooperating with others and trying to establish and preserve harmonious interpersonal connections are both examples of relationship competency. It alludes to interpersonal abilities that promote active interaction with others. Relational competency, as used in conversational AI, would be the ability of the AI agent to support, collaborate, and do so with its users (Brown, S., et al., 2016). For instance, a user-interaction-based AI algorithm may utilise this information to learn about users' tastes and make recommendations for films on Netflix, books on Amazon, or news headlines on social media.

Conversational AI should have cognitive and relational talents since they can increase its effectiveness and

efficiency in performing jobs in the current environment, where AI is quickly replacing humans in customer service interactions. The need for developing capabilities that would enable AI to intuitively meet users' needs by providing adequate and considerate solutions to queries has also been addressed in earlier studies (Birnbaum, G.E., et al., 2016). For instance, Lyft employs its AI-powered self-service app's cognitive and relational competencies to reduce the effort required for common tasks like calling a cab, setting up a pickup location, and instructing the driver, depending on its understanding of consumers' preferences for advice.

Although conversational AI may be able to fulfil users' emotional demands through empathic interactions, cognitive and social competencies might not be enough (Esau, N., et al., 2008). Although everyday customer contacts can be handled by cognitive and relational AI competencies, more may be needed for urgent or emotionally charged conversations (Paiva, T., 2017). When checking in for recently cancelled flights that were supposed to take them to a key business meeting or a significant family event, for instance, a customer's emotions can be at an all-time high. Another illustration would be a consumer awaiting a meal delivery who needs to leave the house immediately. These highly sensitive situations call for a sympathetic human touch, which demands a conversational AI that may have emotional competency built in. People frequently prefer communication that is warm and human-like, even during everyday contacts (Wieseke, J. et al., 2012).

The third crucial skill that conversational AI should demonstrate to keep users interested is emotional competency, according to our theory (Fredrickson, B.L., and Losada, M.F. 2005). Intense feelings are associated with emotional competency, which denotes an aroused emotional state. When connecting with others, it refers to a person's capacity to feel for and empathise with others (Pittenger, L.M., 2015). The ability of an AI agent to self-manage and moderate its interactions with people by accounting for their moods, feelings, and reactions through appropriate expressions and behaviour is referred to as emotional competency in the context of conversational AI. For instance, call centre operators at Cogito (a business co-founded by alumni of MIT Sloan) are guided by voice-analytics software to identify clients' moods over the phone. This allows human agents to modify their talks with consumers in real-time.

Conversational AI Competencies:

Building on the preceding section's ideas, the ideal capabilities for conversational AI should enable users to engage in conversations with less cognitive work, less communication ambiguity, and higher levels of physiological arousal. Systems with these capabilities would maintain smooth and interesting interactions between AI agents and their users.

Human competences are the taught ability to carry out activities, duties, or roles in a specific work situation, including various forms of knowledge, skills, and attitudes (Hertel, G., et al., 2006). This definition comes from earlier management research. Conversational AI

should have the interpersonal skills that are typically expected of humans because it is frequently assumed that it would replace humans. As important predictors of favourable user outcomes in digitally mediated interactions, perceived task and social abilities have been emphasised as being critical in prior IS research (Brown, S., et al., 2016). Research has also demonstrated the importance of emotions exhibited by conversational AI in promoting successful exchanges in which AI successfully mimics a human being (Ho, C.-C., and Mac Dorman, K.F., 2017). This is analogous to the context of human interactions.

This study proposes that the three ideal interacting abilities in conversational AI are cognitive, relational, and emotional, based on extensive literature.

AI- Cognitive Competency and Customer Engagement

According to (Eschenbrenner, B., et al., 2014), cognitive competency is the capacity to efficiently comprehend all of the information at hand in order to contribute fruitfully to the tasks assigned. People with this skill can take the proper steps to maximise work performance (Boyatzis, R.E., 1991). Cognitive competency for conversational AI refers to the collection of skills that would allow the AI to successfully comprehend interactional data in order to fulfil a task specified by the user (Wang, Y.; and Haggerty, N., 2011). Users would believe that conversational AI is cognitively competent to understand and do the assigned task if it displays creativity, spontaneity, and open-

mindedness in perceiving and responding to human demands and motives (Gong, L., 2008).

Users gain confidence in the conversational AI by seeing evidence of cognitive competency. In these circumstances, people give up control and hand off the activity to the AI, lowering the cognitive effort required of them to carry out and oversee it (Kaplan, A.; and Haenlein, M. Siri., 2019). For instance, Tencent's WeChat, an AI-based chatbot, is particularly well-liked in China because to its ability to demonstrate task proficiency by integrating services like orders, purchases, and transaction payments without requiring the user to leave the WeChat app. The cognitive effort needed by its users is decreased by this apparent task efficiency.

It is expected that the decreased effort for users brought about by cognitively competent conversational AI will positively influence user engagement because prior research has shown that reduced cognitive effort is linked to increased user engagement in a variety of contexts, including older adults interacting with technology, gamified online discussions for students, and video game engagement (Sharek, D., and Wiebe, 2014).

AI- Relational Competency and Customer Engagement

The capacity to work with others and establish, sustain a positive relationship is known as relational competency. Relational competency in the context of conversational AI can be defined as abilities that allow the AI to assist, collaborate, and support the user (Brown,

S., et al., 2016). For instance, a relationally adept hiring AI would establish a fair rapport with the candidate by its caring and cooperative behaviour. This would aid in revealing the candidate's genuine skills, which are crucial for determining job-fit.

The user perceives a relationally competent conversational AI as considerate, cooperative, and fair. Relational cues that support these characteristics serve to deepen the bond between the AI and the user with whom it interacts (Biocca, F., et al., 2003). Communication difficulties are lessened by the immediateness and intimacy thus generated (Franceschi, K., et al., 2009). In order to better grasp user preferences, replicate personalised human discussions, and adapt responses based on what is said in particular chats, chat bots, for instance, employ natural language processing (Petouhoff, N., 2020). This is an example of how they demonstrate relational competency.

Reduced communication ambiguities have been associated to increased user involvement in a variety of settings, including crowd sourcing, organizations, and virtual interactions (DeVreede, T., 2013). Therefore, we anticipate that fewer communication ambiguities will increase user interest when dealing with relationally competent AI.

AI-Emotional Competency and Customer Engagement

The capacity to effectively control one's emotions while being aware of the feelings of those with whom they engage is known as emotional competency. It is the set of abilities required for understanding

emotions, including one's own and others', managing those emotions, and employing knowledge of those emotions to direct one's thoughts and actions (Kim, T. Y., 2009). Conversational AI with emotional competency is able to develop a natural emotional relationship with its users by recognising and controlling their feelings, moods, and responses (Spackman, M.P., 2004). A conversational AI agent is considered emotionally competent if it is able to distinguish between various human emotions including pleasure, thrill, anger, boredom, and distress and respond to them properly (Benbya, H., 2021). For instance, a chatbot should be able to discern the rage of a disgruntled consumer and react properly in real time.

A social atmosphere of presence or "being there" can be simulated by emotionally intelligent AI by providing sympathetic warmth and compassion (Biocca, F., et al., 2003). Conversational AI gives off the sense of being natural and real thanks to this experience of presence, which keeps users interested and emotionally stimulated. For instance, the Cogito chatbot uses AI to analyse callers' voices and direct human customer service representatives to be sympathetic when it detects frustration, while the Woebot chatbot describes itself as a charming robot friend and uses AI to offer emotional support through talk therapy, as a friend would. A second emotional robot that resembles a human being, called Pepper, employs AI to recognize emotions in users such as grief, anger, or other emotions and modifies its interactions accordingly.

We anticipate that emotional care will stimulate users' neuro-endocrine

systems, encouraging higher cognitive functioning and positive emotional states and leading to increased user engagement if an AI maintains a real-time emotional connection with its users, responding to emotional sensitivity with human-like warmth and compassion.

Conclusion

Engagement reflects these positive responses, which are shown by interest, concentration, and task engrossment (Blasco-Arcas, L., et al., 2013). Therefore, it is believed that using technology requires both a cognitive and emotional commitment to a dynamic connection (Fan, L., et al., 2017). For a significant impact, previous research has emphasised the importance of users' affective

interaction with technology (Stein, M.K., et al., 2015). Affectively interacting with technology has a positive impact on a number of business-related outcomes, including productivity and inventiveness (Kim, S.S., 2009). The use of chatbots grows more and more experience-oriented as they incorporate human-like competencies. The various user-related benefits of chatbots or other user-centric IT technology cannot be realised without sufficient user involvement (Bhattacharjee, A., et al., 2018). As a result, their favourable experiences with chatbots will affect how they use them in the future (Burton-Jones, A., et al., 2021). Engaged users are more likely to engage with chatbots actively and repeatedly, resulting in willing use and a sense of satisfaction.

Table 1

| The three ideal interacting abilities in conversational AI | | |
|--|--|--|
| Cognitive | Relational | Emotional |
| <ul style="list-style-type: none"> • Contextual Understanding • Recognising Intention • Extracting Entities • Decision-Making and Reasoning • Adaptability in a Context | <ul style="list-style-type: none"> • Individualised Communications • Building Relationships • Active Listening • Proactive Support | <ul style="list-style-type: none"> • Proactive Support • Relationship Development • Enthusiasm • Active Hearing • Courtesy and decorum • Empathy and Support for the Emotions of users |

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Mediation Impact of Literacy and Socio-economic Status through Health-hygiene Status of Tribal in Odisha

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Abstract

The purpose of the study is to explore the mediating effects of literacy status and socio-economic status through the health and hygiene status of the Santal tribe in the Mayurbhanj district of Odisha. The statistical analysis is done by the statistical packages IBM SPSS 25 and AMOS 21. The findings show that there is a significant impact of literacy and health-hygiene status on socio-economic status. Further, there is a partial mediation between the health and hygiene status and the literacy status and socio-economic status. Understanding the importance of literacy and healthcare practices in eradicating poverty and raising living standards is the most straightforward path to economic growth.

Keywords: Santal tribe, Health-hygiene, Literacy Status, Socio-economic Status, mediating effect.

Introduction

Health is wealth. Health can be defined as the physical and mental well-being of a person. A healthy lifestyle can prevent illness. To stay fit, everyone must consume

nutritious foods and engage in physical exercise activities. So, according to the WHO, better health is the reason behind happiness and well-being. This contributes to the economic growth of a country.

There are numerous mechanisms to fit. It involves healthy eating, a consistent timetable, good sleeping practices, and a nutritious diet. These days, maintaining good health is the main priority. Due to the clean air, physical activity, and nutritious food in the villages, people there maintain their physical strength, but they are most likely to ignore their healthcare practices due to their busy schedules at work. The tribal people in India have a much lower health status than the overall population. The majority of tribal people live in isolated rural areas in mountainous, forested, or desert areas, where they are more susceptible to illness due to illiteracy, challenging physical issues, hunger, poor access to drinkable water, and a lack of individual hygiene and sanitation. The reasons that these populations are not aware of the precautions to protect their health include their distance from medical facilities, the lack of roads and cost-effective transportation, the insensitive and discriminatory behaviour of medical facility staff, their financial limitations, etc. All of these factors make a significant contribution to this. Government initiatives to improve the population's access to basic healthcare and increase health awareness have not had the desired effect.

Populations with higher literacy rates generally to be more decent, less criminal, possess higher employment rates, and have stronger economic growth. To develop more complex abilities, a person has to have a solid foundation in literacy. Higher salaries and increased employment throughout labour markets are the results of these. According to the 2011 Census, there are 10,42,81,034 Scheduled Tribes

(STs) in India, with the literacy rate increasing from 47.1 percent in 2001 to 59 percent in 2011. The 2011 Census shows that the literacy rate in India is

72.99 percent, while scheduled tribes only have 59 percent. According to the states, Mizoram has the greatest incidence of scheduled tribal illiteracy (91.7%), while Andhra Pradesh has the lowest rate (49.2%). In Odisha, the Schedule Tribe's overall literacy rate increased from 23.4% in 2001 to 41.2% in 2011. Although it has improved, it is still below the national average, which was 47.1%. The factors contributing to low literacy rates include the distance between home and school, the scarcity of teachers as a result of remote habitations, teachers' unwillingness to work in tribal areas' schools, and instructors from other regions who are unfamiliar with the regional tribal languages. There is no doubt that an individual's level of literacy is a key indicator of their progress. If one lacks access to educational resources, this deprivation extends beyond only one's educational standing and impacts other aspects of one's life, such as their health, economics, etc.

To overcome poverty and put sufficient effort toward their own growth, they must work extremely hard and greatly improve the family's financial situation. It is crucial for a systematic process of tribal development due to their low level of economic activity, social backwardness, low literacy, and poor health conditions. The Santal tribe is one of several tribal groups facing economic development challenges. Santals are found in the states of Jharkhand, Bihar, West Bengal,

Assam, and Odisha. In the present study, the Santal were selected as a sample from Mayurbhanj district in Odisha state, which is found in the states of Jharkhand, Bihar, West Bengal, Assam, and Odisha. In the present study, the Santal were selected as a sample from Mayurbhanj district in Odisha state. Mayurbhanj is one of the districts with the highest Santal population. This area has the second-highest percentage of Scheduled Tribes (56.6%) as well as the highest population density. The schedule tribe population in the district is 14,79,576; out of this, 6,38,104 are Santal. (Census- 2011). The area of the district is 10,418 km², and its headquarters are in Baripada. Santal people are generally simple, honest, and nature-loving, with the majority of them being agriculturally inclined in addition to fishing and hunting. Their script is called "OL CHIKI," and their language is included in the 8th schedule of the Indian Constitution.

Review of literature

Haines et.al (2006) Climate change is expected to have a significant negative impact on health, particularly in low-income countries with the least capacity to adapt, but also in developed countries' most vulnerable groups. Similar research was conducted by Pillay et.al (2016) on the relationship between climate change, its detrimental effects on human health, and its function in igniting popular support for climate policy. The research provided an empirical understanding direct and indirect impacts of climate change on human health, including both physical and non-physical aspects. Kunzli et.al (2000) talked about how air pollution patterns

affect people's health. Despite the fact that there were not many personal health risks associated with air pollution, there were significant negative effects on public health. The study concentrated on public health initiatives in Europe, where traffic-related air pollution remains a problem. They argued that the result may also be applied to economic evaluation and decision-making based on the evaluation of environmental health policy alternatives. Mitra et.al (2008) studied the literacy trend of tribal women in India, which had a significant impact on the state's literacy rates, enrolment ratios, and dropout rates for female students. The lack of education and literacy among Indian tribal women was significantly hampered by high poverty rates. A tribal woman's ability to become literate, however, is also significantly influenced by social and cultural norms, her closeness to mainstream Hindu culture, and the status of women. According to the empirical findings presented by Li et.al (2010), both health and education had a statistically significant influence on economic growth. However, the statistical impact of health on economic growth was greater than that of education. Nandru et al. (2019) conducted research on the five aspects of assessing financial inclusion, such as physical proximity, availability, ease of access, cost, and usage, which have a considerable influence on the socioeconomic condition of the beneficiaries.

According to Aduhene et al.(2021), who studied the socioeconomic impact of the coronavirus on Ghana's economy, the coronavirus pandemic has had a negative impact on the socioeconomic

factors of the community. The result says Ghana's healthcare system is so overburdened by the growing number of cases in the country that it is forced to deploy temporary buildings as isolation and treatment centers for the epidemic. Nanda et al. (2017) explored financial literacy concepts as well as how the tribal community's management of money has brought them to the edge of global poverty. A same study by Safari et al. (2021) found that financial literacy significantly affects individual retirement planning. Similar research was done by Hussain et.al (2018) on the impact of financial literacy and availability to finance on the development of small and medium-sized businesses (SMEs) in the United Kingdom's Midlands. Akingba et al. (2017) examined the impacts of health capital on economic growth and discovered that health capital has a positive and substantial influence on economic growth, which might be greatly enhanced if expenditure on health capital is raised in Singapore. Lal (2021) investigated the effects of financial inclusion via the intermediary of socio-economic empowerment on community economic growth. They proved that, through the medium of social and economic empowerment, financial inclusion has a direct and significant influence on the economic growth of marginalised populations. Ahadzadeh et.al. (2017) investigated the moderating effect of health consciousness (HC) on the influence of attitude toward internet (AI) usage for health information seeking (IHI) behavior, as well as whether HC modifies the influence of perceived health risk (PHR) on internet usage for health information, which is mediated by

perceived usefulness of the internet (PUI) and AI usage. According to the findings, Health Consciousness mitigates the impact of AI use for health information seeking. In addition, the results also showed that the positive indirect effect of PHR on IHI through PUI and AI usage is significant for high levels of Health Consciousness but not for medium and low levels of Health Consciousness. Yildirim et.al (2020) explored the link between health and economic growth in OECD nations in the perspective of sustainable development. It has been established that higher life expectancy can favourably affect economic growth in nations with poor or low health status. They also claimed that a rise in life expectancy at birth in nations with better health had no meaningful influence on economic growth. In research conducted by Khumalo et al. (2021) on the social and economic effects of literacy, they found that higher literacy rates in South Africa are associated with higher income per capita, an increased crime rate, and worsened unemployment.

Research gaps

On the basis of so many reviews of literature, it has been found that most of the research was done on single factors affecting economic development, like the development of small and medium-sized businesses (SMEs), public health and policy, literacy status, etc. Due to these opportunities and gaps, the current study is on the impact of literacy and health-hygiene status on socio-economic status. Furthermore, the mediating effect among variables of literacy status, health-hygiene status and economic status has not been discussed in the earlier study.

Research Framework

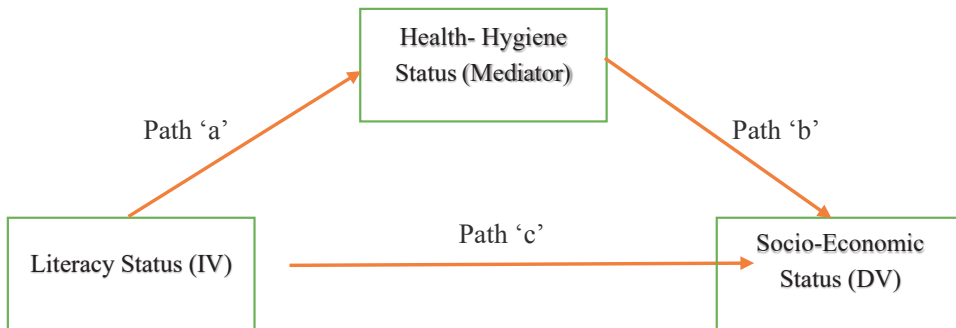


Figure: 1

Source: Author's compliance.

Research Objective

1. To identify the impact of literacy and health-hygiene status on economic status of Santal tribe in Mayurbhanj district of Odisha.
2. To find out the relationship between the literacy status and health-hygiene status of the Santal tribe in Mayurbhanj district of Odisha.
3. To understand how health-hygiene status mediates the relationship between literacy status and socio-economic status.

Hypothesis Development

Hypothesis1: Literacy status has a strong bearing on socio-economic status of the respondents.

Hypothesis2: Health-hygiene status has a strong bearing on socio-economic status of the respondents.

Hypothesis3: Literacy status has a strong bearing on health-hygiene status of the respondents.

Hypothesis4: Health-hygiene status plays an important intermediating role between literacy status and socio-economic status.

Research Methodology

A total of 399 samples were collected using the purposive sampling technique. The respondents were selected from the Santal tribe of three blocks (Udala, Khunta, and Kaptipada), which are largely predominated in the Mayurbhanj district of Odisha. The scale purification and analysis were done using various statistical techniques such as EFA, CFA, and SEM in IBM SPSS 25 and AMOS 21. The measurement variables were chosen after a review of the literature, as shown in Table 1.

Table1: Variable Measurements and reliability and factor analysis result.

| Dimension | Constructs | Source of construct | Cronbach's Alpha | KMO Value | % Variance |
|------------------------------------|--|---|------------------|-----------|------------|
| Health-Hygiene (HH) | HH1: I'm quite concerned about my health. HH2: I always worry about my health. HH3: I pay attention to how I feel physically during the day. HH4: My health is dependent on my hygiene. HH5: I care for myself. HH6: I appreciate a life free of disease and illness. | Ahadzadeh et.al.(2018), Hong, H. (2009) | .710 | .763 | 46.737 |
| Literacy Status(LS) | LS1: I am capable of writing. LS2: I have the knowledge to improve my standard of living. LS3: I know about planning. LS4: I know about preparing monthly budgets. LS5: I am well-educated. | Hussain, J., Salia, S., & Karim, A. (2018). | .707 | .745 | 47.944 |
| Socio-Economic Status (SES) | SES1: Acquisition of personal assets, such as gold and agricultural land. SES2: Monthly household spending has increased. SES3: Increase in living standards. SES4: Other sources of revenue, in addition to agricultural activity, have increased economic strength. SES5: Participate in commercial activities to diversify the revenue sources. SES6: Investing in numerous sources of income has risen. | Nandru, P., & Rentala, S. (2019) | .736 | .794 | 48.776 |

Source: Exploratory research

The table 1 shows the selected constructs from the review of literature and the result of exploratory factor analysis (EFA), in which Chronbach's alpha values are .710,

.707, and .736 for the variables health-hygiene status (HH), literacy status (LS), and socio-economic status (SES), which are all greater than .70 and within

an acceptable range, indicating good internal consistency. The validity test is done for sampling adequacy, and result of the KMO (Kaiser- Meyer-Olkin) values are .763, .745, and .794 for HH, LS, and SES, respectively.

Data analysis

The data gathered from the respondents was then deduced and finalised during

the exploratory factor analysis (EFA). The model fit of every construct of the variables and the correlation are done with the help of confirmatory factor analysis (CFA), and finally, the regression model and mediation method are used to test the hypotheses. The analysis and results are presented in the sections that follow

Table2: Result of Regression Analysis

| Model | Regression Weight | Beta- coefficient | t-value | p-value |
|----------------|-------------------|-------------------|---------|---------|
| 1 | LS→SES | .242 | 3.056 | .002 |
| R ² | HH→SES | .587 | 8.109 | .000 |
| F(2,396) | .476 | | | |
| 2 | 179.687 | | | |
| | LS→HH | .893 | 28.881 | .000 |

Model1:

- Dependent variable: Economic status
- Predictors (Constant), literacy status, health-hygiene status

Model2:

- Dependent variable: health-hygiene status
- Predictors (Constant), literacy status

Table 2 shows the result of the regression analysis between dependent and independent variables in SPSS. In regression model 1, the dependent variables (SES) were regressed on the prediction variables (LS and HH). The independent variables significantly predict the dependent variable (SES), $F(2,396) = 179.687$, $p = .000$ (.001), which indicates that the two predictors significantly impact the dependent variable (SES). Furthermore, the $R^2 = .476$ indicates that the model explains 47.6% of the variation in SES. Additionally, co-efficient were further assessed to ascertain the influence

of each factor on the criterion variable (SES). H1 evaluates the significant positive impact of literacy status on socio-economic status or not. According to the findings, literacy has a significant positive impact on socioeconomic status ($b = .242$, $t = 3.056$, $p = .002$). Hence, H1 is supported. Similarly, H2 evaluates whether the significant positive impact of health-hygiene status on socioeconomic status or not. The findings show that health-hygiene status significantly influences socioeconomic status ($b = .587$, $t = 8.108$, $p = .000$). So H2 is also supported. In regression model 2, the dependent variable (HH) was regressed on the prediction variables (LS). The independent variables significantly predict the dependent variable (HH), $F(1,397) = 834.114$, $p = .000$ (less than .001), which indicates that the predictor variable (LS) has a significant impact on the dependent variable (HH). In addition, $R^2 = .678$

indicates that the model accounts for 67.8% of the variance in HH. In addition, co-efficient were further assessed to ascertain the influence of the variable on the criterion variable (HH). H3 evaluates whether the significant positive impact of literacy status on health-hygiene status or not. The result reveals that literacy status has a significant positive impact on health-

hygiene status ($b=.893, t=28.881, p=.000$). Hence, H3 is also supported.

Confirmatory Factor Analysis (CFA)

The factor structure of a set of observed data is confirmed using confirmatory factor analysis (CFA). The relationship between the observable variables and the latent constructs has been confirmed.

Confirmatory Factor Analysis of Health and Hygiene Status, Literacy Status and Socio-economic Status.

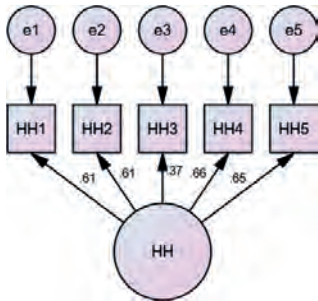


Figure: 2

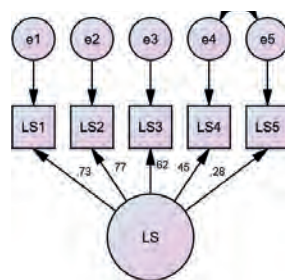


Figure: 3
4

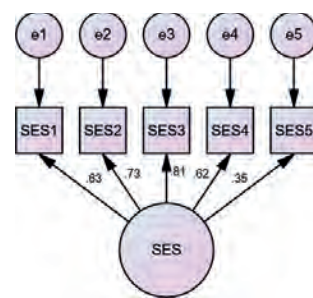


Figure:

Measurement model

In Figure 5, it is shown that the measurement model is specified in such a way that three variables—namely, health-hygiene (HH), literacy status (LS), and socioeconomic status correlate with each other. All three variables are positively

associated with their respective five items. The correlation is .44 between HH and LS. The correlation is 0.43 between LS and SES, and the correlation is 0.42 between HH and SES. The whole relationship among the variables is showing good. The respected model fit of the variable is shown in Table No. 3.

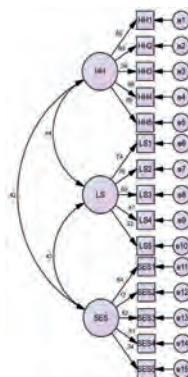


Figure: 5

Table3: Model fit of the respected variables

All indices of model fit are good for their respective factor in the measurement of confirmatory factor analysis.

| Dimension RMR | CMIN/DF | GFI | AGFI | TLI | CFI | REMSEA | REMSEA |
|------------------------------------|---------|------|------|------|------|--------|--------|
| Health-Hygiene (HH) | 3.907 | .981 | .943 | .917 | .958 | .042 | .085 |
| Literacy Status(LS) | 3.602 | .986 | .946 | .934 | .974 | .046 | .081 |
| Socio-Economic Status (SES) | 2.280 | .989 | .966 | .974 | .987 | .030 | .057 |
| Measurement model | 2.770 | .922 | .892 | .873 | .895 | .071 | .067 |
| Recommendation range | ≤ 5 | >.95 | >.90 | >.90 | >.90 | <.08 | <.08 |

Source: CFA, Data analysis Note: GFI/AGFI = (Adjusted) Goodness of Fit indices, TLI

= Tucker Lewis index, CFI=comparative fit index, RMR=Root Mean Square Residual, RMSEA= root mean square error of approximation. Recommendation range refer, Kline, R. B. (2015), Byrne, B. M. (1994), Tucker, L. R., & Lewis, C. (1973), (Marsh & Hocevar, 1985).

Barron and Kenny Mediation Effect

Barron and Kenny (1986) provided a foundational paradigm for testing mediation between dependent and independent factors using mediation variables. The technique was founded on the finding of understanding coefficients for each connection, and their significance determination is calculated through the Sobel Test, the Aroian Test, and the Goodman Test. Due to criticism of Barron and Kenny's mediation, the present study is based on a bootstrap sample technique.

Criticism of Barron and Kenny's Approach

Barron and Kenny's (1986) study provided one of the key foundations for

testing mediation between dependent and independent factors via mediation variables. Researchers have refined their early work on evaluating mediation throughout the years. The Barron and Kenny mediation approach was founded on the discovery of understanding coefficients for each connection and their significance determination utilising the Sobel Test, Aroian Test, and Goodman Test. This approach of testing mediation has modified as research has advanced, and it has been dismissed as a legitimate method of testing mediation. As a result, the most widely acknowledged method in mediation testing is to apply a bootstrap technique to evaluate significance. A bootstrap approach evaluates the sample data as if it were a pseudo-population, taking a random sample with replacement to see if the indirect impact is within a confidence interval. A larger bootstrap sample boosts prediction accuracy. As a result, the bootstrap sample was obtained in the study at 5000 and 95 % confidence

intervals. The new technique now focuses on determining the indirect effect by studying the product of the 'A' and 'B' paths while controlling the direct influence of the 'C' path.

Figure 6: Barron and Kenny Mediation Analysis

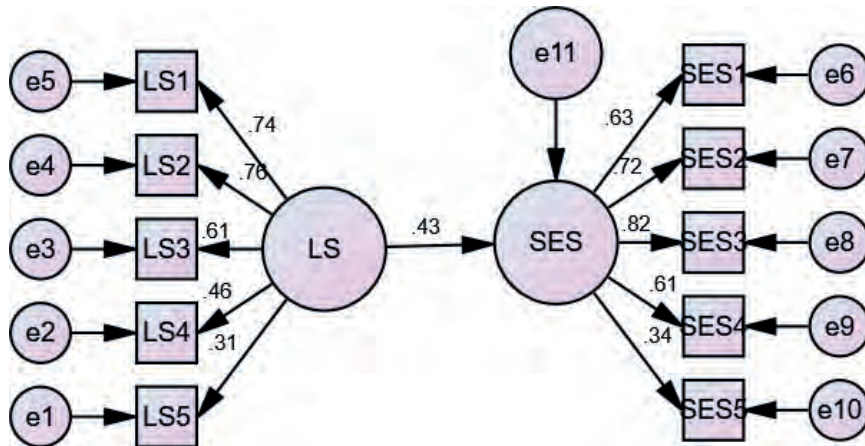


Figure 6 implies the total effect of relationship between LS (IV) and SES (DV) without mediator. The standard error (SE) is .173, refers sample size is sufficient large. The critical ratio (CR)

value is 4.348 which greater than 1.96. Hence, the relationship of LS on SES is .431 and p value is less than .00 level (two-tailed test). So total effect of relationship between LS and SES is significant (table 4).

Table 4: Standardised Regression Estimate of LS (IV) and SES (DV)

| Path Effect | Standardised Regression Estimate | S.E | C.R | P |
|-----------------------|----------------------------------|------|-------|-----|
| SES(DV) <----- LS(IV) | .431 | .173 | 4.348 | *** |

Figure 7: Mediation effect

Figure 7, indicates the mediation effect of literacy status (LS-IV) on socio-economic

status (SES-DV) with addition of health and hygiene status (HH-MV).

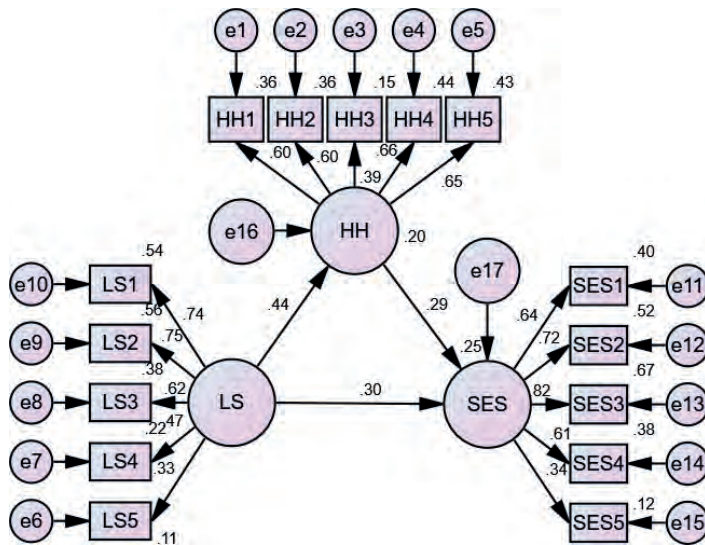


Figure: 7

Table 5: Significant Result of Indirect effect

| LS_IV | | HH_MV | SES_DV |
|--------|------|-------|--------|
| HH_MV | .000 | .000 | .000 |
| SES_DV | .213 | .000 | .000 |

* MV-Mediator Variable, IV-Independent Variable, DV- Dependent Variable

Table 6: Regression Weights and Mediation Hypothesis Test

| | | | Estimate | S.E. | C.R. | P | Label |
|--------|------|----------------|----------|------|-------|-----|--------|
| HH_MV | <--- | LS_IV (Path a) | .712 | .162 | 4.396 | *** | par_13 |
| SES_DV | <--- | HH_MV (Pathb) | .300 | .078 | 3.853 | *** | par_14 |
| SES_DV | <--- | LS_IV(Path c) | .500 | .143 | 3.500 | *** | par_15 |

*** p value is less than 0.01 level of significant.

The total indirect effect of literacy status (LS-IV) on socio-economic status (SES-DV) through health and hygiene status (HH-MV) is .213 (Table-5). In the indirect test of literacy status to socio-economic status through health and hygiene status, the lower bound and upper bound confidence

intervals are .054 and .567, respectively (Table-7). The indirect effect of literacy on socio-economic status is .213, i.e., $a*b$. ($0.712*0.300$). The two-tailed significance value for the intersection of health and hygiene and socio-economic status is .005 (less than 0.05). The mediation

hypothesis (MedH₄) is supported, so it can be concluded that health and hygiene status (HH) mediates literacy status (LS) and socioeconomic status (SES), and the MedH₄ (Mediating Hypothesis) is accepted.

The direct effect of literacy status on socio-economic status in the presence of a mediator is also significant ($b = .500$, $C.R. = 3.500$ is >1.96 , $p = 0.000$ is $<.001$).

Table 7: Mediation analysis summary

| Relationship | Direct Effect | Indirect Effect | Confidence interval | | p-value | Conclusion |
|--|------------------|-----------------|---------------------|-------------|---------|-------------------|
| | | | Lower Bound | Upper Bound | | |
| Literacy status->Health and hygiene -> Socio-economic status | 0.500 (.000)* | 0.213 | .054 | .567 | .005* | Partial Mediation |

* .001 level of significant.

The table 7 shows that the mediation result of direct effect and indirect effect in mediation analysis. Based on the results, the indirect effect of literacy status on socio-economic status through the mediation of health and hygiene status and the direct effect of literacy status on socio-economic status in the presence of a mediator's health and hygiene status are both significant. The total effect between literacy status and socio-economic status is also significant. Hence, health and hygiene status partially mediate the association between literacy and socioeconomic status.

Major Findings

The literacy status of the respondents has a substantial influence on their socioeconomic situation. (Table 2). According to the findings, there is a link between respondents' literacy level and their economic position, i.e., those with a

high literacy status had higher economic standards. As a result, lower-literacy respondents had adequate economic standards, whereas higher-literacy respondents had good economic standards. When their income and savings were reduced, affecting their socioeconomic position. Literacy promotes good health and hygiene, as well as reducing infant mortality rates. This can support them in acquiring the information required to seek medical treatment. As a result, the two variables are intimately connected.

Based on the output of results and hypothesis testing (table 2), there is a significant relationship between health, hygiene, and economic status. If responders maintain good health and cleanliness, it implies that they are physically and mentally fit for any task, and finally, their economic status will improve. In other words, if they are healthy, they are less likely to

catch or become ill with any respiratory infection. As a consequence, they will be able to save money on their medical bills. If the responders do not maintain proper health and hygiene, they are more likely to get sick and hence be unable to complete their duties. Furthermore, if the respondents have an unhealthy condition, it may predict that they will spend more money on medical bills. Their income and savings will eventually suffer, and their financial situation will suffer. As a result, maintaining excellent health and cleanliness is critical for their socio-economic growth. So, health and cleanliness play an important role in the economic growth of the Santal tribe in Mayurbhanj district of Odisha.

Similarly, as per the result (table 2), there is a significant impact of literacy status on the health and hygiene status of the tribe. It can be argued that the health and hygiene status can vary depending on the literacy status of the respondents. But it cannot be said that the illiterate respondents have a bad health status. Literacy status is vital because they cannot grasp the value and necessity of preserving health and cleanliness unless they are literate or educated. In general, people with poor literacy status do not maintain hygiene for a variety of reasons, including a lack of understanding, limited cash, and so on. In other words, if respondents with higher literacy levels are aware of cleanliness and various policies, programs, and care procedures connected to health and hygiene, they will be more knowledgeable than those with lower literacy levels. More literate people may also be able

to reduce their medical expenses. Their income and savings can be raised and can improve their economic standing. They are more prone to having a fever if they do not know how to maintain excellent health and cleanliness. As a result, people may see the doctor regularly, incurring significant costs.

Based on the output of observations and mediating hypothesis testing (tables 5, 6, and 7), there is also a significant positive direct and indirect impact between literacy status and socioeconomic status in the presence of health and hygiene status. Literacy status impacts economic status, and health and hygiene status also have an impact on socio-economic status. From the overall study, these three factors are interrelated. Without having a healthy health condition and literacy status, it is difficult to grow the economic standards of the respondents. Finally, even with a mediation health-hygiene status, literacy status has a significant impact on economic status.

Limitations, Implications, and Future direction

There are various limitations in determining the outcome. The sample size is restricted to 399 married Santal Tribe respondents only. Only three blocks in Odisha's Mayurbhanj district sent responses. Various socioeconomic development factors can be researched by other tribes. The study can be used by politicians or local governments to enhance the living conditions of the Santal tribes.

Conclusion

Literacy, health and hygiene, and economic issues all play important roles for the Santal tribe in the Mayurbhanj area. The Santal tribe should be educated about socioeconomic growth. A high level of literacy is required for quick socioeconomic advancement as well as the maintenance of health and hygiene standards. As a result, without literacy, it is impossible to enhance one's standard

of living. Similarly, if one is unfamiliar with health-care practices, they may incur higher medical costs, affecting their financial situation. People who are in good health have a higher chance of earning and saving more money. Understanding the importance of literacy and understanding of health care procedures in eradicating poverty and raising living standards may be the most straightforward path to economic growth.

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Impact of Digital Practices on Day-to-Day Business Operations of MSMEs in Karnataka

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Abstract:

The primary objective of the article is to analyse the impact of digital practices on day-to-day business operations of MSMEs in Karnataka by using structural equation model (SEM). Micro, small and medium-sized enterprises (MSMEs) are considered as a crucial component in the development of the economy. They contribute in employment, industrial output, GDP, and exports of the country. Karnataka is one of the fastest growing IT hubs in the country and home to the world's fourth largest technology cluster. Karnataka is known as India's Knowledge Capital and one of the country's leading industrial states. Despite its apparent success, this sector faces a number of challenges. In today's digital era, new digital technologies have opened up numerous opportunities to transform the businesses. The use of digital technology is one of the measures that helps to face the competition and also to grow the business operations. In above context, this study is focused on exploring the impact of digital practices on communication, inventory management system, administration and maintenance activities, customer relations and marketing and advertisement activities of MSMEs. This study used 900 MSMEs in Karnataka by using structural questionnaire method. The investigation and analysis of data indicates that there is a positive impact of digital practices on day-to-day business operations of MSMEs. The study recommended that the government should encourage young entrepreneurs to become digitally literate that helps to improve business operations.

Key words: Business Operations, Digital Practices, Impact, Karnataka, MSMEs, Structural Equation Model.

1. Introduction:

“The whole world is impressed by the pace of India's economic development and the contribution made by MSMEs” has said by Hon. Prime Minister of India Shri Narendra Modi. In India Micro, small and medium-sized enterprises (MSMEs) are considered as a crucial component in

the development of our economy. They contribute in employment, industrial output, GDP, and exports of the country. According to the MSMEs Annual Report of 2019-20, this sector plays a pivotal role in economic and social development of the country by fostering entrepreneurship and creating enormous employment

opportunities at a relatively lower capital cost, next to agricultural sector. In India, with 141 crore people, the MSME sector is crucial to the economy. The socio-economic growth of the country is focused on MSMEs (Pandya, 2022). The Union Minister Sri. Nitin Gadkari stated in August 2019 at an event organized by the IMC Chamber of Commerce and Industry titled 'Roadmap for Growth of MSMEs' that the sector has a lot of scope for diversification. Hence, it is the backbone for existing as well as the future high-growth businesses (Confederation of Indian Industry Report, 2017).

According to the National Sample Survey (NSS) 73rd round, which was conducted in the year 2015-16 by the National Sample Survey Office, Ministry of Statistics and Programme Implementation, India has 633.88 lakh MSME units, of which 99.9 per cent are micro, 0.52 per cent are small, and 0.01 per cent are medium-sized enterprises. These enterprises employ 11.10 Crore people and contribute 30.27 per cent of the nation's GDP (MSME Annual Report, 2020-21). Furthermore, the sector contributes more than 40 per cent of the nation's exports and 45 per cent in the manufacturing outputs of the country (RBI Expert Committee Report on MSMEs, 2019). According to the invest India website, Karnataka is one of the fastest growing IT hubs in the country and home to the world's fourth largest technology cluster. Karnataka is known as India's Knowledge Capital and one of the country's leading industrial states. According to Karnataka Industrial policy 2020-2025, Karnataka has the 5th largest MSME base in the country

with over 7.16 million registered units employing nearly 4.94 million people. During the year 2019-20, a total of 97,232 MSME units were registered under Udyam, with an investment of Rupees 18,59,727, employing 7,02,325 people (DIC, Bengaluru). This has resulted in the registration of 80,379 micro units, 16,069 small units and 784 medium units with an investment of Rs. 4,70,352 lakh, 9,94,044 lakh and 3,95,331 lakhs respectively. As compared to 2018-19, there is a 40 per cent increase in the number of units registered, 25 per cent increase in investment and 20 per cent increase in employment in the state (Government of Karnataka website). Therefore, Karnataka is regarded as one of the most desired industrial locations in the country.

Despite its apparent success, this sector faces a number of challenges. In addition to its traditional issues, the MSME sector faces new challenges to expose itself in the international market. In the year 2019, the RBI had set up an Experts Committee on MSMEs under the chairmanship of Shri U.K. Sinha in order to understand the structural bottlenecks and factors influencing the performance of MSMEs. It carried out a comprehensive analysis and provided various suggestions for the sector's survival. Legislative changes, infrastructure development, technological upgradation, improving backward and forward linkages, improving financial support from formal sources, newer technological interventions for robust underwriting practices etc. suggestions are made to MSMEs to help them compete.

In today's digital era, new digital technologies have opened up numerous

opportunities to transform the businesses. These are critical to business success, and they rely heavily on the global business network. Due to digital technologies, competition is changing drastically. The use of digital technology is one of the measures that helps to face the competition and also to grow the business operations. MSMEs in India can become unstoppable forces due to digitization. The purpose of the study is to know the adoption of digital practices and its impact on day-to-day business operations of MSMEs in Karnataka by using structural equation model (SEM).

2. Concept of Digital Practices:

Rodney H. Jones, Alice Chik and Christoph A. Hafner define in their book titled 'Discourse and Digital Practices (2015)' that "Digital practices are the tools associated with digital technologies. It is not limited to software or websites but also includes hardware (Physical objects) and semiotic tools (such as conventional ways of talking or writing that have grown up around digital media).

Aranda and et.al (2018) define "Digital practices are the set of entertainment-oriented uses, information-oriented uses, social connection uses, and E-Commerce uses directly related to digital context".

3. Literature Review:

Manochehri et al. (2012) studied an overview of the current state of affairs of ICT adoption in SMEs in private and public organisations in Qatar. According to the findings, Qatari businesses are concentrating on strategic and operational aspects of their operations. This analysis also revealed that companies in Qatar are

investing heavily in ICT and that there is little competition in the market. **Beley and Bhatarkar (2013)** discussed the impact of new technologies on small and medium-sized businesses in India. According to the study, the global economy is currently undergoing fundamental transformations, with IT playing a critical role. Modern businesses cannot exist without the assistance of information technology, which is having a significant impact on the operations of small and medium-sized businesses. **Tarutė and Gatautis (2014)** demonstrated the importance of gaining and capitalising on the positive outcomes (increased productivity, organisational expansion, efficiency, effectiveness and competitiveness) of ICT adoption and implementation in various organisations. **Singh et al. (2015)** presented a detail review of the literature on the role of technological innovation in improving manufacturing performance of industries. They believed that no organisation could ever remain competitive without continuous technological innovation.

Singh (2017) discussed the impact of digitalization on India's Small and Medium Enterprises. The growth rate of SMEs has increased significantly as a result of digitalization and it has a positive impact on SMEs. Digitalization improves SMEs' performance and also lowering financial barriers by providing an alternative financing option. It has resulted in a significant improvement in the operating performance, profitability and productivity of SMEs. **Okundaye et al. (2019)** studied how Nigerian SMEs use Information and Communication Technology (ICT) adoption as a business

strategy to increase profitability and compete globally. Adoption of information and communication technology influenced an organization's flexibility, job creation, efficiency, productivity and growth, crime and fraud prevention, financial benefits, improved communication, advertisement, competitiveness, globalisation and customer relationships. Due to limited resources, lack of skills, lack of adequate financing and poor education, SMEs are not fully capitalising on the potential benefits of ICT when compared to large corporations. Enterprise and government leaders play a critical role in the successful adoption of ICT in their organisations. **Shettima and Sharma (2020)** said that digitalization has a significant impact on Nigeria's Small and Medium Enterprises because it automates the product and process, resulting in increased quality and production. Ninety-one point two six (91.26%) of respondents believed that digitalization would improve the performance of Nigerian SMEs and that digitalization has a significant positive impact on Nigerian SMEs. **Jayeola et al. (2022)** analysed the impact of government financial support on the cloud ERP implementation and how these effect on the financial performance of SMEs. The least square structural equation modelling method was used in the study of 204 Malaysian manufacturing SMEs. Hence, government financial assistance has a positive impact on cloud ERP implementation, which improves financial performance.

4. Research Gap:

From the literature reviews, it can be understood that digitalization is growing

in India and businesses are adopting it. Thus, numerous researchers and academicians' studies on the adoption of digital technologies by MSMEs and the importance of adoption of technologies in the present scenario. It is found that no study has been carried out in the context of impact of adoption of digital practices on business operations of MSMEs in Karnataka by using Structural Equation Model (SEM). Hence, this study has been undertaken with a hope to fill the existing gap.

5. Problem of the Statement:

The MSME sector is the growth engine of modern India. It is regarded as the foundation of the Indian economy due to its importance. Despite this, MSMEs in India suffer from the problems like lack of efficient management, lack of working capital, shortage of skilled manpower, lack of digital literacy, lack of market access, technological backwardness, late payment of dues, regulatory issues, lack of adaptability to changing trends, lack of access to international market and inadequate infrastructures. Furthermore, the sector was one of the most vulnerable during the Covid-19 pandemic. Even though the MSME sector faces several difficulties, the government works to increase its competitiveness. Therefore, MSMEs must keep up with the evolving technological trends if they want to expand their businesses. Rapidly evolving technologies provide a plethora of opportunities to boost the growth of MSMEs. Adoption of digital practices can help to solve a variety of problems in the MSME sector. In this regard it is necessary

to analyse the impact of adoption of digital practices on MSMEs in Karnataka.

6. Need for the Study:

The various researchers around the world have been making consistent efforts to highlight the importance of digital technologies and their adoption in business operations. The majority of the research findings are descriptive in nature, and concluded with the importance of adopting digital technologies. India is a large country with a diverse socio-economic conditions. The level of adoption varies by region based on socio-economic conditions. The studies revealed that technologies are significant means of gaining a competitive advantage. To remain competitive, the sector must adopt the best digital practices and constantly upgrade its technology. Hence, the need of the hour is adoption and upgradation of technology. It can improve their productivity, ease of access, transparency, better control, expand their market share, scale of production, and build strong or good support between business and employees. The Ministry is taking a number of steps to encourage the development of technologies in the sector in order to improve its competitiveness in international markets.

7. Research Methodology:

The present study largely uses systematic inductive methodology for analysis, interpretation of results, drawing inferences and decision making. The total population of the study includes 97,232 MSMEs registered under UAM in Karnataka in the manufacturing and service categories in 2019-20. (As per DIC, Bengaluru). The study's sample

frame contains 59,939 MSMEs registered with UAM in the year 2019-20. The study considered 900 MSMEs located in main administrative districts of Karnataka.

7.1 Sources of Data:

The research depends on both primary and secondary data sources.

a. Primary Data:

The primary data for this study was collected using a structured questionnaire and interview method, both online (via Google forms) and offline (via direct mode).

b. Secondary Data:

Secondary data was collected in order to discuss the theoretical aspects of MSMEs. It includes MSMEs' annual reports, Confederation of Indian Industry (CII) reports, Karnataka Industrial Policy Reports, Karnataka Economic Survey Reports, RBI reports, various websites, books, research articles, dissertations, documentations, e-newspapers, and other relevant publications.

7.2 Sampling Design:

For the sample selection, the stratified random sampling method was used. The total sample population has been stratified into four districts (Strata), namely Bengaluru, Mysuru, Belagavi and Kalburgi.

7.3 Statistical tool used for analysis:

Structural Equation Model: It is a set of statistical techniques used to measure and analyse the relationships between observed and latent variables. Latent variables

which cannot be measured directly but measurement variables can be observed or measured directly. Measurement variables also known as observed variables. It estimates the coefficients based hypothesized relationships between variables. It is helpful to estimate the multiple and interrelated dependence in a single analysis. The relationships between variables are explained by using a path diagram. Path diagram is a pictorial representation of a model.

8. Objectives of the study:

- To analyse the impact of digital practices on day-to-day business operations of MSMEs in Karnataka.

9. Hypothesis of the study:

H₀: “There is no impact of digital practices on day-to-day business operations of MSMEs”.

H₁: “There is an impact of digital practices on day-to-day business operations of MSMEs”.

9.1 Sub hypotheses:

- a. **H₀₁:** “There is no impact of digital practices on communication”.

H₁₁: “There is an impact of digital practices on communication”.

- b. **H₀₂:** “There is no impact of digital practices on inventory management system”.

H₁₂: “There is an impact of digital practices on inventory management system”.

- c. **H₀₃:** “There is no impact of

digital practices on administration and maintenance activities”.

H₁₃: “There is an impact of digital practices on administration and maintenance activities”.

- d. **H₀₄:** “There is no impact of digital practices on customer relations”.

H₁₄: “There is an impact of digital practices on customer relations”.

- e. **H₀₅:** “There is no impact of digital practices on marketing and advertisement”.

H₁₅: “There is an impact of digital practices on marketing and advertisement”.

10. Discussion and Interpretation:

Impact of Digital Practices on Day-to-Day Business Operations of MSMEs by Using Structural Equation Model (SEM)

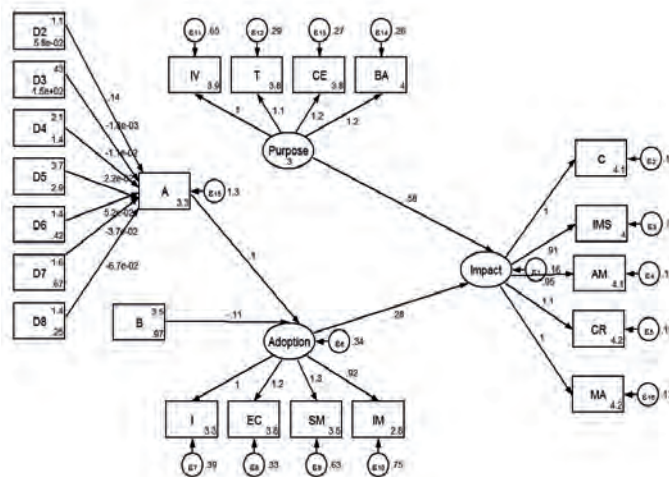
Structural Equation Model (SEM) is a set of statistical techniques used to examine the relationship between latent and observed variables. Latent variables are variables that cannot be measured directly and which are denoted by circles. Observed variables can be measured directly and these are denoted by squares.

All demographic variables (D₂, D₃, D₄, D₅, D₆, D₇, D₈), Awareness (A), Barrier (B), Information (I), E-Commerce (EC), Social Media (SM), Inventory Management (IM), Information Value (IV), Trustworthiness (T), Cost effectiveness (CE), Business Competitive Advantage (BA), Communication (C), Inventory Management System (IVS),

Administration and Maintenance (AM), Customer Relation (CR) and Marketing and advertisements (MA) are observed variables due to their own data. Due to the absence of data, Adoption, Purpose and Impact variables are latent variables. These latent variables are represented by

their respective observed variables. These examines linear causal relationships between variables while taking measurement error (E) into account. The following figure shows the path analysis of Structural Equation Model (SEM).

Figure: 1 Structural Equation Model (SEM) to Explain the Impact of Digital Practices on Day-to-Day Business Operations of MSMEs



The path of relations is explained by the structural equation model is shown in figure

1. The path begins with demographic characteristics of respondents which includes Gender (D2), Age (D3), Education qualification (D4), Work experience (D5), Enterprise Category (D6), Type of ownership (D7) and Nature of enterprises (D8). The adoption of digital practices is influenced by awareness (A) as well as the barriers (B) faced by the MSMEs. The awareness is influenced by the demographic characteristics of the respondents. The adoption of digital practices is explained under four

components. They are Information (I), E-Commerce (EC), Social Media (SM) and Inventory Management (IM) and these components are explained by their respective stochastic random errors (E).

The purpose or perception of MSMEs towards adoption is explained under four components such as Information Value (IV), Trustworthiness (T), Cost effectiveness (CE) and Business Competitive Advantage (BA) and these are also explained by their respective errors.

Both the Purpose and Adoption influence Communication (C),

Inventory Management System (IMS), Administration and Maintenance (AM), Customer Relation (CR) and Marketing and Advertisement (MA) and these are also explained by their respective errors.

The following is the path of actual model of SEM;

= SEM (Impact -> C) (Impact -> IMS)

(Impact -> AM) (Impact -> CR) (Impact -> MA) (Adoption -> Impact) (Adoption -> I) (Adoption -> EC) (Adoption -> SM) (Adoption -> IM) (Purpose -> Impact) (Purpose -> IV) (Purpose -> T) (Purpose -> CE)(Purpose -> BA) (A -> Adoption) (B -> Adoption) (D2 -> A) (D3 -> A) (D4 -> A) (D5 -> A) (D6 -> A) (D7 -> A) (D8 -> A).

Table: 1
Result of Structural Equation Model on Impact

| | OIM | | | | |
|--------------------|-----------|---------------|--------|-------|----------------------|
| | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] |
| Structural | | | | | |
| A <- | | | | | |
| D2 | .1405565 | .1588344 | 0.88 | 0.376 | -.1707531 .4518662 |
| D3 | -.0018176 | .0051212 | -0.35 | 0.723 | -.0118549 .0082198 |
| D4 | -.0113608 | .0325296 | -0.35 | 0.727 | -.0751177 .0523961 |
| D5 | .0216382 | .0370349 | 0.58 | 0.559 | -.0509489 .0942253 |
| D6 | .0516876 | .0638956 | 0.81 | 0.419 | -.0735456 .1769208 |
| D7 | -.0373514 | .0500713 | -0.75 | 0.456 | -.1354894 .0607865 |
| D8 | -.0672556 | .0780441 | -0.86 | 0.389 | -.2202192 .085708 |
| _cons | 3.26473 | .2796702 | 11.67 | 0.000 | 2.716587 3.812874 |
| Impact <- | | | | | |
| Adoption | .2835335 | .032032 | 8.85 | 0.000 | .2207519 .3463151 |
| Purpose | .5820101 | .0486272 | 11.97 | 0.000 | .4867025 .6773177 |
| Adoption <- | | | | | |
| A | -.1007183 | .019918 | 5.06 | 0.000 | -.0616796 .1397569 |
| B | -.1084899 | .0230816 | -4.70 | 0.000 | -.1537289 -.0632509 |
| Measurement | | | | | |
| C <- | | | | | |
| Impact | 1 | (constrained) | | | |
| _cons | 4.118941 | .0354143 | 116.31 | 0.000 | 4.04953 4.189351 |
| IMS <- | | | | | |
| Impact | .9087344 | .0425447 | 21.36 | 0.000 | .8253483 .9921206 |
| _cons | 4.012082 | .0344618 | 116.42 | 0.000 | 3.944538 4.079626 |
| AM <- | | | | | |
| Impact | .9472457 | .0403041 | 23.50 | 0.000 | .8682511 1.02624 |
| _cons | 4.09641 | .0338787 | 120.91 | 0.000 | 4.030009 4.162811 |
| CR <- | | | | | |
| Impact | 1.063593 | .0414499 | 25.66 | 0.000 | .9823523 1.144833 |
| _cons | 4.166515 | .0363751 | 114.54 | 0.000 | 4.095221 4.237809 |
| MA <- | | | | | |
| Impact | .9971257 | .0409801 | 24.33 | 0.000 | .9168063 1.077445 |
| _cons | 4.2069 | .0349078 | 120.51 | 0.000 | 4.138482 4.275317 |
| I <- | | | | | |
| Adoption | 1 | (constrained) | | | |
| _cons | 3.329509 | .0992475 | 33.55 | 0.000 | 3.134988 3.524031 |
| EC <- | | | | | |
| Adoption | 1.15887 | .0632571 | 18.32 | 0.000 | 1.034889 1.282852 |
| _cons | 3.792563 | .1141778 | 33.22 | 0.000 | 3.568779 4.016347 |
| SM <- | | | | | |
| Adoption | 1.342553 | .0796662 | 16.85 | 0.000 | 1.18641 1.498695 |
| _cons | 3.50781 | .1329626 | 26.38 | 0.000 | 3.247208 3.768412 |
| IM <- | | | | | |
| Adoption | .9217757 | .0682918 | 13.50 | 0.000 | .7879262 1.055625 |
| _cons | 2.772183 | .0937857 | 29.56 | 0.000 | 2.588366 2.955999 |
| IV <- | | | | | |
| Purpose | 1 | (constrained) | | | |
| _cons | 3.909111 | .0323325 | 120.90 | 0.000 | 3.845741 3.972482 |
| T <- | | | | | |
| Purpose | 1.146588 | .0716168 | 16.01 | 0.000 | 1.006222 1.286954 |
| _cons | 3.807778 | .0274079 | 138.93 | 0.000 | 3.754059 3.861496 |
| CE <- | | | | | |
| Purpose | 1.167829 | .0755173 | 15.46 | 0.000 | 1.019818 1.31584 |
| _cons | 3.818889 | .0273885 | 139.43 | 0.000 | 3.765208 3.872569 |
| BA <- | | | | | |
| Purpose | 1.203063 | .0770039 | 15.62 | 0.000 | 1.052138 1.353988 |
| _cons | 3.983556 | .0275537 | 144.57 | 0.000 | 3.929551 4.03756 |

Source: Primary data, Computed by the researcher

The results of path analysis of structural equation model are shown in the table 1. There are thirteen measurement models and three structural models in the result. It is found that demographic characteristics of respondents' influence the awareness, which varies based on those traits. According to structural equation 1, Gender (D2), Work experience (D5), Enterprise Category (D6) have positive co-efficients, whereas Age (D3), Educational qualification (D4), Type of ownership (D7) and Nature of enterprises (D8) have negative co-efficients. However, none of these co-efficients are significant at five per cent level. Therefore, the demographic characteristics of respondents' have no or least effect on the awareness.

According to the structural equation model 2, the coefficients of adoption and purpose are positive and have a significant impact on Communication (C), Inventory Management System (IMS), Administration and Maintenance (AM), Customer Relations (CR) and Marketing and Advertisements (MA). The coefficient of impact of adoption is 0.28 and purpose is 0.58. Therefore, the purpose has a higher impact than the adoption and these have a greater impact on Customer Relations (CR) and Communication (C) comparatively less on Inventory Management System (IMS), Administration and Maintenance (AM) and Marketing and advertisements (MA) activities. Therefore, it clear that the adoption has made significant impact on day-to-day business operations of MSMEs. Hence, ***“there is an impact of digital practices on day-to-day business operations of MSMEs”***.

The structural equation model 3 reveals that the coefficient of Awareness is

positive and significant. It means, the awareness significantly increases the level of adoption. The coefficient of barriers is negative and significant at 1 per cent level. Therefore, it indicates that the existence of barriers significantly decreases the level of adoption.

There are thirteen different measurement variables and all these variables are significantly explained by their latent variables. The coefficient of Information (I), E-Commerce (EC), Social Media (SM) and Inventory Management (IM) are explained by their latent variable i.e., Adoption. However, it proves that these variables have made significant impact on day-to-day business operations of MSMEs through their representative latent variable.

The coefficients of Information Value (IV), Trustworthiness (T), Cost effectiveness (CE) and Business Competitive Advantages (BA) are explained by their latent variable i.e., Purpose of adoption. However, it proves that these variables have made significant impact on business operations of MSMEs through their representative latent variable. Therefore, the adoption and purposes have made significant impact on day-to-day business operations of MSMEs.

11. Findings of the Study:

- It is found that demographic characteristics of respondents' influence the level of awareness, which varies based on their characteristics. Gender (D2), Work experience (D5), Enterprise Category (D6) have positive co-efficients,

whereas Age (D3), Education qualification (D4), Type of ownership (D7) and Nature of enterprises (D8) have negative co-efficients and not significant. Therefore, demographic characteristics have no or least effect on awareness levels.

- It is found that the coefficient of Awareness is positive and significant. Therefore, the level of awareness significantly increases the level of adoption. The coefficient of barriers is negative and significant at 1 per cent level. Therefore, the level of adoption is significantly reduced by the presence of barriers.

It is also found that the coefficient of Information (I), E-Commerce (EC), Social Media (SM) and Inventory Management (IM) variables have made significant impact on day-to-day business operations of MSMEs through their representative latent variable.

- The factors Information Value (IV), Trustworthiness (T), Cost-Effectiveness (CE) and Business Competitive Advantage (CA) have made significant impact on day-to-day business operations of MSMEs.

The impact of perception is higher than the adoption and it has a greater impact on Customer Relations (CR) and Communication (C) and it is relatively less on Inventory Management System, Administration and Maintenance activities (AM) and Marketing and advertisements (MA) activities. Therefore, it can be said that the adoption of digital practices has made significant impact on day-to-day business operations of MSMEs.

12. Suggestions of the Study:

- Based on the findings of the research, the following suggestions are proposed in order to improve the level of adoption of digital practices:
- It is important to develop a sense of trust among the entrepreneurs regarding digital security, privacy and risk through counselling.
- The District Industries Centre and other affiliated institutions should bridge the gap between Karnataka Skill Development Corporation (KSDC) and registered MSMEs to address the issue of skilled human resources.
- In order to provide guidance and support to MSMEs, a district-based network of digital entrepreneurship hubs (E-Hubs) should be established.
- The government should encourage young entrepreneurs to become digitally literate to improve business operations.

13. Conclusion of the Study:

- The adoption of digital practices and its impact on MSMEs have been examined in the present study. The main goal of developing a Structural Equation Model (SEM) is to explain the impact of digital practices on day-to-day business operations of MSMEs. As per the model the impact of digital practices depends on the perception of owners, adoption, level of awareness, barriers and also the demographic factors of the respondents. It explained that the demographic factors like place, gender, educational qualification,

work experience, enterprise category, type of ownership and nature of business did not have a significant impact on the level of awareness. Additionally, the adoption and perception also have an impact on Communication, Inventory Management System, Administration and Maintenance, Customer Relations and Marketing and Advertisement activities of MSMEs. Further,

awareness has a positive impact on adoption, while barriers have a negative impact. Thus, it may be concluded that adoption increases as awareness rises and obstacles are eliminated.

14. Scope for Further Research:

A separate analysis can be done on the adoption of digital practices by manufacturing or service enterprises.

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Entrepreneurial Marketing as a Dynamic Approach to Business Strategy: A Bibliometric Review

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Abstract: In the emerging fields for research and in bibliography study, Entrepreneurial Marketing (EM) has its share of critics in current times. Two distinct areas like marketing management and entrepreneurship are included in this paper. Ideas by which companies can gain a competitive advantage are provided by EM, which is a key part of business strategy. This paper also considers a comprehensive review of relevant publications. The study aided in mapping the scope and structure of authors who published studies related to EM and finding the established collaboration patterns among countries. For analyzing the published database in the network analysis, the Visualization Of Similarities (VOS) Viewer tool has been applied. 641 research papers from 2013 to 2023 have been considered. The findings from 25 journals are comprehensively resolved in this research. The metrics of journals, namely Source Normalized Impact per Paper (SNIP), Scimago Journal Rank (SJR), Publication Frequency (PF), publisher, and Impact Factor (IF) are examined. These identified bibliographic reviews focused on specific domains, which are promising for carving avenues in the future.

Keywords: Bibliometric Analysis, Entrepreneurial Marketing, Business Strategy, Bibliographic, Brands, Management.

1. INTRODUCTION

Several researchers focused on the marketing/entrepreneurship interface in the last 30 years, particularly on the EM concept [1,2]. Entrepreneurship and marketing are observed as basic strategic orientations or else business philosophies through which an organization senses and responds to external and internal stimuli and opportunities [3]. Many scholars have tried to define EM, which

was established as an idea in 1982. EM is a concept that is established at the interface between 2 sciences, such as marketing and entrepreneurship [4]. The term EM is frequently related to marketing activities in small firms, which have limited resources and thus should depend on creative and unsophisticated tactics. In addition, it is utilized for describing nonlinear, unplanned, and visionary marketing actions taken

by entrepreneurs [5,6]. Although the Marketing-Entrepreneurship Interface (MEI) has attracted researchers not only from marketing and entrepreneurship but also from psychology, economy, and sociology, this construct's evolution is yet underdeveloped [7,8]. EM, as a marketing stream at the interface of marketing and entrepreneurship, is particularly significant in supporting the growth of resource- constrained firms in dynamic industrial markets [9]. The entrepreneurial process's significance in the creation of artifacts and markets is highlighted by EM, which provides a voice to the entrepreneur. Finally, the entrepreneur recognizes, explores, and exploits opportunities, finds the organizations, as well as directs the following operational strategies [10, 11].

It is observed that while discussing components like exploitation and opportunity recognition, the perspective of an introduced company or that of a full-time entrepreneur is not considered [12,13]. The current study has properly propounded the phenomenon of a hybrid entrepreneur, an individual who willingly engages in the development of their entrepreneurial venture while maintaining salaried employment [14]. Via an intuitive market feel (i.e. sensing), this innovative orientation is evident; here, an entrepreneur initially comes up with a fresh idea and subsequently thinks about the market to which he sells the product. Entrepreneurial firms' culture is mostly influenced by the central entrepreneur's attributes and values and driven by their positive attitude toward risk and innovation, which permits more flexibility as they exploit and explore attractive opportunities [15, 16]. By eliminating disagreeable players,

building and/or removing constraints, as well as creating new preferences, firms drive markets by directly or indirectly influencing and "shaping" the marketplace [17, 18]. For attaining the best result for the focal organization, these activities need not only outstanding knowledge and understanding of the marketplace but also the entrepreneurial drive as well as determination to shape behaviors [19, 20].

2. RESEARCH QUESTIONS AND INFORMATION SOURCE FROM ARTICLE SELECTION STRATEGY

The research questions help in establishing the context for what has to be researched and what is the aim to discover, which contributes to the present work with a well-defined target to achieve. Moreover, the selection criteria need to be applied to both peer-reviewed and non-peer-reviewed submissions. Hence, framing the key variations between them is important.

2.1. Research Questions

This study explicitly addresses the research questions given below:

- **RQ1:** What are the keywords used to locate the document for the research?
- **RQ2:** How many journals were considered for the Bibliometric analysis?
- **RQ3:** Totally, how many papers were taken from the journals?
- **RQ4:** Who are the top 25 authors having higher citations?
- **RQ5:** What are the advantages and disadvantages of EM?

2.2. Article selection strategy

From Scopus research databases, the bibliometric data were gathered from 2013 to 2023. Scopus is considered as the largest abstract and citation database of scientific journals, conference proceedings, peer-reviewed literature, and books. The data were gathered by using the “title, abstract, keywords” search in the Scopus database and SCIE. Several performance-related articles that concentrate precisely on EM as a dynamic approach to business strategy are included in the Scopus database. These databases have been carefully selected owing to their academic reliability and the wide spectrum of journal articles provided within the respective disciplines. For the analysis, about 641 papers were taken from 25 reputed journals. After knowing the inclusion criteria, the next step is to apply the exclusion criteria. An exclusion criterion is that only Scopus database indexes have been taken and most research papers concentrated on the analysis over the last 10 years.

3. BIBLIOMETRIC STUDY ON EM AS A DYNAMIC APPROACH FOR BUSINESS STRATEGY

Through normal data analysis, the EM research was quantitatively and qualitatively analyzed. Bibliographic measures like journals, countries, authors, scientific papers, and publishers were used for normal data analysis. For recognizing the most worthy papers, researchers, and journals enclosed by certain domains,

bibliographic research uses citations. In this section, the important analyses like initial search, exploratory data, geographic location, subject area, network analysis, affiliations-based analysis, source types, publication citations, source titles, and funding sponsors are also analyzed.

3.1. Keyword analysis

Keywords are vital in any type of research. The keywords have a vital role in the research’s findings. To locate the documents that best match the theme of this work, the common keywords, “Entrepreneurial Marketing”, “Customer Development”, “Product-Market Fit”, “Marketing Analytics”, and “Minimum Viable Product (MVP)” were used. From the analysis of the entire journals belonging to the main keywords, 25 reputed journals were filtered, which were most appropriate for this study and bibliometric research.

3.2. Analysis of journals with their metrics

Several journals are there for the research of EM as a dynamic technique for business strategy. In this analysis, 25 journals were taken with their metrics, namely IF, SJR, SNIP, Citation score (CS), Country, PF, and publisher. Hence, table 1 indicates the analysis of journals with their metrics for the research of EM as a dynamic technique for business strategy.

Table 1: Analysis of journals with their metrics for the research of EM as a dynamic approach for business strategy

| Journal name | IF | SJR rating | CS | SNIP | Publisher | Country | PF |
|-----------------------------------|-------|------------|------|------|-------------|-------------|-------------------|
| Journal of Innovation & Knowledge | 20.31 | 2.64 | 14.9 | 4.67 | Elsevier BV | Netherlands | Four Times a year |

| | | | | | | | |
|--|-----------|------|-----------|------|--------------------------------|----------------|--------------------|
| Business Strategy and the Environment | 14.8 8 | 2.87 | 17.8 | 2.75 | John Wiley and Sons Ltd | United Kingdom | Bi-Monthly |
| Journal of Business Research | 13.4 4 | 2.89 | 16 | 3.23 | Elsevier Inc | United States | Monthly |
| Journal of Retailing and Consumer Services | 12.4 | 2.54 | 16.1 | 2.65 | Elsevier Ltd. | United Kingdom | Quarterly |
| Journal of Cleaner Production | 11.9 | 1.98 | 18.5 | 2.37 | Elsevier Ltd. | United Kingdom | Semi-Monthly |
| Journal of Small Business Management | 11.5 | 1.55 | 2.06 4 | 1.55 | Taylor and Francis Ltd. | United Kingdom | Quarterly |
| Industrial Marketing Management | 10.6 6 | 2.65 | 13.8 | 2.42 | Elsevier Inc. | United States | Bi-Monthly |
| International Business Review | 10.3 | 2.45 | 12.3 | 2.77 | Elsevier Ltd. | United Kingdom | Three times a year |
| Strategic Management Journal | 8.78 | 8.49 | 11.7 | 3.57 | John Wiley and Sons Ltd | United Kingdom | Monthly |
| Small Business Economics | 8.67 | 2.73 | 12.8 | 2.90 | Springer Netherlands | Netherlands | Quarterly |
| Business Horizons | 8.48 | 2.47 | 18 | 2.88 | Elsevier Ltd. | United Kingdom | Bi-Monthly |
| British Journal of Management | 8.29 | 2.15 | 9.9 | 2.52 | Wiley-Blackwell Publishing Ltd | United Kingdom | Quarterly |
| Research Policy | 8.03 | 3.48 | 15.1 | 3.63 | Elsevier | Netherlands | Monthly |
| Strategic Entrepreneurship Journal | 7.22 | 3.17 | 8.4 | 2.19 | John Wiley & Sons Inc. | United States | DAYS |
| International Entrepreneurship and Management Journal | 7.03 | 1.52 | 11.5 | 2.29 | Springer New York | United States | Quarterly |

| | | | | | | | |
|---|------|------|------|------|-------------------------|----------------|---------------------|
| Review of Managerial Science | 6.36 | 1.31 | 8.7 | 1.94 | Springer Verlag | Germany | Bi-Monthly |
| Journal of Open Innovation: Technology, Market, and Complexity | 5.91 | 0.73 | 7.5 | 1.46 | (MDPI) | Switzerland | Quarterly |
| Journal of Strategic Marketing | 4.71 | 0.89 | 8.6 | 1.18 | Routledge | United Kingdom | Quarterly |
| Sustainability | 4.39 | 0.66 | 5.8 | 1.19 | MDPI AG | Switzerland | Semi-Monthly |
| Creativity and innovation management | 4.14 | 0.98 | 5.8 | 1.39 | John Wiley and Sons Ltd | United Kingdom | Quarterly |
| Journal of the Knowledge Economy | 3.9 | 0.57 | 4.2 | 1.31 | Springer Verlag | Germany | Quarterly |
| Administrative Sciences | 3.38 | 0.53 | 3.9 | 1.01 | MDPI AG | Switzerland | Monthly |
| Journal of Entrepreneurship | 3.22 | 0.74 | 10.2 | 2.24 | Sage | India | 8.8 weeks |
| Sustainable Technology and Entrepreneurship | 2.56 | 0.43 | 3.8 | 1.25 | Elsevier Inc. | United States | Eight Weeks |
| Journal of Research in Marketing and Entrepreneurship | 2.13 | 0.42 | 2.6 | 0.82 | EMERALD | United Kingdom | Three times a year. |

Table 1 shows that each journal is from a different country like the United Kingdom (UK), United States (US), Netherlands, and Germany. The journals were on the basis of ranking priority of IF from high to low. Out of all the other mentioned journals, the Journal of Innovation & Knowledge depicts the highest IF of 20.31 with its SJR and SNIP of 2.64 and 4.67, respectively. For journals like Elsevier BV, John Wiley and Sons Ltd, EMERALD, John Wiley and Sons Ltd, et cetera,

there were numerous publishers. The 2nd position was achieved by the Business Strategy and the Environment with an IF of 14.88, and its SJR rating and SNIP are 2.87 and 2.75. In the Journal of Research in Marketing and Entrepreneurship, the IF metric was lower at 2.13.

3.3. Initial search results

Language is considered as a significant way for a structured communication system. A language's structure is its

grammar as well as the free components are its vocabulary. For humans, languages are the primary means of communication and can be conveyed via sign, written, or

spoken language. Figure 1 examines the language used in standard publications related to the theme of work for the last 10 years.

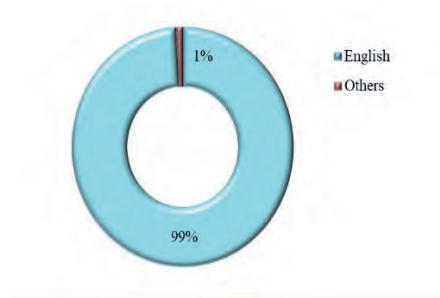


Figure 1: Pie chart of language utilized in standard publications associated with the theme of work for the last 10 years

Figure 1 clearly shows that the English language completely dominated the standard publications between the years 2013 to 2023 for the research of EM as a dynamic approach for business strategy. The standard publication in other languages was only 1%.

3.4. Exploratory data highlights

Many types of research have been

done on EM as a dynamic approach for business strategy, and the research has been published by most of the efficient authors from various countries. 2013 to 2015, 2016 to 2019, and 2020 to 2023 are the publication count columns in the table. The number of published papers for EM as a dynamic approach for business strategy research between the years 2013 to 2023 is described in Table 2.

Table 2: Number of published paper counts for EM as a dynamic approach for business strategy research between the years 2013 to 2023

| Journal name | 2013 to 2015 | 2016 to 2019 | 2020 to 2023 |
|---|--------------|--------------|--------------|
| Journal of Business Research | 9 | 22 | 16 |
| International Entrepreneurship and Management Journal | 14 | 13 | 10 |
| Review of Managerial Science | 4 | 4 | 8 |
| Journal of the Knowledge Economy | 6 | 3 | 4 |
| Small Business Economics | 8 | 14 | 5 |
| Sustainable Technology and Entrepreneurship | 0 | 0 | 7 |

| | | | |
|---|----|----|----|
| Industrial Marketing Management | 7 | 14 | 9 |
| Journal of Open Innovation: Technology, Market, and Complexity | 0 | 3 | 13 |
| Journal of Retailing and Consumer Services | 1 | 1 | 5 |
| Business Horizons | 3 | 6 | 2 |
| British Journal of Management | 8 | 12 | 8 |
| Business Strategy and the Environment | 3 | 8 | 12 |
| Strategic Management Journal | 10 | 14 | 11 |
| Creativity and innovation management | 8 | 4 | 6 |
| Strategic Entrepreneurship Journal | 15 | 37 | 32 |
| Journal of Research in Marketing and Entrepreneurship | 16 | 24 | 14 |
| Research Policy | 4 | 5 | 5 |
| Journal of Strategic Marketing | 5 | 2 | 2 |
| Journal of Innovation & Knowledge | 0 | 5 | 8 |
| Sustainability | 0 | 11 | 16 |
| International Business Review | 9 | 7 | 9 |
| Journal of Small Business Management | 22 | 17 | 0 |
| Administrative Sciences | 1 | 6 | 8 |
| Journal of Entrepreneurship | 13 | 10 | 14 |
| Journal of Cleaner Production | 0 | 5 | 3 |

The published journals centered on the research on EM as a dynamic approach for business strategy between the years 2013 to 2023 are exhibited in the above table 2. From the year 2013 to 2023, when analogized to all other journals, the highest number of articles was published by “Strategic Entrepreneurship Journal” with a total count of published articles being 84. During the years 2013 to 2023,

the “Journal of Research in Marketing and Entrepreneurship” obtained the 2nd highest number of published articles. Moreover, with a count of 47, the “Journal of Business Research” obtained the 3rd highest position in publishing articles. In addition, the lowest position was achieved by the journal “Asia Pacific Management Review” in which the total of published articles based on the applied

research was 6. In total, 641 papers were taken. In the reference part, the reference papers utilized in the analysis are cited. For example, reference no [21 to 25], which had been displayed in the reference section, comes under various journals, namely the Journal of Business Research, Review of Managerial Science, International Entrepreneurship and Management Journal, et cetera. Similarly, the references [26 to 40] displayed in

the reference section also come under journals, namely the Journal of Research in Marketing and Entrepreneurship, Strategic Management Journal, Journal of Strategic Marketing, et cetera.

Most of the authors are from different locations. Thus, the pie chart of Figure 2 further analyzes the percentage of a country in which the number of authors has higher citations.

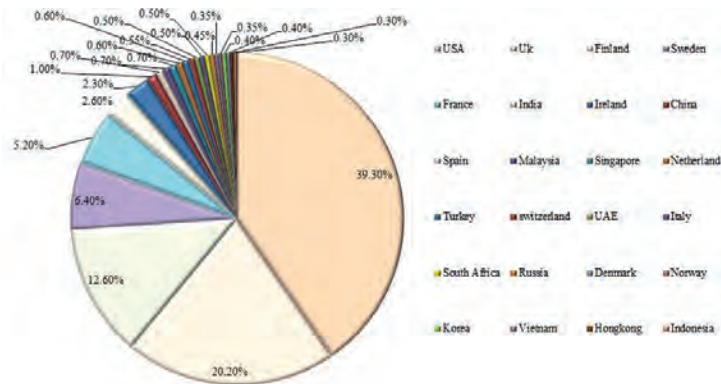


Figure 2: Percentage of countries where the number of authors has higher citations

Figure 2 depicts that authors from the country USA had a higher percentage (39.30%) of citations than the other countries. Authors from the country UK attained the 2nd position with a percentage of 20.20%. Finland country authors attained the 3rd position with 12.60%. Unexpectedly, the last position was achieved by authors from countries like Saudi Arabia, Latvia, Pennsylvania, and the Philippines with the same percentage level of 0.10%.

3.5. Analysis by geographic location

Based on the authors' country and journals' country, analysis of geographical

distribution for the research of EM as a dynamic approach for business strategy between the years 2013 to 2023 is done. A map chart that could use shaded areas for showing how data have been distributed over various regions is termed geographic distribution. A darker area denotes a greater focus on values. Figure 3 investigates the geographical distribution of the authors' countries centered on the research on EM as a dynamic approach for business strategy. Figure 4 analyzes a list of journal countries based on the research on EM as a dynamic approach for business strategy.



Figure 3: Geographical distribution of the list of author's countries based on the research of EM as a dynamic approach for business strategy



Figure 4: Geographical distribution of the list of journal's countries based on the research of EM as a dynamic approach for business strategy

The author's countries include the USA, UK, India, Canada, Spain, China, Germany, France, and others. Figure 3 displays that more authors participated in the research. 52.2 % of the authors from the USA had done research on EM as a dynamic approach for business strategy, which is a higher percentage than other mentioned countries. The UK achieved the second position with a percentage of about 36.3%.

The journal's countries include the USA, UK, Germany, Netherlands, and others. Figure 4 indicates that for the research, journal publications have been done from more countries. The UK holds the highest percentage (44%) for having journals based on the research of EM as a dynamic approach for business strategy. Unexpectedly, USA achieved the 2nd place

with 20%. The 3rd position was attained by Switzerland and the Netherlands with the same percentage of 12%.

3.6. Subject area analysis

A subject area is a gathering of data pieces obtained from the transactional database that are related to each other in a particular context. Among various analyses, subject area analysis is the most important one because the theme of the work in the research of EM as a dynamic approach for business strategy is from different subjects, such as Business marketing, Marketing, Entrepreneurship, Entrepreneurship strategies, and Business strategy. The graphical representation of subject area-wise classification for EM as a dynamic approach for business strategy research area is explained in Figure 5.

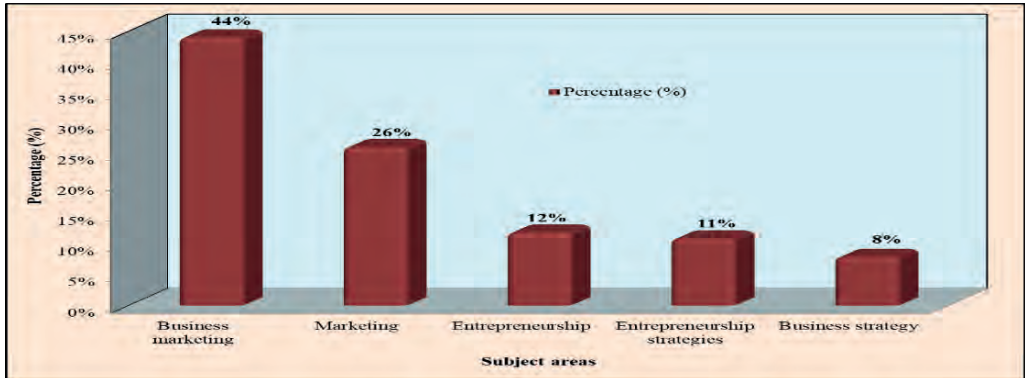


Figure 5: Graphical representation of subject area-wise classification for EM as a dynamic approach for business strategy research area

Figure 5 displays that business marketing covered more research on EM as a dynamic approach for business strategy with 44%. The marketing subject attained the 2nd highest percentage (26%) for the research of EM as a dynamic approach for business strategy. Among the subjects like Business marketing, Marketing, Entrepreneurship, Entrepreneurship strategies, and Business strategy, business strategy exhibited the lesser percentage (4%) as it is less related to the title EM as a dynamic approach for business strategy research.

3.7. Network analysis

Network analysis is a graph-centric representation, which signifies the relationship between various attributes. For performing network analysis, diverse software platforms are available. This analysis is mostly utilized to represent the connection among different computable attributes. But, VOS viewers are used here for providing the network analysis graphs. The network analysis diagram regarding keywords is explained in Figure 6.

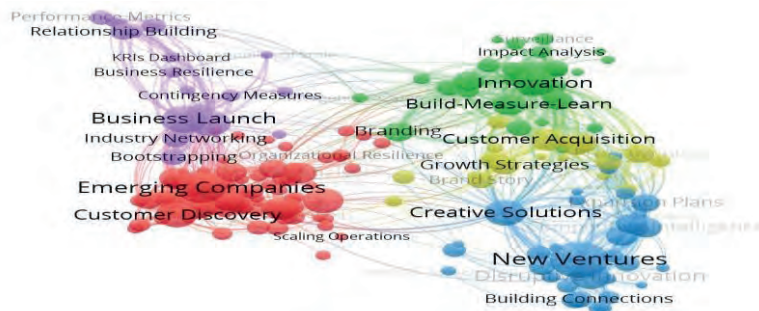


Figure 6: Network analysis diagram on the basis of keywords

Figure 6 displays that the keywords utilized in the research are indicated by the name in the map circles. The distance between

two keywords is signified by the links that join circles. The correlation between keywords will be larger if the relation size

is small. In total, 5 colors were utilized for indicating 5 clusters. For 200 terms, the relevance score is estimated. Thus, 200 keywords were selected for drawing the network analysis regarding keywords.

In addition, it is necessary to analyze the network analysis of authors after the

network analysis of keywords. A major cluster of authors is there with higher bibliographic coupling indices. The author sample's complete study exposes a focus of authors within this major cluster. The network analysis on the basis of the authors is explained in Figure 7.

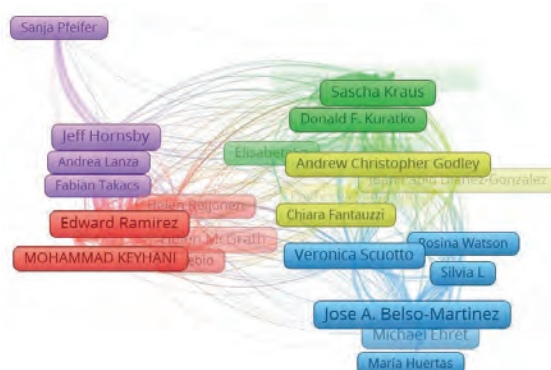


Figure 7: Network analysis on the basis of the authors

Figure 7 exhibits a combination of authors taken for the research. The interconnection signifies the authors' collective work on the published documents. In total, 5 colors were utilized for the analysis of research similar to a keyword analysis. The author's threshold value has a minimal number of documents, which was set manually to three and acquired as sixty authors.

3.8. Analysis based on affiliations

It is quite challenging to determine the affiliation data automatically, which needs a substantial effort for data extraction, data cleaning, and matching heterogeneous representations of the same affiliations. The statistical analysis by affiliation is explained on the basis of the percentage of publication count in Figure 8.

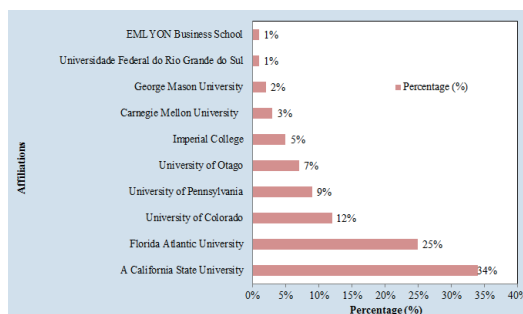


Figure 8: Statistical analysis by affiliation on the basis of the percentage of publication count

Figure 8 indicates that other universities are completely dominated by California State University with a high percentage of about 34. Moreover, the 2nd position was achieved by Florida Atlantic University with a higher percentage of 25. The University of Colorado achieved the 3rd position with a percentage of 12.

3.9. Statistical analysis on the basis of source types

Lists of books, essays, and articles were available previously; however, websites, videos, and other multimedia sources should be cited now in the bibliography if they are accessed as part of the research. Various sources like conferences, journals, and books were used for the analysis of EM as a dynamic approach for business strategy. The statistical analysis centered on source types is explained in Figure 9.

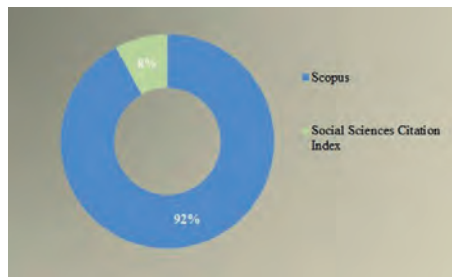


Figure 9: Statistical analysis based on source types

According to the Scopus extracted literature on EM as a dynamic approach for business strategy, 92% of the publications are Scopus, followed by 8% of publications in the social sciences citation index.

3.10. Analysis based on publication citations

Education, skills, and/or biographical information are the author's credentials, which make them qualified to write/speak on a specific topic. This section displays the top 25 authors out of 641 papers considered. The top 25 authors and the citations are explained in Table 3.

Table 3: Top first 25 authors and the citations

| AUTHOR NAME | TITLE | YEAR | FINDINGS | AUTHOR CITATION | JOURNAL NAME |
|--------------------|--|------|--|-----------------|--------------------------|
| Zoltan, et.al.[41] | The knowledge spillover theory of entrepreneurship | 2013 | According to the analysis, the role of knowledge in entrepreneurial activity is explained well by the dual-conduit mechanism; contrarily, superior insights are rendered into knowledge-centric entrepreneurship | 2284 | Small Business Economics |

| | | | | | |
|-----------------------------|---|------|---|-----|--------------------------------------|
| Brian, et.al.[42] | Reconceptualizing Entrepreneurial Orientation | 2014 | Findings exhibited thatby identifying knowledge typologies facilitating entrepreneurial | 847 | Strategic Management Journal |
| | | | behaviors, there was apossibility of moving into the black box under the re-conceptualization | | |
| Maija, et.al.[43] | Understanding and Measuring Entrepreneurial Leadership Style | 2013 | By utilizing measurement toll, it was found that entrepreneurial leadership among founder-leaders was more common than non-founder leaders, which signified construct validity | 831 | Journal of Small Business Management |
| Mohammad, et.al.[44] | Innovative Entrepreneurial Teams: The Give and Take of Trust and Conflict | 2015 | Outcomes signified that innovative entrepreneurial teamperformance’s cornerstone was cognitive trust | 723 | Creativity and innovation management |
| Maria, et.al.[45] | Nature of academic entrepreneurship in the UK: Widening the focus on entrepreneurial activities | 2013 | Findings have suggestions for the practice of academic entrepreneurship as well as university efforts’ efficiency topromote entrepreneurial activities through the formal IP system | 658 | Research Policy |

| | | | | | |
|--------------------------|---|------|--|-----|---|
| David, et.al.[46] | Resources As Dual Sources Of Advantage :Implications For Valuing Entrepreneurial-Firm Patents | 2013 | Findings possess policy and managerial implications. Outcomes displayed that for entrepreneurs, patents served as signaling devices, an economically meaningful role, to capital providers | 634 | Strategic Management Journal |
| Bo, et.al. [47] | The evolving domain of entrepreneurship research | 2013 | While considering the literature on closely associated fields, such as science and technology and innovation studies, findings were even more obvious | 580 | Small Business Economics |
| Alain, et.al.[48] | Beyond entrepreneurial intentions: values and motivations in entrepreneurship | 2014 | As per the analysis, self-efficiency negatively moderated the relationship between observing a favorable institutional environment as well as the entrepreneurial intention | 516 | International Entrepreneurship and Management Journal |
| Johan, et.al.[49] | Commitment to Sustainability in Small and Medium-Sized Enterprises: The Influence of Strategic Orientations and Management Values | 2015 | Outcomes exhibited that amongst SMEs, various parts of Market Orientation (MO) and Entrepreneurial Orientation (EO) differ in the significance of commitment to sustainability | 489 | Business Strategy and the Environment |

| | | | | | |
|---------------------------------|---|-------------|--|------------|------------------------|
| <p>Raghu, et.al.[50]</p> | <p>Contextualizing entrepreneurial innovation : A narrative perspective</p> | <p>2014</p> | <p>An understanding of the dynamics that wereinvolved in the entrepreneurial fields’ creation, was generated by entrepreneurial narratives for the performative properties</p> | <p>480</p> | <p>Research Policy</p> |
|---------------------------------|---|-------------|--|------------|------------------------|

3.11. The top 10 authors with higher citations were from journals like Business Strategy and the Environment, Small Business Economics, Journal of Business Research, et cetera. Table 3 displays that in 2013, author Zoltan had the topmost number of citations (2284), which belongs to the Journal of Small Business Economics. Brian achieved the 2nd position with 847 citations and this author belongs to the Strategic Management Journal. The author Maija attained the 3rd position with 831 citations and this author

belongs to the Journal of Small Business Management.

3.11. Statistical analysis based on source titles

Source titles are normally displayed near the author’s name and are easy to find for most sources. The graphical representation of statistical analysis is explained in Figure 10 based on source titles.

Figure 10: Graphical representation of statistical analysis on the basis of source titles

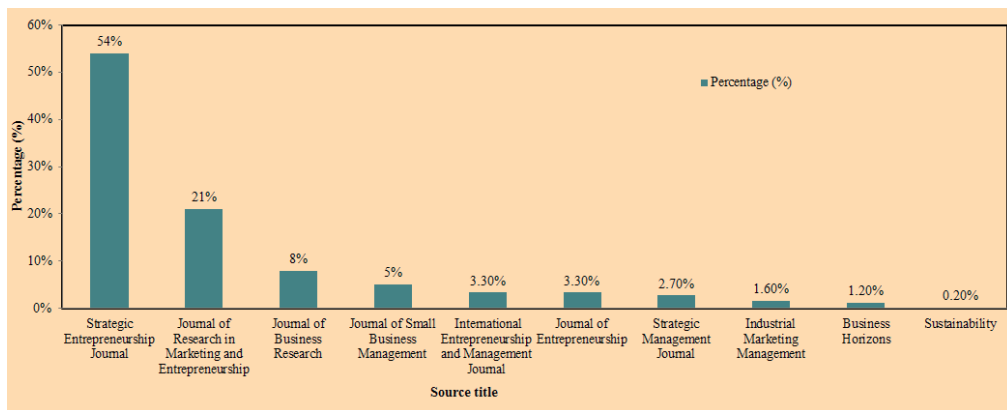


Figure 10 indicates that in the source title “Strategic Entrepreneurship Journal”, a maximum number of publications are performed. The source title

“Journal of Research in Marketing and Entrepreneurship” achieved 2nd place with 21%. The lesser percentage of publication count was in the source title of Sustainability.

3.12. Statistical analysis on the basis of funding sponsors

Figure 11 displays the statistical analysis centered on funding sponsors in EM as a dynamic approach for business strategy.

Centered on the statistics, the top 10 funding sponsors are taken.

Figure 11: Statistical analysis based on Funding sponsors in EM as a dynamic approach for business strategy research area

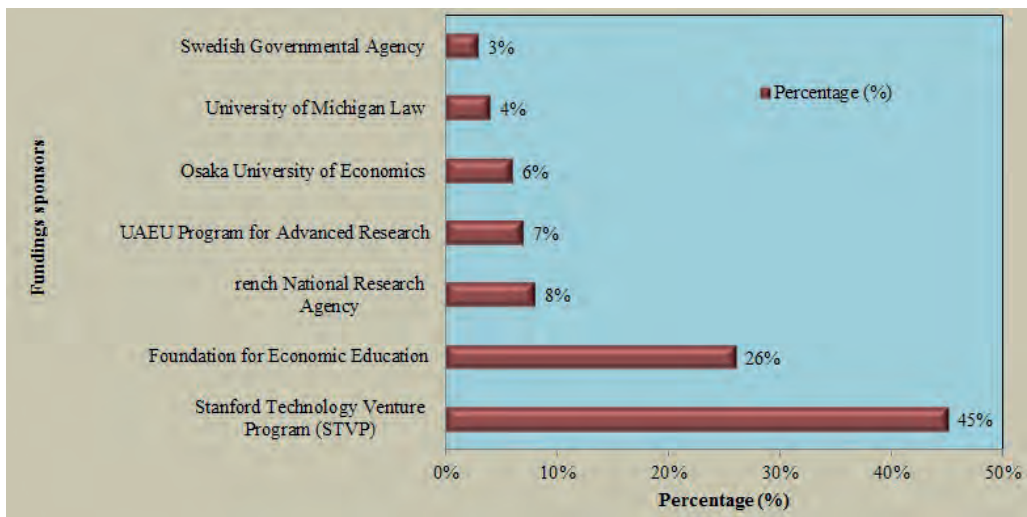


Figure 11 displays that the majority and a surprising funding percentage are sponsored by the “Stanford Technology Venture Program (STVP)” with 45%. The 2nd highest funding is done by the sponsor name “Foundation for Economic Education”. The lesser funding is sponsored by the sponsor “Swedish Governmental Agency”.

6. INFERENCES AND LIMITATIONS

The study in the EM sector expands its level globally and is expanding more. Here, the importance and contribution of authors, funding agencies, affiliations, countries, et cetera are emphasized. Most of the reports present in the paper are from journals associated with the topic of EM as a dynamic approach for business

strategy. The researchers in this review paper mainly used the English language to publish the papers. Totally, for the analysis of bibliometric review, 641 papers from the year 2013 to 2023 are considered. To locate the papers for the analysis of EM as a dynamic approach for business strategy, there are different kinds of research sources. However, only with the Scopus database, the publications are accessible in this bibliometric review paper. For the present research, other significant data research sources like GoogleScholar aren't utilized. The authors chose the keywords that are utilized for querying the Scopus database. Centered on the researcher's viewpoint, the keyword combination for the study will be arranged again or modified and modernized.

7. CONCLUSION

Based on EM as a dynamic approach for business strategy, many research topics have been published, and many literature reviews have been reported on suitable subjects. This paper performs a bibliographic survey on the topic of EM as a dynamic approach for business strategy from the Scopus database. Among all, the Scopus database remains the most widely utilized as well as popular database for exploring, analogizing, and tracking numerous citations despite the existence of many other databases in the public domain. At first, 25 journals

were filtered and considered for the research of EM as a dynamic approach for business strategy. From the database, metrics of journals like SJR, SNIP, publishing frequency, publisher, and IF are examined. In addition, the countries of the author and their published work under different journal countries for the research were examined. In this paper, it was easier to detect their growth and trends via the analysis of bibliometrics. In this bibliographic review, each domain of the process was concentrated, which would be a promising avenue for future work.

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Impact of the Russia-Ukraine War on the Stock Performance of the Defence Industry: An Event Study Analysis

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Abstract: The paper endeavors to appraise the effects of the Russia-Ukraine battle on defence industries by employing event study methodology. The normal return was determined by applying the Fama & French three-factor model and the market model. The abnormal return was found by computing the gap between the normal return and the realized return. The daily returns of 28 arms manufacturing firms listed on multiple stock exchanges in New York, London, Paris, Frankfurt, Milan, Stockholm, Istanbul, BATS Europe, Tel Aviv, and the Indian Stock Exchanges (NSE and BSE) were collected for the period from 1 May 2021 to 3 March 2022. The 180 trading-day estimation window ranges from 1 May 2021 to 14 January 2022 and 11 trading-day event window ranges from 16 February 2022 to 3 March 2022. Both parametric standard t-tests and non-parametric generalized rank tests were applied for hypothesis testing. The cumulative average abnormal return of 20 out of 28 firms was found to be positive and statistically significant. The outcome demonstrates that the war had a beneficial effect on the valuation of the defence industry.

Keywords: Russia-Ukraine war, defence industry, event study; normal return; abnormal return; stock return

Introduction

The military action of Russia against Ukraine on 22 February 2022, had economic and military consequences. The conflict resurrected the Cold War rivalry, changing the dynamics of defence partnerships among nations. It slowed down the recovery of economic activity in the post-pandemic period, accelerating inflationary pressure on food grains and energy prices across the world. The war has created innumerable adverse regional and global economic impacts, especially

in Ukraine and its European and central Asian neighbors. Though Russia had lost a significant portion of its territory and many cold war allies who are now part of the North Atlantic Treaty Organization (NATO) and European Union (EU), its aggressive posture against Ukraine created panic among the neighbors. Russia justified the aggression on the pretext of self defence citing that the inclusion of Ukraine in NATO would jeopardize its territorial sovereignty. The attack intensified the security concern in the region, magnifying the relevance of

NATO. The neutral countries, like Sweden and Finland, expressed eagerness to join the bloc. Poland went to the extent of being willing to host US nuclear arms in its territory. Poland supplied direct military support to Ukraine in the form of weapons and provided safe passage of Western weapons to Ukraine (Jenkins 2023a). All European nations felt the heat of the war and tried to build defence architecture to protect them against any such aggression. The war gave rise to the following military consequences (Melville et al., 2023):

- The military support to Ukraine generated arm sales opportunities for NATO and EU countries.
- The European neighbors were forced to modernize their arsenal, incurring huge expenditures.
- Shift in focus from land-based traditional war equipment to air defence systems, long-range missiles, drones, supersonic jets, unmanned aerial vehicles, and futuristic nuclear powered naval vessels.
- The EU planned to extend \$20 billion to member countries for procuring weapons and transferring them to Ukraine.

The major defence equipment supplier gave priority to supplying their own armed forces and their allies. This resulted in a supply-demand gap and an inordinate delay in supply, breaching the contracted commitment.

2. The balance of power equations in Eastern Europe, Central Asia and Baltic region had changed, and the need

for enhancing defence preparedness increased among all the states sharing borders with Russia and Belarus (Jenkins 2023a). The escalation sent a wake-up call to all countries across the worlds that have to deal with hostile neighbors. The defence expenditures of such countries have increased manifold. The spike in global defence expenditure especially in the affected regions was bound to have a business impact on the large defence equipment manufacturers. In this backdrop the paper attempts to assess the effect of the war on the major defence producers. The impact assessment was done by measuring the stock return of these establishments adopting event study procedure.

2. Literature Review

2.1 Global Defence Industry

The international arms trade figures for 2021 and 2022 presented below in Table-1 give us a clear picture of the tectonic shift happening in the postwar era. While Russian exports have marginally declined, Ukraine's exports have declined by 70% in 2022. Ukraine's import in 2022 has increased by 60 times its import in 2021. As per the global arms trade report, United States of America (USA) is the largest exporter contributing around 45% of the market followed by France-9%, Russia-8%, China-6%, Italy-6%, Germany-5% and UK-5%. Qatar tops the list of importers accounting for 10% followed by India-9%, Ukraine-8%, Saudi Arabia-7%, Kuwait- 7%, Pakistan-5% and Japan-4% (SIPRI 2024).

With respect to defence expenditures the top 15 spending countries account for 82 percent of the expenses. As per SIPRI data in 2022 United States is the largest with 40% of the total expenditure followed by China and Russia with 13% and 4%, respectively. Russia, which

was the 5th largest spending country in 2021, overtook India and United Kingdom to become 3rd largest in 2022 (Tian et al. 2023). Though military expenditure in Europe increased in 2022 as an immediate

response to the Ukraine war, security threat perception in the region has started to build since 2014, when Russia annexed Crimea. As an instant response to the event, NATO increased the military spending target to 2% of the GDP for all its member countries. The highest increase in expenditure during the period ranging from 2014 to 2022 was observed in Central and Western European countries located near Russia and Ukraine. The increase was in the range of 29% for Finland to 353% for Lithuania.

Table 1. List of Top Arms Exporter, Importer and top arms spending countries (\$ millions)

| Arms Export | 2021 | 2022 | Arms Import | 2021 | 2022 | Arms Expense | 2021 | 2022 |
|--------------|---------------|---------------|--------------|---------------|---------------|---------------|------------------|------------------|
| US | 10,994 | 14,515 | India | 4,167 | 2,846 | United States | 806,230 | 876,943 |
| France | 3,853 | 3,021 | Qatar | 2,075 | 3,342 | China | 285,931 | 291,958 |
| Russia | 2,857 | 2,820 | Saudi Arabia | 1,739 | 2,272 | India | 76,349 | 81,363 |
| Italy | 1,673 | 1,825 | Egypt | 1,287 | 701 | UK | 67,501 | 68,463 |
| China | 1,462 | 2,017 | Australia | 1,260 | 761 | Russia | 65,908 | 86,373 |
| Germany | 938 | 1,510 | Pakistan | 1,180 | 1,565 | Saudi Arabia | 63,195 | 75,013 |
| UK | 656 | 1,504 | China | 981 | 807 | France | 56,647 | 53,639 |
| Spain | 594 | 950 | Japan | 947 | 1,291 | Germany | 56,513 | 55,760 |
| South Korea | 544 | 209 | Kuwait | 904 | 2,249 | Japan | 50,957 | 45,992 |
| Israel | 543 | 831 | UK | 878 | 799 | Korea,South | 50,874 | 46,365 |
| Turkiye | 438 | 398 | US | 868 | 837 | Italy | 36,249 | 33,490 |
| Netherlands | 347 | 295 | South Korea | 798 | 408 | Australia | 32,718 | 32,299 |
| Sweden | 332 | 68 | Netherlands | 652 | 695 | Canada | 25,362 | 26,896 |
| Australia | 188 | 33 | Norway | 514 | 848 | Israel | 24,341 | 23,406 |
| Ukraine | 147 | 50 | UAE | 508 | 681 | Spain | 19,544 | 20,307 |
| Norway | 119 | 88 | Israel | 476 | 829 | Brazil | 19,187 | 20,211 |
| Canada | 118 | 171 | Ukraine | 39 | 2,644 | Ukraine | 5,943 | 43,998 |
| Others | 989 | 1,678 | Others | 7,519 | 8,408 | Others | 285,334 | 328,054 |
| Total | 26,792 | 31,983 | Total | 26,792 | 31,983 | Total | 2,028,782 | 2,210,530 |

(SIPRI 2024)

The list of major arms producers and their income from arms sale as a percentage of total revenue for the year 2022 has been presented in table-2.

Table 2. Top 30 arms producers for the year 2022 (\$ millions)

| Rank | Company | Country | Arms Revenue | Total Revenue | Arms Revenue % of totalRevenue |
|------|------------------------|----------------|--------------|---------------|--------------------------------|
| 1 | Lockheed Martin Corp. | United States | 59,390 | 65,984 | 90% |
| 2 | Raytheon Technologies | United States | 39,570 | 67,074 | 59% |
| 3 | Northrop Grumman | United States | 32,300 | 36,602 | 88% |
| 4 | Boeing | United States | 29,300 | 66,608 | 44% |
| 5 | General Dynamics Corp. | United States | 28,320 | 39,407 | 72% |
| 6 | BAE Systems | United Kingdom | 26,900 | 27,712 | 97% |
| 7 | NORINCO | China | 22,060 | 82,537 | 27% |
| 8 | AVIC | China | 20,620 | 82,499 | 25% |
| 9 | CASC | China | 19,560 | 44,458 | 44% |
| 10 | Rostec | Russia | 16,810 | 30,295 | 55% |
| 11 | CETC | China | 15,080 | 55,837 | 27% |
| 12 | L3Harris Technologies | United States | 12,630 | 17,062 | 74% |
| 13 | Leonardo | Italy | 12,470 | 15,025 | 83% |
| 14 | Airbus | Trans-European | 12,090 | 61,805 | 20% |
| 15 | CASIC | China | 11,770 | 37,364 | 32% |
| 16 | CSSC | China | 10,440 | 51,443 | 20% |
| 17 | Thales | France | 9,420 | 18,479 | 51% |
| 18 | HII | United States | 8,750 | 10,676 | 82% |
| 19 | Leidos | United States | 8,240 | 14,287 | 58% |
| 20 | Amentum | United States | 6,560 | 8,750 | 75% |
| 21 | CSGC | China | 6,460 | 42,507 | 15% |

| | | | | | |
|----|-------------------------|----------------|-------|--------|-----|
| 22 | Booz Allen Hamilton | United States | 5,900 | 9,259 | 64% |
| 23 | Dassault Aviation Group | France | 5,070 | 7,288 | 70% |
| 24 | Elbit Systems | Israel | 4,960 | 5,512 | 90% |
| 25 | Rolls-Royce | United Kingdom | 4,930 | 15,647 | 32% |
| 26 | CACI International | United States | 4,820 | 6,703 | 72% |
| 27 | Honeywell International | United States | 4,630 | 35,466 | 13% |
| 28 | Rheinmetall | Germany | 4,550 | 6,742 | 67% |
| 29 | Naval Group | France | 4,530 | 4,578 | 99% |
| 30 | Peraton | United States | 4,410 | 7,000 | 63% |

(SIPRI 2024)

2.2 Russia-Ukraine conflict

Russia launched its attack against Ukraine on 24 February 2022 rekindling the military excursion of 2014 when it annexed Crimea. The war literally raised an alarm bell for Europe which had been enjoying a long stint of military hibernation since the end of the Cold War. The immediate cause of the invasion could be attributed to the expansion of NATO into the former Soviet bloc, reaching the immediate border of Russia, which is in violation of the pledge taken by the US and NATO in 1990 (Pifer 2022). The war re-galvanized the role and requirements of NATO and has brought about a tectonic shift in the geopolitical landscape (Jenkins 2023b). Ukraine suffered thousands of civil and military casualties and severe damage to its civil and military infrastructure. The Russian economy was critically harmed on account of economic sanctions by the EU, US and UK (Masters 2023).

2.3 Important events in the run up to the Ukraine-Russia conflict:

- 12 June 2020: NATO Enhanced Opportunity Partner status was accorded to Ukraine
- 14 September 2020: A new national security strategy was adopted by Ukraine to join NATO
- 6 April 2021: mass military drills launched by Russia
- 17 December 2021: Russia demanded a security guarantee from NATO, asking it not to accept membership in Ukraine and put an end to military exercise in Ukraine and Eastern Europe.
- 24 January 2022: The US kept 8,500 troops ready for deployment in Europe to strengthen NATO.
- 10 February 2022: Russia and Belarus launched joint military exercises

- 21 February 2022: Russia declared Donetsk and the Luhansk People's Republic as independent and sent troops into these territories.

2.4 Stock return and event study

The performance of a firm or an industry/sector could be evaluated using different yardsticks. The share price movement is one of those measures that efficiently measure the current and future income generating capacity of a company or a group of companies belonging to a particular industry. The favorable attitude towards a stock is completely dependent on the investor's perception of its performance, keeping in view the market scenario and its financial and managerial strength.

Event study is employed to assess the consequences of an incident on the movement of the share price of a particular firm or set of firms. Event study as a methodology was first used by Dolley (1933), Myers and Bakay (1948), and Barker (1956) for assessing the effect of stock split on stock price. Subsequently Ball and Brown (1968) attempted to gauge the impact of accounting income of the company on its share price. In 1969, a monumental paper was published by Fama et al. (1969) which made the event study methodology (ESM) sweepingly popular in the branches of study of accounting, economics, and finance. As ESM became popular, the focus was on addressing statistical and econometric issues (Brown and Warner 1980) (Khotari and Warner 2005). Researchers employed it to validate the postulation that all available information on a company is reflected in its share price. It was also used to estimate the outcome of an incident on the change in the security price of a firm (MacKinlay

1997). In the beginning, ESM was used to assess company specific events like stock splits, dividend announcements, issue of bonus shares, mergers, investment decisions, new product launches, tie ups, and innovation. Later, it was used to evaluate the impact of country specific events like regulatory announcements, interest rate hikes or international events like COVID-19 or war etc. Stock market performance is the most valid measure as it is not subject to managerial manipulation like accounting performance (McWilliams and Siegel 1997). ESM is used to measure the excess income or abnormal return that is generated as a result of the announcement or occurrence of an event (Sorescu et al. 2017).

2.5. Impact of the war on the International Defence Industry

The defence budget and arms purchases of EU countries for the 12 month period from June 2022 to June 2023 increased by 50% from €52 billion to €75 billion over the corresponding period of last year (Maulny 2023). The world defence expenditure in 2022 was \$2.240 trillion, registering a growth of 3.7% over 2021. The growth is mainly attributed to the war in Ukraine and the increase in expenses in China, India, and Japan. The defence expenditure of Europe increased by 13%, the highest ever since the Cold War came to an end. The military expenditures of Russia and Ukraine grew by 9% and 640%, respectively in 2022.

The war also prompted the countries of Asia-pacific region, such as Taiwan and Japan, which have perpetual hostility toward their belligerent neighbors, to enhance their military capabilities. Japan announced its first ever national security

strategy in December, 2022, planning to increase its defence expenditure to 2% of GDP by 2027 and emphasizing building independent self defence architecture to protect its sovereignty. Australia also focused on enhancing the domestic manufacturing capability of arms and ammunition. The war taught an important lesson in modern warfare: that armoured vehicles, aircraft, and helicopters used to provide air support were not effective against guided weapons and unmanned air and naval systems. India, Indonesia, Malaysia, and Vietnam reduced their dependence on Russian arms as spares were not available for the existing equipments and platforms (Huxley 2023). India has already started investing heavily in indigenous manufacturing capability (Bommakanti 2023). The war has also given a huge opportunity for US drone start ups to test the efficacy of their product by supplying it to Ukraine (Thompson 2022).

The huge supply of anti-tank and anti-aircraft missiles to Ukraine resulted in a rise in the share price of both U.S. manufacturers. The share price of Raytheon, which is the manufacturer of stinger missiles, and Lockheed Martin, which is the maker of Javelin anti tank missiles jointly with Raytheon, increased by 16% and 3% respectively, whereas the benchmark S&P index decreased by 1%. Similarly, the stock of BAE system, the largest player in the UK and Europe, and Northrop Grumman increased by 26% and 14% respectively (Bloom 2022).

2.6 Research Gap

Though previous studies by Tian et al.(2023) highlighted the influence of war on defence expenditure and also on the performance of various stock markets, there is limited focus on the performance

of firms engaged in the manufacturing of arms and other defence equipment. The stock market performance of these firms requires evaluation to understand the influence of war on defence industry. The scope of the past research has been limited to advanced countries and did not cover the emerging market, especially India, which is focusing on developing indigenous defence manufacturing industries as Russia, the largest arms supplier to India, is involved in the war itself (Bhaumik 2022). The hypothesis is based on the assumption that since the war had escalated military expenditure in the Europe and other nations with hostile neighbors, defence manufacturing companies would benefit from increased demand. This scenario will have a positive effect on the security returns of these firms.

H0 : The average abnormal return is zero and not statistically significant during eventperiod

3.Design, method, and approach

3.1 Context

The defence expenditure has been growing with the increase in the incidence of war and regional tension. The focus has been shifted from traditional weapons to innovative military technology. The deployment of modern equipment such as drones or unmanned aerial vehicles (UAV) for intelligence, surveillance, reconnaissance and launching counter-offensive has been very successful in the Russia-Ukraine war. There has also been the use of hypersonic weapons systems, AI-enabled deep fakes, cyber attacks, and anti-satellite infrastructures (Favaro and Williams 2023). Modern warfare has

been transforming the defence industry, and smarter weapons are fast replacing conventional military assets. The Russian attack on Ukraine has provided a physical platform for arms producers to test the capability of their weapons and invest in new military technology to change the nature of the war.

3.2 Methodology

The research work has used ESM to evaluate the outcome of the war on defence industry by measuring the share price movement of the companies engaged in the manufacturing of arms, ammunition, and other defence equipment. ESM enables us to measure the abnormal return (AR) caused by the event. As stated by McWilliams and Siegel (1997) and Brown and Warner (1980) the ESM presupposes the following assumptions:

- i) The efficient market reacts to all available information
- ii) The event has a surprise element and no prior information is available regarding the event
- iii) The market should not be impacted by any concurrent event during the event window

The stock exchanges of the United States of America (USA), Europe, and India are reasonably efficient. The event considered for the study was unpredicted and was the most significant occurrence during the event window. The following procedure has been employed for the study.

3.2.1 Identification of event and event date

The process starts with the selection of the incident and the most impactful date during the entire event period. For this

study, we have considered 24 February 2022 as the event date when Russia attacked Ukraine from Belarus, Crimea, and Russia (Walker 2023).

3.2.2.Determination of event window

Having fixed the event date, the researcher needs to decide on the event window. It indicates to the period in which the influence of the event on the chosen stocks is considered to be the highest (Gupta 2016). Then the researcher has to decide on the length of the event window. Brown and Warner (1985) and Lyon et al. (1999) stated that a long event window results in erroneous conclusions regarding the significance of an event and reduces the power of test statistics. Khotari and Warner (2005) recommended a short event window for ESM studies, provided the researcher makes a careful selection of the event window. Rubin and Rubin (2013) adopted 21- day event window, with 10 days preceding and 10 days following the event. Cheng et al. (2007) further decreased it to 5 days ahead of and 5 days following the event. The ideal span should be adequate to record the impact of the incident and to avoid the impact of any overlapping events. We have considered 11-day window consisting of 5 days prior to and 5 days subsequent to the event date of 24 February 2022. It was designed appropriately to capture the full impact of war and to keep itself free from the impact of any simultaneous event. The declaration of war was the turning point and an important trigger for the arms race, which led to an increase in military expenditure. The event period started five days before the war as news of a probable attack was available in the public domain

before the event date, which could have impacted the valuation of defence stock. We have estimated the event period to be five days after the event, assuming that the full impact of the news would have been absorbed by the stock market by then. We have fixed 11-day event window, assuming that most of the impact of the war-related information is spread over the 11-day period before and after the event.

3.2.3. Selection of sample

The samples have been collected from the list of defence companies that are listed in the stock markets of the US, UK, Europe, and India. Income and market capitalization have been considered as the criteria for sample selection, as large company stocks are likely to be impacted most by the war and consequent rise in demand. One corporate entity from Israel that is listed in both Israeli and US stock market has also been included which fits into the selection criteria. We have selected ten firms from the United States of America, nine from Europe, eight from India and one from Israel. The firms are listed on multiple stock markets, such as the New York Stock Exchange (NYSE), the National Association of Securities Dealers Automated Quotations (NASDAQ), London, Paris, Frankfurt, Milan, Stockholm, Istanbul, BATS Europe, Tel Aviv, the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE). Many companies with higher income and market capitalization have not been included, as in these cases revenue from arms sales as a percentage of total revenue is less than 50 percent. It will be difficult to gauge the consequences of the war on these companies, as the valuation of these stocks might be impacted by

some other factors. The selection has been carefully done to avoid those stocks that could be impacted by internal events like stock splits, mergers & acquisition and dividend declarations, etc.

3.2.4. Selection of estimation window:

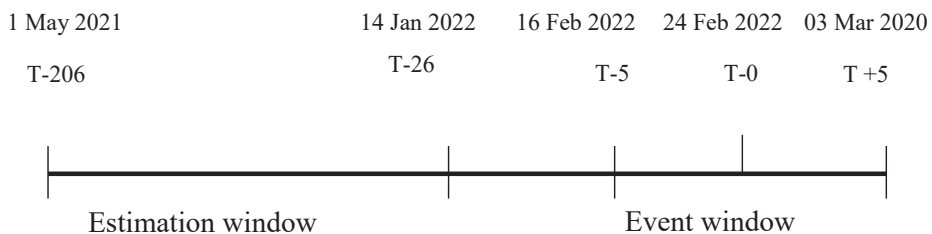
This is the time before the occurrence of the event when there is no impact of the event. The normal return is calculated based on the return during this period. The expected return is the most likely rate of return in a normal scenario. Therefore, the estimation window excludes the event window. Though there is no fixed criteria of selecting the appropriate length of event window, Konchitchki and O'Leary (2011) made an exhaustive list of research works that employed ESM, wherein they mentioned the length of event and estimation window considered for the study. Most of the studies have considered a minimum of 100 to 250 business days' stock return data for the event study. The other important aspect of the estimation window is deciding the end date of the estimation period. The end date should be kept with a reasonable gap where information regarding the event could be leaked before the actual event.

Daily stock return data for the sample stocks was gathered over a period of 180 trading days, spanning from 1 May 2021 to 14 January 2022. We have kept the last date of our estimation window exactly 40 calendar days before the event date to keep the estimation window free from any impact of the event. A close look at the pre-war events mentioned in the beginning of this paper revealed that the situation got worsened on 24 January 2022 when US kept 8,500 troops ready for deployment in

Europe to strengthen NATO. Therefore, we closed our estimation window before that. The following diagram illustrates

the time period of the event window and the estimation window. The time line is represented by the number of trading days.

Timeline of event window and estimation window



3.2.5. Estimation of normal return (NR)

NR is the anticipated return earned in the event period if there was no event. NR is computed on the basis of the return in the estimation period. Abnormal return (AR) is the gap between the NR and the actual return in the event window. Various models are used to measure the NR. MacKinlay (1997) has classified these models into statistical and economic segments. Statistical models rely on statistical projections that focus on asset returns and economic models rely on projections that focus on investor behavior. We have selected four of the most often used models for the computation of AR. Economic models like Capital Asset Pricing Models (CAPM) and Arbitrage Pricing Theory (APT) are not adopted by researchers as the former could not adequately explain the patterns of average stock returns and the latter has insignificant benefits over the market model.

Constant mean return model: In this model, the average yield on equity in the estimation period is considered to be the NR. AR is then obtained by deducting the average yield of the estimation period from the realized returns in the event window. This model produces a higher AR as it takes into account the average of individual stock returns instead of market returns. Brown & Warner (1980, 1985) observed that, despite being the simplest model, this is as efficient as other advanced models. In the following equation, R_{it} refers to the yield on stock i on day t , R_i is the mean yield on stock i for the estimation period, and AR_{it} is the AR on stock i on day t .

$$AR_{it} = R_{it} - \bar{R}$$

Market adjusted returns: This model considers the market return or index return during the estimation period as the NR. The AR is determined by deducting the market return in the estimation window

from the actual return of the stock in the event window. This model is known as a limited market model since it considers $\alpha_i = 0$ and $\beta_i = 1$ (MacKinlay 1997). In the following equation, R_{mt} is the market return on day t .

$$AR_{it} = R_{it} - R_{mt}$$

Market Model/Risk Adjusted Returns

Model: This model accurately captures the impact of an event because it eliminates the piece of the return generated by the variation in the market return. As a result, the variation in AR is minimized, and the effect of the occurrence can be accurately estimated. Therefore, the market model is an improved version of the constant mean return model. The security return is compared to the market return by regressing the security return against the reference market index over the entire estimation period. The result of the regression of the R_{it} on the reference market index (R_{mt}) is the result of the calculation of the slope coefficient β_i . The below mentioned equation is employed to obtain the expected return, wherein R_{it} pertains to return on stock (i on day t); R_{mt} refers to market return on day t ; α_i represents the intercept, which is the return which is not dependent on market; β_i signifies the sensitivity of stock to market (the systematic risk of stock); and ϵ_{it} refers to the error term, which is an inexplicable part of the return as a result of some company specific factors that are not evidenced in the market return. In other words, this is considered an unsystematic risk linked to the stock.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

Then the following mathematical equation is used to calculate the abnormal return using the market model.

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

We have used the market model for the computation of the normal return or expected return, which is suggested by Brown and Warner (1980,1985) as most appropriate for a variety of studies. This model has been recommended by Brenner (1977) and Dyckman et al. (1984) as the most straightforward and effective of the three models.

Fama-French three factor model: This model enlarges the scope of CAPM developed by Sharpe (1964) and Lintner (1965), by adding two more factors, namely size and value, to market risk. These three factors are used in this model to calculate the expected return of a portfolio of stocks. According to Fama and French (1992), the yield on value stocks is higher than growth stocks. Similarly, the return on small-cap stocks is higher than that on large cap stocks. The price to book ratio is high for value stocks and low for growth stocks. The sensitivity of a group of stocks to the following three factors determines the expected return of that portfolio.

- The difference between market return and risk free rate
- The difference between yield on small cap and large cap stocks portfolio
- The difference between yield on value stocks and growth stocks portfolio

The following equation is used to compute expected return (ER) wherein $E(R_i)$ represents ER of stock i ; R_f represents

the risk free rate; R_m represents market return; β represents the coefficient; $(R_m - R_f)$ represent risk premium; SMB (Small Minus Big) refers to the difference in yield on small cap companies over large cap companies, HML (High Minus Low) means the difference in yield of value stocks and growth stocks and ϵ_i represents random error.

$$E(R_i) = R_f + \beta_1 (R_m - R_f) + \beta_2 (SMB) + \beta_3 (HML) + \epsilon_i$$

3.2.6 Computation of Abnormal return/ Cumulative Abnormal return

As discussed in the above mentioned models, various mathematical formulas are used to calculate the ER and AR. Then the AR is aggregated across the time series to obtain the cumulative abnormal return (CAR). CAR is required to assess the aggregate outcome of an incident at a single firm across the event window. The CAR is calculated using the following mathematical equation:

Cumulative average abnormal return

$$CAR(t1t2) = \sum_{t=t1}^{t2} AR_{it}$$

(CAAR) is the average of the CAR of a particular stock for the event period. This parameter is used to assess the average impact of an event on all the sample stocks over the defined event window.

3.2.7 Significance test of the abnormal

$$CAAR_{t1t2} = \frac{1}{N} \times \sum_{t=t1}^{t2} CAR_{t1t2}$$

returns

Having obtained the CAAR, we conducted

the significance test to verify if the AR is not equal to zero.

3.3 Data collection

The daily stock return data of 28 defence firms listed in multiple exchanges (mentioned in the sample selection paragraph) from 1 March 2021 to 4 March 2022 have been collected. The percentage growth in share price on t day over t-1 day is computed to get the stock return. The information has been gathered from the websites listed below.

<https://in.investing.com/equities> <https://www.moneycontrol.com/stocks> <https://finance.yahoo.com/> <https://www.nseindia.com/> <https://web.iima.ac.in/> <https://www.bseindia.com/markets/equity/>

<https://www.nasdaq.com/market-activity/quotes/historical> https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html <https://www.bloomberg.com/>

3.4 Data analysis

We have determined the CAAR for the sample stocks inside the event window using the event study approach. The CAAR has been obtained with the help of the event study command in STATA statistical software. We have adopted the market model and the Fama & French three-factor model to compute the normal return (NR). The stock return during the 180-day estimation window from 1 May 2021 to 14 January, 2022 has been used to calculate the NR. Having computed the NR, we evaluated the difference between the actual return and NR during the 11 trading day event window from

16 February 2022 to 3 March 2022 to arrive at the abnormal return (AR). Then the ARs of each sample stock have been added across the event window, and the mean of the cumulative AR has been computed to obtain CAAR. The CAAR of each stock and the group of stocks and its associated p-value are mentioned in Table no.3. Lastly, the p- value has been used to test the hypothesis.

4.1 Results and discussions

We found that the CAAR for all 10 companies in Group A is positive and statistically significant, which demonstrates that the valuation of arms manufacturers in the United States of America has increased substantially during the event window. It also validates the assumption that as the requirement for arms and ammunition surged worldwide, especially in East European countries bordering Russia, these companies were expected to register higher income and profit, leading to appreciation in their security return. The p-value of nine stocks is less than 0.01 and that of one stock is less than 0.05. The CAAR of the group is 16.38% (market model) and 17.84% (Fama & French three-factor models), and the p-value of both is less than 0.01. As the p-value is less than 0.01, the test result is statistically significant, leading to the rejection of null hypothesis. The outcome of this study is endorsed by previous studies done by Bloom (2022) & Joshi et al. (2023). The test results of both models are almost similar. The CAAR output of the Fama & French model is marginally higher than that of market model and the p-value of all ten stocks is less than 0.01.

Out of nine European stocks and one Israeli stock, the CAAR for eight stocks is statistically significant. The p value of seven stocks is less than 0.01 and that of one stock is less than 0.05. The CAAR of the group is 27.55% (market model) and 28.23% (Fama & French three factor models) and the p-value of both tests is less than 0.01. The results substantiate that the defence firms have been positively affected by the event. Though the test result at the group level for European stocks is better than that of US stocks, the CAAR for individual stocks is better in the US. The results suggest that the impact of the war is more evenly distributed across the defence industry in the US than in Europe. The results authenticate the assumption that rising defence budgets and military expenditures across Europe as evidenced by the report of Maulny (2023) & Melville et al.(2023) would increase the market value of arms manufacturers. The results of both model are similar.

With respect to Indian defence companies, the CAAR of three stocks is positive and five stocks is negative as per the market model; six are positive and two are negative as per Fama & French three-factor models. The CAAR of none of the stocks is statistically significant as per the market model and the CAAR of only one company is statistically significant as per Fama & French three-factor models. The CAAR of the group is -1.03% (Market model) and 3.68% (Fama & French three-factor models) and the p value of both test is higher than 0.05. The result for the Indian stocks could be attributed to the fact that the Indian defence manufacturing industry is in a cradle stage and will take more time to compete with its US and European counterparts.

The portfolio abnormal return could have been used to determine the impact better than individual stocks. But there is

no portfolio available for defence firms separately. Therefore, we used individual stocks for an evaluation of the impact.

Table 3. Event study with common event date: 24 February 2022, under the Normality assumption

| Defence companies | Market Model (Standard t-test) | | Fama & French 3 factor Model | |
|--|------------------------------------|---------|---------------------------------|---------|
| | CAAR[-5,5] | P value | CAAR[-5,5] | P value |
| (A) United States of America | | | | |
| Lockheed Martin Corp. | 17.95%*** | 0.0000 | 18.50%*** | 0.0000 |
| Raytheon Technologies | 8.55%** | 0.0175 | 11.00%*** | 0.0005 |
| Northrop Grumman Corp | 16.67%*** | 0.0000 | 18.18%*** | 0.0000 |
| General Dynamics Corp. | 13.03%*** | 0.0000 | 14.64%*** | 0.0000 |
| L3Harris Technologies | 18.11%*** | 0.0000 | 18.85%*** | 0.0000 |
| Huntington Ingalls Industries(HII) | 18.56%*** | 0.0000 | 21.38%*** | 0.0000 |
| Leidos | 24.22%*** | 0.0000 | 25.77%*** | 0.0000 |
| Booz Allen HamiltonCACI International | 13.12%*** | 0.0037 | 13.70%*** | 0.0016 |
| Kellogg Brown & Root (KBR) | 16.05%*** | 0.0000 | 16.80%*** | 0.0000 |
| CAAR group 1 (10 securities) | 16.19%*** | 0.0005 | 18.38%*** | 0.0000 |
| | 16.38%*** | 0.0000 | 17.84%*** | 0.0000 |
| (B) Europe | | | | |
| BAE SystemsLeonardo | 14.22%*** | 0.0000 | 14.47%*** | 0.0000 |
| Thales | 24.08%*** | 0.0029 | 23.06%*** | 0.0027 |
| Dassault Aviation Group | 28.13%*** | 0.0000 | 29.92%*** | 0.0000 |
| Elbit Systems Rheinmetall | 12.94%** | 0.0125 | 15.00%*** | 0.0017 |
| Saab | 18.45%*** | 0.0009 | 19.27%*** | 0.0003 |
| Babcock International Group | 51.15%*** | 0.0000 | 52.64%*** | 0.0000 |
| Hensoldt | 32.25%*** | 0.0000 | 32.76%*** | 0.0000 |
| Aselsan | 5.93% | 0.4444 | 6.97% | 0.3486 |
| | 67.91%*** | 0.0000 | 67.83%*** | 0.0000 |
| CAAR group 1 (10 securities) | 5.75% | 0.5001 | 6.04% | 0.4615 |
| | 27.55%*** | 0.0000 | 28.23%*** | 0.0000 |

| (C) India | | | | |
|------------------------------------|--------|--------|---------|--------|
| Bharat Electronics Ltd | 10.32% | 0.1624 | 11.53%* | 0.0935 |
| Hindustan Aeronautics Ltd | 4.48% | 0.4715 | 6.06% | 0.3004 |
| Mazagon Dock Shipbuilders | -1.77% | 0.8449 | 5.00% | 0.5289 |
| Bharat Dynamics | 2.40% | 0.7290 | 5.25% | 0.4106 |
| Cochin shipyard Astra | -5.77% | 0.1778 | -2.50% | 0.5108 |
| MicrowaveZen technologies | -5.94% | 0.5856 | 1.98% | 0.8400 |
| MTAR Tech | -9.17% | 0.5102 | -3.54% | 0.7860 |
| | -4.01% | 0.7207 | 4.64% | 0.6403 |
| CAAR group 1 (8 securities) | -1.03% | 0.7520 | 3.68% | 0.2154 |

*** p-value < .01, ** p-value <.05, * p-value <.1

4.2 Econometric Issues in Event Study

Now that we have finished the parametrical t-test, the next thing we need to do is figure out the econometric problems with the model and use an alternative test to confirm the results. Autocorrelation is observed across time series and cross-section data in event study models. This implies that ARs are neither independent nor random within an event period or across companies. Furthermore, there is heteroscedasticity in the ARs, meaning that the variance is larger during the event period than in the pre and post-event periods. Brown and Warner (1985) concluded that cross-sectional dependency would lead to underestimation of variance and over rejection of the null hypothesis. Bernard (1987) and Patell (1976) observed that heteroscedasticity and cross correlation issues required to be resolved to get an unbiased result. The standard t-test, which is the patriarch of all parametric tests, is overly responsive to cross-sectional correlation, event-induced volatility, and deviation from normality. Patell (1976) used the standardized abnormal return (SAR) to eliminate the deficiencies of the standard t-test. Boehmer et al.(1991)

refined it more to take care of the problem of event induced volatility and serial correlation. However, the problem of cross-sectional correlation still remained unsolved. Kolari and Pynnönen (2010) modified the BMP test to resolve the cross-sectional correlation.

Kolari and Pynnönen (2010) observed that event study models are most efficient when the abnormal return (AR) is free from cross-sectional correlation. This holds true when the event date is not common for all the firms. Brown and Warner (1980,1985) hold that even if the event date is same for all the firms, if the firms are not selected from one segment, the market model brings down the cross correlations of residuals (abnormal returns) significantly. But in our study, there is a single event date, and the sample firms have been selected from one industry. Therefore, we removed the impact of cross-sectional correlation in our study. Kolari and Pynnönen (2010) observed that little cross-sectional correlation could result in underestimation of standard error and over estimation of t-statistics, which in turn lead to over-rejection of the null hypothesis that the event does not have any impact or AR is equal to zero. Though the portfolio method of Jaffe (1974) is not

the most efficient, it does a good job of solving the contemporaneous correlation problem to a large extent.

Corrado (1989) introduced a non-parametric rank test to measure abnormal returns which was further modified by Corrado and Zivney (1992). This test was able to assess the abnormal returns in a single day. Kolari and Pynnonen (2011) designed generalized rank tests, generally known as GRANK-Z and GRANK-T tests, extending the scope of the test to evaluate abnormal returns over multiple days. They proposed that non-parametric tests were more efficient and powerful than their parametric counterparts. They also prescribed that the GRANK test was resistant to serial correlation and event-induced volatility. Additionally, it settles the cross-correlation problem to a great extent. It does not rely on the normal distribution characteristics and therefore, is somewhat independent of distribution properties. We performed test suggested by Kolari and Pynnönen (2010), keeping in mind the benefits of nonparametric testing. The test's outcome was discovered to be precisely comparable to the conventional t-test. The diagnostic test validates that the model selected for the study is appropriately specified and fits the set of data.

5. Limitation of the study and scope of further research

The arms race between Ukraine and its allies on the one hand and China, North Korea and Russia on the other hand has been continuing and has expectedly benefited arms producers across the globe. Therefore, the scope of the study could be widened to include Chinese defence firms that are supplying arms to Russia. But

the Chinese firms could not be covered in the study as all eight firms appearing in the SIPRI top 100 arms-producing and military services companies list have less than 50 percent of arms revenue to total revenue. The impact of war on the valuation of such firms could not be properly assessed from the stock price changes, as the price change could be on account of some positive developments with respect to other products produced by these firms. We have chosen 11 day event period which is very short event window to capture the full impact of war which is still continuing. A longer event window could be considered for the study.

Conclusion

The prime intent of the paper is to assess the effect of the Ukraine war on the global defence industry. The aggressive posture of Russia had raised a red flag for all the nations that are militarily weak and sharing border with a hostile neighbor. These countries were forced to increase their arms expenditures and get them aligned with a military alliance to get protection against any such attack. This paper sought to assess the impact of the war on the valuation of defence industry across the world. Event study methodology was adopted to assess the stock price movement and abnormal returns accrued during the event window. The research result is inconformity with the assumption that war has forced European nations to increase their military spending, and arms manufacturers across the world have gained owing to this development. Findings from previous studies have also supported this. This paper complements the existing event study literature on events with global implications.

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Artificial Intelligence and Machine Learning in Customer Satisfaction: A Study of Banks using the UTAUT Model

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ABSTRACT

Artificial Intelligence (AI) and Machine Learning (ML) are revolutionizing the financial sector by offering solutions that cater to evolving customer expectations. These technologies provide more streamlined, innovative, and secure methods for customers to manage and utilize their finances. Beyond consumer interactions, AI enhances financial processes ranging from investment decisions to algorithmic trading and advanced risk management. Consequently, AI-driven automation is poised to be a transformative force, broadening financial accessibility and reshaping conventional banking norms. This research elucidates the impact of AI and ML integration on customer satisfaction within the financial services industry. To gauge customer sentiment, a structured survey was conducted, garnering 138 responses from diverse bank clientele in Goa. Leveraging the UTAUT model, a PLS-SEM analytical framework was employed to discern the interplay between various determinants. The empirical results underscore a pronounced preference among customers for AI/ML-based banking features, reinforcing the notion that AI/ML implementations amplify customer satisfaction in banking operations.

Key Words: Artificial Intelligence, Machine Learning, Customer Satisfaction, UTAUT Model, Banking.

1. INTRODUCTION

In contemporary times, the deployment of Artificial Intelligence (AI) in various sectors represents a pinnacle of technological evolution, a journey which has its roots in the ancient civilizations

where the concept of machines with human-like intelligence was first envisioned (McCarthy et al., 1955). Initially emerging as rudimentary logic machines capable of basic calculations, the progress and definition of AI have

continuously evolved over the years. Currently, AI stands as a potent tool with widespread utilization in the financial services sector, significantly influencing operations and customer experiences (Lu et al., 2018). For decades, banks have been at the forefront of adopting technological advancements to facilitate both front-end and back-end operations. The integration of AI and Machine Learning (ML) techniques in banking services is no exception, providing multifaceted benefits that exceed common expectations. In the current global climate, digital transformation has become a critical initiative. The modernization of legacy business frameworks and policies, without causing disruptions in existing structures, remains a significant challenge. The incorporation of AI and ML techniques can serve as a dynamic solution, fostering seamless collaborations with other FinTech services (Cao, 2020).

The rapid developments in AI have notably impacted the customer service industry, offering the ability to efficiently manage a plethora of tasks and promptly respond to automated inquiries. The deployment of AI in customer service platforms ensures enhanced precision and speed in generating responses, a feat that surpasses human capabilities (Roslan et al., 2023). The integration of sophisticated technologies like natural language processing has blurred the lines between voice bots and human customer service representatives, making it increasingly difficult for consumers to distinguish between the two. By enhancing various business aspects such as online customer experience, brand

reputation, and revenue streams, AI-powered services stand ready to redefine the industry standard (Fountaine et al., 2019). Leveraging intelligence garnered from previous interactions, AI can offer personalized solutions that anticipate individual customer needs, facilitating more intuitive and cost-effective self-service interfaces. In the banking sector, the implications of AI and ML are vast, promising to transform operational dynamics and facilitate richer and more rewarding experiences for both banks and clients. Experts anticipate these emerging technologies to have significant impacts, streamlining processes and enhancing efficiency in various applications such as fraud detection, loan approvals, and market trend analysis. Furthermore, AI and ML aid in data collection and analysis, high-frequency trading, compliance monitoring, and even offer personalized financial services through robo-advisors (Arner et al., 2016).

Considering the burgeoning fintech sector and rapid technological advancements, the integration of AI and ML into modern banking was inevitable, forever altering the sector's landscape. These technologies facilitate predictive data analytics, enabling banks and financial institutions to offer improved services backed by actionable insights derived from customer behavior patterns and spending habits (Kankanhalli et al., 2016). The adoption of AI technologies is poised to offer a competitive edge, promising swift, secure, and personalized banking experiences for customers. Also, fintech diffusion and financial inclusion were found to have long-run effects on GDP per capita over

and above their short-run impact and the effects of investment in fixed and human capital (Kanga et al, 2022).

In the current study, we describe the influence of AI and ML on customer satisfaction within the financial service sectors, particularly in banks. Utilizing a survey research design, data was collected from 138 bank customers across various locations in Goa through structured questionnaires. Applying the UTAUT model within a PLS-SEM framework, this study scrutinizes the relationships between several dependent and independent variables. The initial findings indicate a positive reception of AI/ML features introduced by banks, showcasing customer satisfaction with modernized banking operations.

2. LITERATURE REVIEW

The incorporation of Artificial Intelligence (AI) in customer service sectors is continually reshaping the industry. The reviewed literature highlights the progression of AI applications, emphasizing their roles in enhancing customer experiences, problem-solving abilities, and task complexities. It also sheds light on the increasing reliance on AI technology in the service industry and the potential implications on human labor. Xu et al. (2020) investigated the influence of task complexity on the use of AI customer service applications, specifically within the context of banking services. They noted that customers were more likely to rely on AI for low-complexity tasks, wherein AI displayed superior problem-solving abilities compared to human service providers. Conversely, for high-

complexity tasks, customers preferred human services, viewing them as superior to AI applications. The study suggests that banks could potentially engage more effectively with customers by leveraging the unique features of AI customer service (Xu et al., 2020).

Several studies have demonstrated the significant impact of AI on enhancing customer experience across various industries. Daqar and Smoudy (2019) reported a significant positive correlation between AI and customer experience, wherein AI was shown to predict 22.9% of the variance in customer service. The study emphasized the importance of implementing AI in call centers and after-sale support services to reduce customer waiting time. Furthermore, Gao et al. (2022) found that AI technology stimuli, including usability and passion, positively influenced smart customer experience, enhancing word-of-mouth intentions among consumers (Gao et al.; Lan, 2022).

Huang and Rust (2018) highlighted the evolutionary trajectory of AI in performing various tasks in the service sector. AI technologies are progressively developing to undertake tasks requiring higher levels of intelligence, moving from mechanical to analytical and eventually intuitive and empathetic tasks. This progression suggests a potential threat to human employment, with AI possibly replacing human roles completely as it acquires the capacity to perform all job tasks (Huang et al.; R., 2018). Hentzen et al. (2021) offered a systematic literature review on AI applications in customer-facing

financial services, suggesting a need for further research to explore overarching theories and empirical evidence regarding consumers' financial behaviors and the influence of regulatory, ethical, and policy aspects within the financial service context (Hentzen et al.; Erol, 2021)

Goodell et al. (2021) investigated AI and ML trends in finance research, utilizing co-occurrence and confluence analyses. Their study delved into 283 articles spanning from 1986 to 2021, employing bibliometric techniques such as co-citation analysis, bibliographic coupling, and co-word analysis. Similarly, Arjun et al. (2021) studied the impact of adopting intelligent Decision Support Systems (DSS) on the banking sector in emerging markets. Owing to pandemic restrictions, primary data was sourced virtually via email, WhatsApp, and telephony from bank managers. The Document Term Matrix (DTM) method was employed to identify key themes from the employee feedback. Their findings revealed that decisions like opening or closing retail bank branches can lead to a "learning spillover" effect, influencing digital channel transactions. They also highlighted that institutional factors significantly influence the adoption of information communication technologies. In certain scenarios, this could even adversely affect employee performance in Indian banks.

Chong et al. (2021) explored the potential of AI chatbots as service agents in retailing and consumer services. They pinpointed challenges to be tackled and proposed a three-tier classification for AI chatbot design, comprising anthropomorphic

role, appearance, and interactivity. Their findings indicated that incorporating AI into frontline teams boosts operational efficiency, leading to heightened customer satisfaction and trust. This stems from AI-enhanced teams displaying improved decision-making, responsiveness, and reliability, which collectively foster value creation. In a similar domain, Ameen et al. (2021) probed into the transformative potential of integrating AI into shopping experiences. They conducted an online survey targeting users of an AI-enabled service by a beauty brand, garnering 434 responses. Their research illustrated the pivotal role of trust in linking AI-enabled customer experiences to factors like personalization, perceived sacrifice, and service quality. Moore et al. (2022) delved deeper into the nuanced social dynamics introduced by consumers interacting with AI digital avatars in physical shopping settings. Through interviews with various stakeholders — from store staff to top-tier developers and executives — and consistent customer observations over a year, they discerned an intriguing phenomenon. The introduction of AI digital humans in stores can sometimes stir social tensions. However, when integrated effectively, these digital entities can elevate the overall in-store ambiance, becoming central to customer interactions.

Raman Tiwari et al. (2020) explored the potential of artificial intelligence techniques, specifically artificial neural networks (ANN) and fuzzy logic, in predicting stock market movements, sales forecasting, and market segmentation. Their study centered around stocks listed on the Bombay Stock Exchange (BSE)

between 07-02-2012 and 17-02-2016. Utilizing neural networks and fuzzy logic, they tackled two prediction problems: stock market price indices and sales forecasts, and one classification issue concerning market segmentation. While both methodologies were effective, neural networks outperformed in prediction accuracy, as evidenced by a lower mean square error. For the market segmentation task, the Self-Organizing Map (SOM) emerged as a potent clustering tool, offering clear and interpretable results. Bhatia et al. (2020) delved into the evolving landscape of Robo-advisory services in India, with a particular focus on their capability to counteract the behavioral biases of retail investors. By engaging with experts across various domains, including IT, Banking and Financial Services, Finance Technology, and Non-Banking Finance Companies, the study painted a detailed picture of Robo-advisory's potential in bias mitigation. The overarching finding highlighted a concerted effort towards boosting investor awareness, primarily through education and trust-building initiatives.

Di Vaio and colleagues (2020) delved into the literature concerning AI's role in forging sustainable business models (SBMs). Their analysis spanned 73 English-language publications from 1990 to 2019. The results emphasized that integrating AI into SBMs brings multifaceted challenges, encompassing social, ethical, economic, and legal dimensions. The study argues that AI can be a catalyst for achieving Sustainable Development Goals (SDGs), pinpointing the cultural shift companies need to

undertake for sustainability. Therefore, businesses, researchers, and policymakers should prioritize advancing AI's role in SBMs. S.B. Jabeur (2021) assessed the features highlighted by the Cat Boost model and juxtaposed this with eight benchmark machine learning models at intervals of one to three years before a business failure. Jabeur's model outstripped its peers in classification performance. Using partial dependence plots, he identified crucial features predicting corporate collapses. The study's implications are manifold for managers. By adopting this model, banks and investors can detect financial turmoil earlier. Concentrating on the four key scorecard ratios recognized in the years leading to failure facilitates preventive measures, enhancing intra-corporate synergy and oversight. C. Prentice and team (2020) probed the interconnectedness between AI service markers, perceived service quality, AI satisfaction, and customer engagement. Their data was sourced from patrons of Australian hotels that employed AI tools over the past year. The findings validate the proposed relationships, underscoring the paramount importance of accurate, up-to-date information in shaping customer decisions. A service showcasing assurance and dependability elicits positive customer feedback. Customers view AI primarily as an information provider, with minimal concern for its operational intricacies.

Eliasy & Przychodzen (2020) examined the potential of integrating Artificial Intelligence (AI) into the Capital Asset Pricing Model (CAPM) to enhance the accuracy of expected return estimations. By analyzing the adjusted closing stock

prices of 10 leading tech companies from January 2013 to January 2019, the study aimed to predict returns for the subsequent year. They utilized a year's data to compute the traditional CAPM value and also trained Recurrent Neural Networks (RNN), specifically using a Long Short-Term Memory (LSTM) architecture with dropout layers, for the same purpose. Remarkably, the AI-based CAPM outperformed its traditional counterpart by an average accuracy of 18%. Additionally, AI-driven returns showcased the least variance, translating to a 60% higher accuracy in predictions. Applying this AI technique could enhance the Weighted Average Cost of Capital (WACC) calculations' precision. Pavel Leonov et al. (2020) devised an analytical model aimed at optimizing the budget for financial monitoring by ensuring ATMs have adequate banknotes while minimizing collection efforts. Using data from the Database Management System (DBMS) spanning February to September 2018, the model achieved an impressive accuracy of 0.91. After assessing the existing ATM servicing algorithms and examining ATM congestion and collection data, the researchers identified a need to revise the ATM cassette filling algorithm. Their findings can be instrumental in optimizing ATM load amounts, thereby leading to significant cost savings for financial institutions. Neha Soni and team (2020) delved into the extensive implications of AI, shedding light on both its positive and negative impacts across governments, businesses, communities, and individuals. The study also probed the factors propelling AI advancements. They evaluated two compilations of

the top 100 AI startups to understand entrepreneurial undertakings in AI. The research offers enhanced insights into AI's innovations and its profound influence on business and society. With a surging interest in AI, its growth potential seems boundless. Investments in AI have seen a consistent rise over the past six years, and this trend is expected to persist. The industries poised to offer abundant opportunities due to AI advancements include business intelligence, healthcare, core AI, cybersecurity, and marketing & sales. Some notable benefits of harnessing AI through cognitive technologies, automation, and data analysis include heightened productivity, cost and time efficiency, accelerated business decision-making, reduced human errors, precise prediction of customer preferences, and optimized sales.

3. RESEARCH METHODOLOGY

Backed by the literature discussed above, the paper aims at identifying customer satisfaction on AI/MI based services provided by banks in the state of Goa. The UTAUT Scale (Venkateshet al., 2003) was adapted for the research study and applied the variables to identify satisfaction with AI/MI-backed services in banks.

3.1 UTAUT Model

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a prominent model rooted in psychology and sociology that investigates user acceptance of information technology. Developed by refining previous technology acceptance models, UTAUT strives to elucidate the intention behind individuals' use of information systems

and their subsequent behavior. The theory segments into four primary constructs that critically influence behavioral intention and actual system use: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Condition.

Additionally, UTAUT identifies four essential moderators that further refine its predictions: gender, age, experience, and voluntariness of use. The UTAUT can be seen in Figure 1 below.

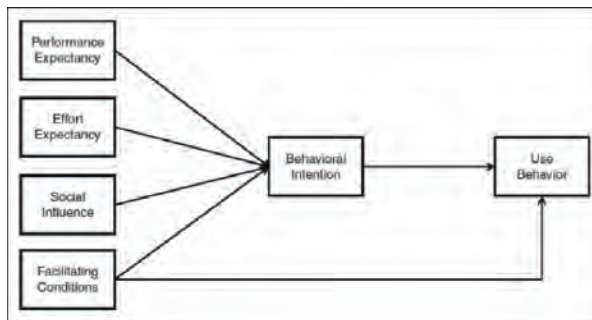


Figure 1: UTAUT model

The Independent variables in this study are performance expectations (Performance Expectancy), business expectations (Effort Expectancy), influence of social conditions (Social Influence), facilitation conditions (Facilitating Conditions) and interest in utilization (Behavioral Intention) and the dependent variable is User Behavior.

3.2 Hypothesis

Performance Expectancy, which refers to the degree to which an individual believes that using a system will help in attaining gains in job performance, has been consistently linked to behavioral intention in technology adoption studies (Venkatesh et al., 2003). In an extended analysis, Zhou (2013) emphasized the substantial role of performance expectancy (self-efficacy), illustrating that users are more inclined to utilize mobile banking services when they anticipate improved performance. Furthermore, Al-Gahtani (2016) showed that in the context of e-learning,

performance expectancy significantly predicts behavioral intention, thus suggesting that when individuals perceive a technology to be beneficial in enhancing their performance, they are more likely to intend to use it. Consequently, it can be hypothesized that performance expectancy has a significant and positive effect on behavioral intention.

H1: Performance Expectancy has significant and positive effect on Behavioral Intension.

Social influence, denoting the extent to which individuals perceive that important others believe they should use a new system, has been highlighted as a critical determinant of behavioral intention in the Unified Theory of Acceptance and Use of Technology (UTAUT) model. A seminal study by Venkatesh and Davis (2000) illustrated that social influence mechanisms, including subjective norms and image, significantly influenced

the intention to use technology. Lewis et al. (2003) further reinforced this, demonstrating that knowledge workers' beliefs about IT usage were considerably affected by social influence. Moreover, Schepers & Wetzels (2007) conducted a meta-analysis, confirming the positive moderation effects of social influence on technology acceptance. Therefore, it is reasonable to hypothesize that social influence significantly and positively affects behavioral intention.

H2: Social Influence has significant and positive effect on Behavioral Intension.

Effort expectancy, denoting the perceived ease of use of the system, has been recognized as a vital factor influencing behavioral intention (Venkatesh et al., 2012). In a meta-analysis conducted by King & He (2006), the authors substantiated that effort expectancy, among other factors, significantly affects the intention to adopt technology. Moreover, Teo (2011) observed in his research that teachers' intentions to use technology were positively associated with effort expectancy, suggesting that perceived ease of use encourages technology adoption. Hence, based on these studies, it can be hypothesized that effort expectancy significantly and positively affects behavioral intention.

H3: Effort Expectancy has significant and positive effect on Behavioral Intension.

Facilitating conditions, representing the degree to which an individual believes an organizational and technical infrastructure exists to support the system's use, have been noted to substantially influence user

behavior (Venkatesh et al., 2016). Zhou (2012) found that initial trust in mobile banking was substantially influenced by facilitating conditions, pointing to the necessity of proper infrastructure and support. Further, Brown et al. (2008) identified that facilitating conditions, as a direct determinant, significantly influenced user behavior in technology adoption scenarios. Thus, based on the literature, it can be hypothesized that facilitating conditions significantly and positively affect user behavior.

H4: Facility condition has significant and positive effect on User Behavior.

Technology acceptance literature has well-documented the link between behavioral intention and user behavior. In an evolved version of the technology acceptance model, Venkatesh & Bala (2008) identified that behavioral intention serves as a critical precursor to actual system use, thus directly influencing user behavior. This notion is supported by earlier works by Taylor & Todd (1995), where the authors asserted that intention to use significantly predicts actual usage behavior. Furthermore, a study by Bhattacharjee (2001) used an expectation-confirmation model to confirm the significant and positive relationship between behavioral intention and user behavior. Therefore, drawing from these studies, it can be hypothesized that behavioral intention significantly and positively affects user behavior.

H5: Behavioral intension has significant and positive effect on User Behavior.

3.3 Data Source

For the study's purpose, data was collected from primary sources by distributing questionnaires to Bank customers. A total of 138 responses were obtained. The survey was carried out using a structured questionnaire. Each variable from the UTAUT model had a set of 3 to 5 questions framed to capture their banking experience in the AI/ML dimension.

3.4 Statistical Tools and Techniques Used

The Partial Least Square-Structural Equation Modelling (PLS-SEM) is a comprehensive approach utilized to delineate the intricate relationships between various variables. Beginning with the Unified Theory of Acceptance and Use of Technology (UTAUT) as our foundational technology acceptance model, our primary aim is to validate the reliability and aptness of our chosen model. We employ the partial least squares (PLS) method, facilitated by the SmartPLS software. This technique, grounded in structural models, is prevalently adopted within social sciences for its robustness. Subsequently, the envisaged structural model undergoes rigorous evaluation. One of the main strengths of PLS-SEM is its capability to concurrently analyze multifaceted models with numerous constructs,

indicator variables, and structural paths. This provides a comprehensive landscape for researchers to understand and model intricate cause- and-effect associations. In these models, latent variables (depicted graphically as circles) represent unobservable phenomena like perceptions, attitudes, and intentions that aren't directly measurable. Conversely, observed variables, which might include questionnaire responses or secondary data (represented graphically as rectangles), serve as proxies for these latent variables in a statistical model. The PLS-SEM technique estimates the relationship dynamics between latent variables, gauging their intensity. It also evaluates how adeptly the model accounts for and elucidates the target constructs under investigation.

4. ANALYSIS AND FINDINGS

The data collected was coded and run on the PLS-SEM software to generate the measurement model. The measurement model was evaluated for convergent and discriminant validity. Table 1 below provides test results for convergent validity using Cronbach's alpha, Dijkstra and Hensler's rho ratio (Dijkstra and Hensler, 2015), composite reliability and Average Variance Extracted (AVE). All the measures of convergent validity are well above the minimum required to establish the validity.

Table 1. Tests of convergent validity

| | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|----|------------------|-------|-----------------------|----------------------------------|
| BI | 0.900 | 0.900 | 0.930 | 0.770 |
| EE | 1.000 | 1.000 | 1.000 | 1.000 |
| FC | 0.814 | 0.836 | 0.890 | 0.729 |

| | | | | |
|----|-------|-------|-------|-------|
| PE | 0.700 | 0.854 | 0.831 | 0.640 |
| SI | 0.922 | 0.922 | 0.951 | 0.866 |
| UB | 1.000 | 1.000 | 1.000 | 1.000 |

Fornell and Larcker criterion (Fornell and Larcker, 1981) and Heterotrait-Monotrait (HTMT) ratio are used to establish

Table 2. Fornell-Larcker Criterion

| | BI | EE | FC | PE | SI | UB |
|----|-------|-------|-------|-------|-------|-------|
| BI | 0.877 | | | | | |
| EE | 0.577 | 1.000 | | | | |
| FC | 0.661 | 0.627 | 0.854 | | | |
| PE | 0.750 | 0.583 | 0.620 | 0.800 | | |
| SI | 0.694 | 0.623 | 0.767 | 0.661 | 0.931 | |
| UB | 0.687 | 0.411 | 0.520 | 0.543 | 0.510 | 1.000 |

The Fornell – Larcker criterion results show that the square root of each construct's AVE is higher than its

discriminant validity. Tables 2 and 3, respectively, provide the results of these tests.

Table 3. Heterotrait-Monotrait Ratio (HTMT)

| | BI | EE | FC | PE | SI | UB |
|----|-------|-------|-------|-------|-------|----|
| BI | | | | | | |
| EE | 0.608 | | | | | |
| FC | 0.769 | 0.694 | | | | |
| PE | 0.891 | 0.681 | 0.805 | | | |
| SI | 0.760 | 0.647 | 0.873 | 0.755 | | |
| UB | 0.723 | 0.411 | 0.570 | 0.584 | 0.525 | |

The Heterotrait-Monotrait Ratio (HTMT) is shown in table 3. The HTMT ratio of correlations is well below the threshold of

0.90 as proposed by Gold, et al. (2001), thus additionally confirming discriminant validity of constructs.

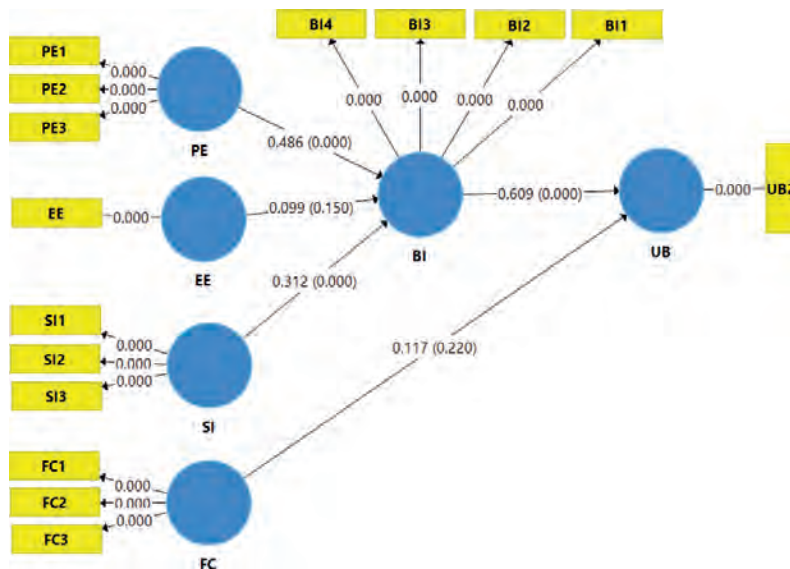
Table 4 Model Fit Criteria

| | Saturated Model | Estimated Model |
|------------|-----------------|-----------------|
| SRMR | 0.067 | 0.068 |
| d_ ULS | 0.533 | 0.559 |
| d_ G | 0.554 | 0.561 |
| Chi-Square | 381.166 | 386.819 |
| NFI | 0.791 | 0.788 |

The model fit is evaluated using standardized root mean square residual (SRMR) and normed fit index (NFI). If SRMR value of the model is ≤ 0.08 , then the model is said to have a good fit (Hu and Bentler, 1998). The NFI is defined as 1 minus the χ^2 value of the proposed

model divided by the χ^2 values of the null model. Consequently, the NFI results in values between 0 and 1. The closer the NFI to 1, the better the fit. NFI of 0.79 indicates a decent model fit. The results of path analysis of PLS-SEM are presented in Fig. 2 below.

Fig.2 Path Coefficients of the Structural Model



The path diagram above shows β value with p-values in parenthesis. The higher

the value of β , the greater the effect of the latent construct, provided it is also statistically significant.

Table 5: Total Effect

| | β values | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (O/STDEV) | P Values |
|--------------------|----------------|-----------------|----------------------------|--------------------------|--------------|
| BI -> UB | 0.609 | 0.607 | 0.082 | 7.464 | 0.000 |
| EE -> BI | 0.099 | 0.091 | 0.069 | 1.441 | 0.150 |
| EE -> UB | 0.060 | 0.056 | 0.043 | 1.391 | 0.165 |
| FC -> UB | 0.117 | 0.121 | 0.096 | 1.227 | 0.220 |
| PE -> BI | 0.486 | 0.487 | 0.080 | 6.035 | 0.000 |
| PE -> UB | 0.296 | 0.295 | 0.062 | 4.747 | 0.000 |
| SI -> BI | 0.312 | 0.315 | 0.081 | 3.833 | 0.000 |
| SI -> UB | 0.190 | 0.192 | 0.057 | 3.340 | 0.001 |

The bootstrapping technique was employed to ascertain the significance of the β values within the path model, following the methodology of Chin, W. W. (1998). Delving into the results:

1. Performance Expectancy's Impact on Behavioral Intention: A robust, positive correlation between performance expectancy and behavioral intention is evident. With a β value of 0.486 and a p-value of 0.000, the relationship is statistically significant at a 5% confidence level. Thus, we confidently accept the null hypothesis, H1.
2. Performance Expectancy's Effect on User Behavior: Similarly, performance expectancy positively impacts user behavior. This relationship, too, is confirmed to be statistically significant at the 5% level ($\beta = 0.296$, $p=0.000$).
3. Social Influence on Behavioral Intention: Social influence exhibits a positive association with behavioral intention. This relationship holds statistical significance at the 5% level, with a β value of 0.312 and a p-value of 0.000. This result leads us to accept the null hypothesis, H2.
4. Social Influence's Correlation with User Behavior: The data reveals a significant positive correlation between social influence and user behavior, established at the 5% level ($\beta = 0.190$, $p=0.000$).
5. Effort Expectancy and Behavioral Intention: The relationship between effort expectancy and behavioral

intention is positive. However, it isn't statistically significant at the 5% level, given the β value of 0.099 and a p-value of 0.15. This outcome necessitates the rejection of the null hypothesis, H3.

6. Facilitating Conditions and User Behavior: No significant association was discerned between facilitating conditions and user behavior, leading to the rejection of the null hypothesis, H4.
7. Relationship Between Behavioral Intention and User Behavior: A compelling positive relationship exists between behavioral intention and user behavior. With a β value of 0.609 and p-value of 0.000, this association is statistically significant at a 5% confidence level. We thereby accept the null hypothesis, H5. In essence, this underscores that a customer's behavioral intention is profoundly linked to their behavior and satisfaction concerning the adoption of Artificial Intelligence and Machine Learning services provided by banks.

5. DISCUSSION

Drawing from the current findings and the established theoretical framework of UTAUT, it is evident that there is a distinct interplay of several factors governing the behavioral intentions and ultimate adoption of technology. In line with the established literature, the strong and significant positive relationship between performance expectancy (PE) and behavioral intention (BI) found in this study echoes the sentiments put forth by prior research (Venkatesh et al.,

2003; Zhou, 2013). The performance expectancy also appears to directly influence user behavior (UB), supporting the foundational concepts of the UTAUT model. Our findings concerning the role of social influence (SI) stand in agreement with previous research, illustrating a strong connection between SI and BI, and a positive effect on UB (Venkatesh & Davis, 2000; Lewis et al., 2003). This points to social factors' critical role in shaping individuals' behavioral intentions and ultimate user behavior.

Contrary to expectations based on literature (King & He, 2006; Teo, 2011), effort expectancy (EE) did not significantly influence behavioral intention, which might indicate a shift in user perceptions and the importance of perceived ease of use in technology adoption. Interestingly, facilitating conditions (FC) did not show a significant effect on user behavior (UB), a deviation from findings of earlier research (Zhou, 2012; Brown et al., 2008). This calls for a deeper investigation into the evolving role of facilitating conditions in technology adoption. Lastly, a strong positive relationship was found between behavioral intention (BI) and user behavior (UB), supporting the assertions made by previous research (Taylor & Todd, 1995; Bhattacharjee, 2001), thereby strengthening the predictive power of the UTAUT model.

6. DIRECTIONS FOR FUTURE RESEARCH

The findings from this study pave the way for several future research directions. Firstly, deeper investigations into the observed weakened influence of effort

expectancy (EE) on behavioral intention (BI) could uncover changing user dynamics and attitudes toward technology adoption. Similarly, the non-significant influence of facilitating conditions (FC) on user behavior (UB) calls for a more nuanced analysis, possibly incorporating additional factors or considering industry-specific variations to unravel the underlying dynamics. Furthermore, future research should explore the moderating effects of various demographic factors on the relationships observed in the UTAUT model, potentially offering a more segmented view of technology adoption behaviors. Lastly, incorporating additional constructs such as trust, personal innovativeness, and satisfaction could help in expanding the UTAUT model, offering a more comprehensive view of the factors influencing technology adoption and user behavior.

7. DIRECTIONS FOR PRACTICE

For practitioners in the field, the insights gleaned from this study offer several strategic directions. Firstly, efforts should be concentrated on enhancing the perceived performance gains from adopting new technology, given the strong influence of performance expectancy (PE) on behavioral intention (BI) and user behavior (UB). Simultaneously, leveraging the power of social influence through targeted marketing and peer testimonials could foster positive behavioral intentions towards technology adoption. Despite the weakened influence observed in this study, efforts to streamline and simplify the user interface cannot be understated, potentially fostering a more positive reaction from users hesitant about

adopting new technologies. Moreover, an analysis into the facilitating conditions and infrastructure needs to be carried out to ascertain the roadblocks preventing a positive influence on user behavior, followed by strategic interventions to remove these barriers. Finally, nurturing positive behavioral intentions through feedback mechanisms and user engagement strategies could pave the way for successful technology assimilation in the user community, ultimately driving up satisfaction and usage rates.

8. CONCLUSION

The successful implementation and utilization of AI/ML are crucial to the satisfaction of customers. As it was shown during this research, the adoption of Artificial Intelligence/Machine Learning at banks in Goa is not only for chatbots or customer data protection as it is in the case in other countries, but is for the convenience, accessibility, timely and effective delivery of services for customer satisfaction.

Behavioral intention is derived from several factors such as performance expectancy, Effort expectancy, social influence and facilitating conditions. The findings of this research prove that behavioral intention is significantly influenced by two variables: performance expectancy,

which refers to the degree to which users expect to use AI/ML features based on its performance, and social influence, which represents the degree to which customers perceive that the acceptance of technology is affected by people surrounding them. Since behavioral intention significantly influences user behavior, the variables of performance expectancy and social influence would, in turn, be crucial in influencing user behavior. Repeated usage of these services would then deduce into customer's satisfaction towards AI and ML.

Banking services would need to focus more on improving AI/ML-based performance expectancy of their services and develop wider acceptance of AI/ML-supported transactions to create an environment of satisfied users who would, in turn influence new users since social influence also plays a vital role in the acceptance of technological advancements.

The awareness of AI and ML in the banking sector has been made known by the media; relatively very few banks have actually begun production or even full-blown research at this stage. However, banks cannot afford to ignore AI at this stage and must formulate a strategy to deal with the opportunities it promises to their customers and to their competitors.

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From Pixels to Portals: Unleashing the Metaverse for Marketing Mastery

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Abstract:

The advent of the metaverse has opened up new opportunities for brands to engage with consumers in immersive and interactive virtual environments. This research aims to investigate the potential of the metaverse as a platform for marketing mastery, focusing on the transition from traditional pixel-based marketing to the utilization of metaverse portals. Through in-depth interviews with marketing professionals and observations of marketing activities within the metaverse, this qualitative research study employs a phenomenological approach and case study methodology to gain rich insights into the experiences, perspectives, and practises of brands navigating this new digital landscape. The utilisation of triangulation, which involves the integration of diverse data sources and methods, serves to enhance the robustness of research outcomes. The findings of this study contribute to a deeper understanding of how brands can embrace the metaverse and harness its potential to revolutionize marketing strategies, ultimately leading to enhanced consumer engagement and brand loyalty in the digital era.

Keywords: Metaverse; Brand engagement; Immersive marketing; Consumer experience; Digital landscape; Brand loyalty; Qualitative Research Methods

1. Introduction

The advent of the metaverse, a collective virtual shared space, has opened up new frontiers in the realm of digital experiences (Castronova, 2005). Offering immersive and interactive environments where users can engage with each other and with virtual content (KZero Worldwide, 2020). This emerging digital landscape presents unprecedented opportunities for brands to connect with consumers in innovative ways and revolutionize their marketing strategies. The metaverse is an evolving concept, and the market is still in its infancy. However, empirical data demonstrates that the global market for virtual and augmented reality will grow at a compound annual growth rate of 42.2% between 2021 and 2028 (Grand View Research, 2023) indicating that these technologies have a substantial growth potential. Traditional pixel-based marketing approaches, while effective in the past, are facing limitations in capturing the attention and engagement of today's digitally savvy consumers (McDonnell, 2017). With its distinctive characteristics and capabilities, the metaverse offers a promising platform for brands to reimagine their marketing strategies and create immersive experiences that resonate with their target audiences. According to McKinsey, the

metaverse is poised to have a profound impact on both commercial and personal aspects of our lives. The investment in the metaverse has already surpassed \$120 billion in 2022, indicating the growing interest and financial commitment in this emerging space. Projections suggest that the metaverse market is expected to generate a staggering \$5 trillion by the year 2030 (McKinsey & Company, 2022). These figures highlight the substantial economic potential and the transformative power that the metaverse holds for various industries and individuals alike. The consumption patterns of consumers are undergoing a fundamental transformation, with a growing inclination towards digital consumption (Giang Barrera and Shah, 2023). The assertion that digital marketing is superseding traditional marketing is a widely accepted notion. Furthermore, the emergence of the metaverse is anticipated to propel digital marketing to unprecedented heights, rendering the traditional marketing approach obsolete.

This study argues that brands seeking to effectively engage and communicate with their target audiences must have a comprehension of metaverse consumer behaviour and preferences. As virtual worlds and immersive experiences continue to acquire popularity, marketers must adapt their strategies and embrace the

opportunities the metaverse presents. The present investigation aimed to examine the subsequent research inquiries:

1. What is the potential of the metaverse as a platform for marketing mastery?
2. What are the strategies, challenges, and outcomes associated with transitioning from traditional pixel-based marketing to metaverse portals?
3. What are the experiences, perspectives, and practices of brands operating within the metaverse?
4. What are the best practices and effective marketing strategies for brands embracing the metaverse?
5. How does metaverse marketing impact consumer engagement and brand loyalty?

The research questions in this study are tackled using a qualitative research approach, employing phenomenological analysis and case study methodology. Data is collected from diverse sources, including brand representatives, metaverse users, and marketing materials, and analysed systematically. The synthesized findings provide a comprehensive exploration of the research questions, offering rich insights into metaverse marketing. By employing a combination of qualitative research methods, this study contributes a nuanced understanding of the field and guides future research and marketing practices in the metaverse.

2. Literature Review:

Emerging from its conceptual origins in science fiction, the metaverse gained recognition through Neal Stephenson's influential novel *Snow Crash* in 1992, portraying a virtual reality space where users could navigate and interact with each other (Stephenson, 1992). Over time, the notion has undergone development and broadening, conceptualizing the metaverse as a revolutionary extension of the internet that alters our digital interactions and encounters through immersive virtual settings. The concept of the metaverse signifies a fundamental transformation in our interaction with technology, presenting extensive opportunities for communal interaction, discovery, and novel modes of digital participation. The metaverse has progressed from a literary concept to a tangible concept with implications for a variety of industries, including marketing (Shi et al., 2023). The advent of technological breakthroughs has aided in the establishment of the metaverse as a viable platform for companies to investigate and use in their marketing plans. The term "Metaverse" is derived from the combination of the Greek prefix "Meta" and the suffix "verse." In Greek, "Meta" denotes a sense of going beyond or transcending. By incorporating this prefix, the concept of the metaverse signifies an

extension or evolution beyond our current reality, representing a new realm of possibilities and experiences enabled by digital technologies.

The concept of marketing in virtual environments has evolved significantly over the years. At first, virtual environments were regarded as innovative platforms for the promotion of products and the placement of brands. However, studies have shown that marketing strategies in virtual environments have progressed beyond traditional approaches (Jin et al., 2021; Kim, Fiore and Lee, 2007). A significant transformation in marketing strategies involves the transition towards immersive and interactive encounters (Cheng et al., 2022; Taufik, Kunz and Onwezen, 2021). Contemporary brands are currently utilizing the potential of virtual environments to fabricate captivating virtual brand experiences and virtual product introductions. These encounters facilitate customer interaction with brands and products in a dynamic and immersive fashion, thereby augmenting customer experiences and brand engagement. The emergence of virtual brand communities and virtual word-of-mouth marketing has been observed as a significant development in the evolution of marketing strategies within virtual environments (Muniz and O'Guinn, 2001). Contemporary brands

are proactively establishing communities within digital realms, facilitating consumer interactions, enabling the exchange of experiences, and fostering organic brand promotion. This methodology leverages the potency of social influence and word-of-mouth advertising, cultivating brand allegiance and advocacy. Additionally, customization and personalization have become integral components of marketing strategies (Li, Daugherty and Biocca, 2001). Companies are utilizing consumer data and preferences to provide customized experiences, bespoke merchandise, and focused promotional campaigns. This level of customization enhances the relevance and effectiveness of marketing efforts, leading to higher consumer engagement and satisfaction (Luchs, Swan and Creusen, 2015).

The shift from pixel-based marketing to metaverse portals denotes a noteworthy change in marketing tactics, propelled by technological advancements and the rise of immersive virtual environments. Numerous studies have emphasized the potential of metaverse portals as a valuable platform for accessing untapped and varied markets (Joy et al., 2022; Yongwoog Andrew Jeon, 2022). According to their argument, metaverse portals present distinctive prospects for brands to interact with consumers

through immersive means, thereby generating noteworthy virtual encounters that augment customer engagement and brand allegiance. Researchers have also directed their attention towards investigating consumer behaviour in the metaverse (Hadi, Melumad and Park, 2023; Shen et al., 2021). Studies explored various aspects of consumer behaviour within virtual environments, including motivations for engagement, preferences for virtual experiences, and the role of social influence. The aim being to gain insights into how consumers interact with brands and make purchasing decisions in virtual settings.

This research makes a valuable contribution by addressing various deficiencies in prior literature pertaining to metaverse marketing. Prior research has predominantly concentrated on the theoretical aspects of metaverse marketing and the potential benefits it offers, but empirical studies that examine the actual strategies, challenges, and outcomes of brands operating in the metaverse are lacking. This research fills this void by undertaking in- depth case studies of brands navigating the metaverse, thereby providing valuable insights into their experiences and outcomes. While there are some studies investigating user engagement and interaction in

virtual environments, the metaverse as a marketing platform has received scant attention. This study explores the subtheme of user engagement and interaction within the metaverse, emphasizing the unique opportunities for brands to engage with users in immersive and interactive ways. In addition, previous literature frequently discusses the marketing potential of the metaverse, but there is a lack of practical guidance and insights for marketers on how to utilize the metaverse as an effective marketing channel. This study contributes by providing concrete examples, strategies, and observations of marketing activities within the metaverse, with implications for marketers attempting to engage their target audience in virtual environments.

3. Research Methodology

The study employs a multi-stage research design and employ various data collection techniques to offer an in- depth understanding of the phenomenon under investigation. To gain abundant insights into the lived experiences, perspectives, and practises of the individuals involved in establishing brand presence through metaverse portals, a phenomenological approach is adopted. This method seeks to comprehend the essence of their experiences and how they make meaning of the investigated phenomenon. Sixteen participants are selected based on their

knowledge and experience in the field of metaverse marketing, utilising the technique of purposive sampling. Targets for the collection of distinct perspectives include marketing managers, brand strategists, and digital marketers from various companies. Purposive sampling ensures that the selected participants can provide valuable insights and in-depth information relevant to the research objectives. The case study method is utilized to examine real-world instances of companies successfully establishing brand presence through metaverse portals. By analysing multiple cases, it is possible to identify recurring trends, themes, and obstacles, thereby providing a comprehensive understanding of the phenomenon.

3.1 Methods of Data Collection and Data Analysis

Through semi-structured interviews with participants, a thorough examination of

their experiences, strategies, and obstacles in establishing brand presence through metaverse portals is made possible. The data collection period spanned from November 2022 to March 2023, during which Web-based telephone interviews were conducted. The duration of the interviews exhibited variability, with the span ranging from 25 minutes to 1 hour, and the mean duration being 38 minutes. Following the acquisition of informed consent from participants, all interviews were digitally recorded. This approach ensured that participants had ample opportunity to provide comprehensive insights. The interviews yield a wealth of qualitative information for analysis. In addition to interview data, direct observations of marketing activities within the metaverse are conducted to gain a comprehensive understanding of the phenomenon.

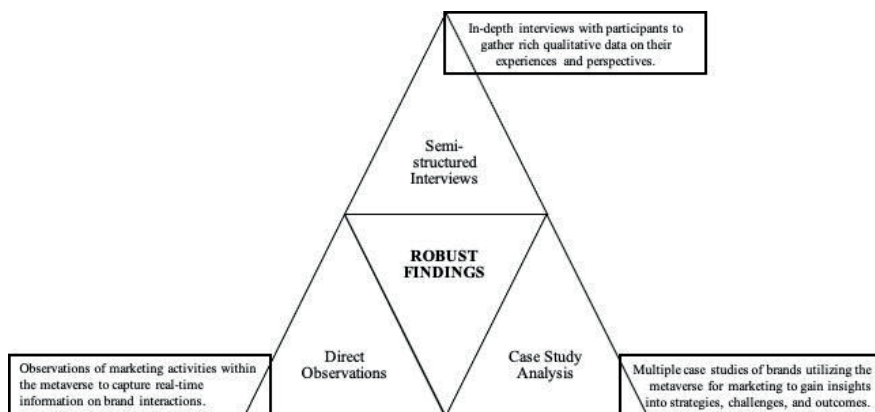


Figure1: Triangulation of data sources

The gathered data is subjected to thematic analysis. MAXQDA, a leading qualitative data analysis software, was utilized in this study due to its suitability for conducting thematic analysis. The interviews and observations are verbatim transcribed, and the data are systematically coded to identify patterns, themes, and subthemes. Meaningful categories and themes are derived through a stringent classification process. The analysis employs a constant comparative strategy, which entails analysing similarities and differences across cases in order to identify commonalities and distinctive features. The incorporation of interview data, direct observations and case study analysis provides a triangulation of data sources as seen in figure 1, thereby bolstering the credibility and validity of the findings.

4. Themes and Findings

This section presents the themes and findings that have arisen from the analysis of the qualitative data gathered during the research. Several key themes and subthemes were identified through a rigorous analysis process, casting light on the strategies, challenges, and opportunities associated with establishing brand presence through metaverse portals. Findings reveal that the identified themes can be classified into several overarching categories, including Adoption and Motivation, Strategies and Campaigns, User Engagement and Interaction, Challenges and Obstacles, Measurement and Evaluation, and Future Outlook and Trends. Table 1 displays the sub-themes associated with each concept.

| Themes | Subthemes |
|---------------------------------|--|
| Adoption and Motivation | Reaching new markets and gaining a competitive advantage |
| Strategies and Campaigns | Interactive storytelling and immersive experiences |
| User Engagement and Interaction | User-generated content and community building |
| Challenges and Obstacles | Technical limitations and compatibility issues |
| Measurement and Evaluation | Tracking user engagement metrics and brand sentiment |
| Future Outlook and Trends | Convergence with emerging technologies and augmented reality |

Table 1: Identified Themes and Subthemes in Metaverse Marketing

Theme 1: Adoption and Motivation

The theme of Adoption and Motivation uncovers the driving forces that lead brands to adopt metaverse marketing strategies. It

emphasises the desire to expand into new markets and acquire a competitive edge in the constantly changing digital landscape. The Adoption and Motivation topic

encompassed two sub-themes, namely: 1. Expansion into untapped markets and 2. Acquiring a competitive edge.

The metaverse is viewed by brands as a promising avenue for broadening their audience and connecting with demographics that may prove challenging to access via conventional marketing channels. According to the marketing manager, *“we saw the metaverse as an opportunity to reach a younger, tech-savvy audience and differentiate ourselves from competitors.”* (Participant 14). Brands view the metaverse as a strategic instrument for establishing a distinct brand identity and differentiating themselves from competitors. Utilising strategies such as innovative virtual experiences, interactive campaigns, and immersive narrative, brands attempt to stand out. The participant statements listed below illustrate how brands leverage the metaverse to gain a competitive advantage and establish a unique position in the minds of consumers.

“I believe that establishing a presence in the metaverse is essential for our brand to stay ahead of the competition.” (Participant 7)

“We can get people’s attention in a way that standard advertising can’t by making engaging virtual campaigns and adding gaming features to them. It helps us stand out as leaders in our field and stay one step ahead of our competitors.” (Participant 12)

“The metaverse offers a unique opportunity that goes beyond traditional marketing ways.” (Participant 9)

“To keep our brand at the forefront of its industry, I feel it is crucial that we make an appearance in the metaverse.” (Participant 10)

The Diffusion of Innovation theory (Rogers, 2003) can be utilized to comprehend the variables that influence the adoption of metaverse marketing by brands. It serves to explain how early adopters perceive the advantages and benefits of metaverse marketing, as influenced by variables such as comparative advantage, compatibility, complexity, trialability, and observability.

Theme 2: Strategies and Campaigns

The thematic area of Strategies and Campaigns centres on the novel methods that brands utilize within the metaverse to develop influential marketing strategies and campaigns. Exploring how brands leverage the unique capabilities of the metaverse to engage users, build brand experiences, and deliver their messages in interactive and immersive ways. The first subtheme creating immersive brand experiences in virtual environments emphasizes that companies employ virtual reality (VR) technologies, three-dimensional (3D) environments, and sensory components to fully engage consumers in the narrative and merchandise of their brand. As stated by a participant *“Our team has focused on making the metaverse a more immersive and interactive place so that users can learn more about our brand and interact*

with it on a deeper level.” (Participant 8). The second subtheme delves into the utilization of interactive storytelling and narrative-driven campaigns, whereby brands leverage the potency of storytelling to captivate users and establish significant associations. The employment of gamification, tasks, and plot-driven narratives serves to engross and engage users in the brand’s communication. For instance, contributors mentioned:

“We have used the power of storytelling to create engaging ads that hit home with our demographic.”

(Participant 4).

“By drawing people into the story of our company, we can increase their involvement and have an impact on them on a more personal level.” (Participant 11).

“We have found that including game elements into our platform greatly increases user engagement.”

(Participant 3).

The Strategies and Campaigns theme aligns with the Experiential Marketing Theory (Pine & Gilmore, 1998), which emphasizes the significance of creating memorable, emotionally-resonant brand experiences for consumers. By implementing these strategies in the metaverse, brands can effectively differentiate themselves from rivals and develop lasting relationships with consumers.

Theme 3: User Engagement and Interaction

The third thematic element points out the significance of user-generated content and community building in the metaverse. This first sub-theme covers the opportunities for users to create and share content within virtual environments. By establishing user-generated events, contests, and challenges, brands encourage user-generated content production. According to the brand strategist, *“We’ve witnessed a huge rise in brand engagement since we let people create and share their own content in the metaverse...”* (Participant 8). The second sub-theme delves into the significance of community development within the context of metaverse marketing. Brands employ metaverse social elements to provide an environment where users can interact with one another, exchange experiences, and engage with the brand more meaningfully. The participant articulated the following opinion on the same matter *“We wanted to create a metaverse community, so we designed our virtual space with areas for users to interact and engage.”* (Participant 1). The Social Presence Theory suggests that building a community and promoting social interaction can increase emotional involvement with a brand, leading to engagement and loyalty in the

metaverse (Short, Williams & Christie, 1976). Therefore, user engagement and community building are crucial for creating a sense of social presence, promoting brand loyalty, and improving the overall brand experience.

Theme 4: Challenges and Obstacles

The theme of Challenges and Obstacles addresses the difficulties faced by brands when navigating the metaverse for marketing purposes. The two sub-themes under consideration are Technical Limitations and Compatibility Concerns. System requirements, bandwidth constraints, and hardware limitations hinder the efficacy of marketing campaigns and the delivery of immersive experiences as expressed by few participants.

“Due to the technical limitations of the metaverse, we had to optimize our virtual experiences to ensure they could run smoothly on a variety of devices and network conditions.” (Participant 2).

“Poor picture quality might hinder our ability to provide satisfying marketing experiences for our target audience....” (Participant 7).

“When we tried to add high-quality graphics and interactive elements to the metaverse, we ran into technical problems, which hurt the overall immersive experience for users.” (Participant 10).

Compatibility issues make it difficult for brands to establish a consistent presence across multiple metaverse platforms which has previously been found (Ning et al., 2021). Compatibility issues pertain to the

difficulties encountered with integrating metaverse platforms and technologies, such as interoperability, data interchange, and interaction with current marketing systems. As examples, participants stated:

“It took us a lot of work to get our metaverse presence to work with our current marketing tools because of compatibility difficulties.” (Participant 16).

“It’s like trying to juggle multiple balls in the air while wearing different gloves for each platform...”

(Participant 4).

“Frustratingly, despite our best efforts, we frequently cannot successfully connect with people across multiple metaverse platforms due to a lack of interoperability.” (Participant 13).

Theme 5: Measurement and Evaluation

The Measurement and Evaluation theme emphasizes the significance of monitoring and evaluating the efficacy of metaverse marketing efforts. The sub-themes Tracking User Engagement Metrics and Brand Sentiment emphasize the need for comprehensive measurement and evaluation strategies to assess the impact of brand activities within the metaverse. The monitoring of key performance indicators such as time spent, interactions, and participation rates, provides insight into the level of user engagement and the efficacy of marketing campaigns. A

marketing director discussed *“We keep a careful eye on indicators like user engagement to fine-tune our tactics.”* (Participant 9). In order to comprehend how users perceive and interact with brands in virtual environments, techniques such as sentiment analysis and brand sentiment surveys are used. Another participant commented *“We do brand opinion polls all the time to find out how users feel about our brand. This helps us figure out how people feel about our brand and make the changes we need to make to improve brand opinion and customer happiness.”* (Participant 11). Through the implementation of rigorous measurement and evaluation methodologies, brands can proficiently evaluate the efficacy of their metaverse marketing endeavours, utilize data to guide decision-making, and consistently refine their strategies to improve brand efficacy and customer contentment.

Theme 6: Future Outlook and Trends

The theme of Future Outlook and Trends discusses the potential trajectory of metaverse marketing and identifies emerging trends that may shape the future landscape. Convergence in Emerging Technologies is a sub-theme that focuses on how metaverse marketing is developing in tandem with new technologies such

as artificial intelligence, virtual reality, and blockchain. Within the metaverse, brands are leveraging these technologies to enhance user experiences, personalize interactions, and provide innovative marketing solutions. The second sub-theme of Augmented Reality focuses on the growing integration of augmented reality (AR) within the metaverse and its impact on brand-consumer interactions. Blending the physical and virtual realms, brands are utilizing augmented reality to provide immersive and interactive experiences (Dwivedi et al., 2022). A considerable number of the participants conveyed an upbeat view regarding the prospects of metaverse marketing. An industry expert highlighted the potential convergence of metaverse with emerging technologies, stating, *“When augmented reality is combined with the metaverse, we can look forward to ever more engaging brand experiences.”* (Participant 15). These advancements provide brands with new opportunities to create immersive and interactive marketing campaigns, thereby influencing the future of marketing in the metaverse.

Direct Observations

Direct observations of marketing activities within the metaverse are conducted in order to observe and record real-time practices and interactions that yield additional insights. The following table displays a range of observations, accompanied by illustrative examples.

| Aspect Observed | Description | Examples |
|----------------------------------|--|--|
| Visual Design and Branding | Analysed the various visual design components employed in marketing. | <ul style="list-style-type: none"> i. Brand 'X' used its recognizable logo and consistent colour palette throughout its virtual store. ii. The brand also featured a virtual billboard with visually appealing illustrations that matched the overall aesthetic of the business. |
| Interactive Experiences | Searched for interactive experiences like virtual product demonstrations, interactive games, or virtual tours. | <ul style="list-style-type: none"> i. Brand 'Y' enabled consumers to virtually try on apparel and alter the look of their avatars. ii. An automotive brand sponsored a virtual car racing game where users could engage with the brand's vehicles. |
| Virtual Events and Gatherings | Observed how brands organize and conduct virtual events. | <ul style="list-style-type: none"> i. A virtual concert sponsored by a beverage brand, featuring a popular musician attracted a massive crowd. ii. Brand 'Z' hosted a virtual fashion show with models showcasing their latest collection to a large audience of attendees. |
| User Engagement and Interactions | Considered user participation and interactions with branded content or virtual objects. | <ul style="list-style-type: none"> i. Many brands had users interact with virtual objects by clicking on clickable buttons to access additional information about the brand. |

Table 2: Direct observations of marketing activities within the metaverse

The significance of establishing a strong brand presence in the metaverse was one of

the most prominent observations. Brands that invested in creating visually enticing and immersive virtual spaces were able to effectively attract and engage users.

Interactive elements, such as gamification, assignments, and plot-driven narratives, played a significant role in captivating and retaining user attention. Users exhibited greater levels of engagement and brand recall for brands that effectively implement these techniques. User-generated content related to a brand's products or services increased significantly when the brand encouraged user participation and provided tools for content creation. This user-generated content not only served as genuine testimonials, but also increased the credibility and trustworthiness of the brand. Brands that utilized user-generated content effectively as a marketing tool saw an increase in brand advocacy and brand loyalty among users. Users are able to feel as if they are a part of something exclusive and exciting via the usage of virtual events like as product debuts, virtual conferences, and immersive brand experiences. From observations it is found that these virtual events provided a unique opportunity for brands to interact directly with their target audience, gather feedback, and strengthen brand-consumer relationships. As brands collected user data for personalized experiences and targeted advertising, users expressed concern over the management and use of their personal data. Observations revealed that brands with transparent data collection and usage practices and robust privacy protections were able to establish trust with users and allay their concerns.

Observation also discovered that influencer marketing and celebrity endorsements had a substantial effect in altering customer behavior inside the metaverse and affecting brand

perceptions. Brands who worked together with famous people and celebrities to promote their products in virtual settings saw an increase in both their exposure and the credibility of their products. Users were more inclined to interact with companies that were recommended by trustworthy influencers and celebrities, which led to improved brand awareness and customer acquisition. Celebrities and influencers had a significant impact on user behavior. When it comes to marketing in the metaverse, ethical issues are of the utmost importance. It was necessary for companies to walk the narrow line between using persuasive marketing strategies and preserving the autonomy of their customers. According to the findings of the study, companies that placed a high priority on ethical practices, such as truthful advertising, informed permission, and responsible data management, were more likely to earn the confidence of their target audiences and establish lasting connections with them. In virtual environments, brands encountered diverse user populations with varying cultural backgrounds and preferences. Successful brands recognized and respected these cultural nuances, adapting their marketing strategies and content to resonate with various audiences. In the metaverse, brands that embraced cultural diversity and inclusivity saw greater user engagement and acceptance. By taking into account these supplementary observations, brands can augment their comprehension of the metaverse and fine-tune their marketing tactics correspondingly, resulting in more efficacious and prosperous campaigns within immersive virtual settings.

Case Analysis and Findings

Companies like Nike, Gucci, Burberry, Louis Vuitton, and Samsung have harnessed metaverse portals to establish their brand presence, engage users, and create immersive experiences. Through interactive virtual showrooms, collaborations with gaming platforms, and innovative digital initiatives, these brands have successfully integrated the virtual and physical realms. From virtual sneakers releases to digital fashion shows, these cases demonstrate the strategic use of metaverse marketing to communicate with consumers in a memorable and dynamic manner. The metaverse provides marketers with a one-of-a-kind chance to develop immersive experiences that cross the gap between the virtual and real worlds (Golden, 2021). Companies may engage consumers in interactive activities, virtual showrooms, and special events by developing virtual settings that match their corporate identity, establishing a closer relationship with

their audience (Roblox, 2021). Metaverse portals enable firms to exhibit their items and conduct virtual transactions. Limited-edition virtual goods, digital fashion lines, and virtual shoe launches show how marketers may use the metaverse to build buzz and increase customer interaction (Hackl, n.d.). Companies may exploit scarcity and exclusivity to increase the value of their brand by providing unique virtual experiences and goods. Brands can engage with a global audience through the metaverse portal, overcoming geographical barriers and reaching consumers who may not have access to physical stores or events (Nguyen et al., 2016, pp.1–24). This expanded reach enables businesses to interact with a broader variety of consumers and develop global brand awareness. The table given below exhibits a comprehensive overview of the companies, metaverse portals used, key strategies implemented, and the results and impact achieved through their respective metaverse marketing endeavours.

| Company | Metaverse Portal | Key Strategies | Results and Impact |
|----------|------------------|---|--|
| Nike | Roblox | <ul style="list-style-type: none"> Creation of virtual hub “Nike Land” Customization options and interactive mini-games | <ul style="list-style-type: none"> Successful engagement with younger demographic Generated buzz around Air Max sneakers |
| Gucci | Roblox | <ul style="list-style-type: none"> Development of virtual experience “Gucci Garden” Fashion shows and interaction with branded items | <ul style="list-style-type: none"> Seamlessly merged real and virtual worlds Enhanced brand appeal and exclusivity |
| Burberry | Sansar | <ul style="list-style-type: none"> Digital replica of flagship store “Burberry World” Interactive exploration and immersive experiences | <ul style="list-style-type: none"> Extended reach and global audience engagement Showcased brand heritage and innovation |

Table 3: Building Brand Presence in the Metaverse

Despite the fact that metaverse marketing presents intriguing opportunities, there are obstacles to consider. Potential obstacles to extensive engagement are technological requirements, device compatibility, and user adoption (CNET, n.d.; Elder, n.d.; The Coca-Cola Company, n.d.). Companies must address these obstacles by assuring accessibility, streamlining user

experiences, and educating their target audience on the benefits and potential of the metaverse. The table provides a concise representation of the challenges faced and the unfavourable impact experienced by Coca-Cola, Google, and Microsoft in their respective metaverse marketing campaigns.

| Company | Metaverse Portal | Challenges | Consequence |
|-----------|------------------|--|---|
| Coca-Cola | Decentraland | Privacy and data concerns, potential user adoption barriers | Negative impact on brand reputation, hindered user engagement |
| Google | Sansar | Limited content and developer support, market fragmentation | Reduced user engagement, limited platform growth |
| Microsoft | AltSpace VR | Limited user adoption and engagement, competition from other platforms | Decreased user activity, lower market share |

Table 4: Challenges in metaverse marketing, insights from Coca-Cola, Google, and Microsoft

By embracing the metaverse, brands can transcend traditional marketing channels, connect with their audience on a deeper level, and pave the way for the future of brand-consumer interactions. The metaverse opens up a world of possibilities for marketers, and these case studies serve as a testament to its immense potential in shaping the future of marketing and customer engagement.

5. Discussion

The metaverse presents a chance to explore and innovate in marketing, and even though it may take time for the metaverse to be widely adopted, top brands are already revolutionizing marketing practices. In this discussion we

will address the key themes that emerged from the analysis, the implications of these findings, and their alignment with the existing literature. Furthermore, it will highlight the unique contributions of this study and provide practical implications for marketers.

Key Findings

The findings from several data sources were triangulated in order to cross-verify them, which both ensured that the findings were consistent with one another and corroborated the results' correctness. For instance, participant comments gathered via interviews were compared and contrasted with observations made during direct observations of marketing

operations. These comparisons and contrasts were carried out in order to draw conclusions about the relationship between the two. The results' credibility was boosted as a result of this cross-checking, and the possibility of bias was cut down significantly. The analysis has uncovered a noteworthy aspect pertaining to the adoption and motivation underlying metaverse marketing. Brands are motivated by the promise of reaching a wider audience and connecting with demographics that may be difficult to engage through traditional marketing channels. The metaverse presents an opportunity to tap into a younger, tech-savvy audience and differentiate themselves from competitors. The case analysis further illustrates how brands have successfully leveraged the metaverse to expand their reach and enhance their brand presence. This is consistent with the theory of the diffusion of innovations, as brands adopt metaverse marketing to obtain a competitive advantage (Smith et al., 2022). Businesses can illustrate the significance of implementing strategies and campaigns that generate immersive brand experiences in virtual worlds and employ interactive storytelling, fostering a strong brand relationship and drawing people in which has been supported by research (Scholz and Smith, 2016). Observations obtained during metaverse

marketing activities corroborate the efficacy of these techniques, as businesses were able to generate engaging and memorable experiences for consumers. Aligning with the Social Presence Theory, which explains how social interaction and community building enhance users' emotional connection with a brand (Short et al., 1976) observations from marketing activities demonstrate the enthusiastic and committed participation of users in content creation and sharing, further validating the importance of the theme of user engagement and interaction. The challenges and obstacles faced by brands in the metaverse are also noteworthy. Technical limitations, such as platform compatibility issues, pose challenges to brands seeking to establish a consistent presence across multiple metaverse platforms. This hampers seamless integration with existing marketing systems and requires additional efforts to ensure coherence across channels. Implementing rigorous measurement and assessment procedures enables companies to optimize their metaverse marketing efforts, align their operations with business goals, and improve the overall efficacy of their metaverse brand presence. Brands obtain important insights into the amount of engagement and the effectiveness of their marketing initiatives inside the metaverse by analysing user

engagement indicators like as time spent, interactions, and participation rates. Furthermore, monitoring brand sentiment using methods like as sentiment analysis and brand sentiment surveys helps in understanding how customers perceive and interact with businesses in virtual worlds. These assessment and evaluation tools allow companies to assess the efficiency of their metaverse marketing efforts, make data-driven choices, and constantly tweak their plans to increase brand effectiveness and consumer happiness. To keep up with the ever-changing metaverse environment, marketers must be abreast of developing trends and adjust their strategy appropriately (Yoo et al., 2023).

Practical Implications for Marketers

Several important takeaways from this research may help marketers as they strive for dominance in the metaverse. Implications found from the study provide actionable insights and recommendations that can guide marketers in effectively leveraging the metaverse to enhance their brand presence and engage with their target audience. Firstly, marketers should recognize the potential of the metaverse as a valuable platform for reaching new and diverse markets which has also been proposed prior (Jungherr and Schlarb, 2022). Therefore, marketers should consider incorporating metaverse

marketing strategies into their overall marketing plans to expand their audience reach and tap into new market segments. Furthermore, marketers need to give thought to creating experiences that are both unique and memorable for their target audience, all while encouraging participation and interaction with the brand. Marketers may increase metaverse users' feelings of community and loyalty by encouraging them to create and share original content and by facilitating the formation of online groups. Marketing strategists may learn more about user habits, the efficacy of their campaigns, and the influence of their brands by using the right analytics tools and platforms. By basing their judgments and actions on empirical evidence, they are better equipped to refine their tactics and make the most of their resources. Lastly, marketers ought to remain on top of emerging metaverse landscape trends and technologies, investigating and experimenting with these technologies to improve user experiences and maintain a competitive advantage. Keeping up-to-date with industry developments and attending relevant conferences and events can provide valuable insights and networking opportunities for marketers to stay at the forefront of metaverse marketing.

6. Conclusion

The findings provide compelling evidence of the metaverse's potential as a powerful platform for marketing. The study explored the strategies, challenges, and outcomes of brands navigating the metaverse. Through a qualitative research design using phenomenological analysis and case study methodology, valuable insights were obtained. The findings shed light on key themes, including Adoption and Motivation, Strategies and Campaigns, User Engagement and Interaction, Challenges and Obstacles, Measurement and Evaluation, and Future Outlook and Trends. These themes provided a comprehensive understanding of the metaverse as a powerful marketing platform. The participants' experiences and practices demonstrate how brands are leveraging immersive experiences, interactive storytelling, and user-generated content to engage with their target audience effectively. These strategies highlight the metaverse's capacity to captivate users and create memorable brand experiences, leading to enhanced marketing outcomes. This transition represents a paradigm shift in marketing strategies, showcasing the metaverse as a dynamic and innovative alternative to traditional pixel-based marketing.

Limitations and Future Research Directions in Metaverse Marketing

Despite the valuable insights gained, this study has certain limitations that should be acknowledged. Firstly, the research design focuses on qualitative data collection, limiting the generalizability of the findings. A larger sample size and quantitative analysis could enhance the robustness of the study. Additionally, the study primarily relied on self-reported data from brand representatives, which may be subject to bias and social desirability effects. Future studies could incorporate multiple data sources, such as user feedback and behavioural data, to gain a more comprehensive understanding. Building on the findings and contributions of this study, there are several promising directions for future research in the field of metaverse marketing. First, longitudinal studies are required to monitor the evolution of metaverse marketing strategies and their effects over time. This would provide valuable insights into the effectiveness and sustainability of metaverse marketing strategies over the long term. Undertaking comparative analyses spanning diverse industries, brands, and metaverse platforms would yield a more comprehensive understanding of the nuances and variations in metaverse marketing strategies and their

effectiveness. In addition, exploring consumer behaviour within the metaverse, including motivations for engagement, preferences for virtual experiences, and the role of social influence can inform the design of more targeted and engaging metaverse marketing campaigns. Finally, investigating the metaverse's confluence with upcoming technologies such as augmented reality (AR), virtual reality (VR), and mixed reality (MR) might

provide new chances for immersive brand experiences and inventive marketing strategies.

By pursuing these future directions, researchers can continue to expand our knowledge of metaverse marketing, contribute to the advancement of marketing theory, and provide practical insights for marketers to effectively navigate and leverage the potential of the metaverse as a marketing platform.

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Managing General Entrenchment in the Impact of corporate Governance on Firm Performance in Capital Structure

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Abstract

The purpose of this paper is to identify the presence of managerial entrenchment, measure its degree, and establish its relationship to corporate governance, capital structure, and business performance. This paper focuses equal emphasis on managers' personal qualities, such as age and tenure, as well as ownership structures, such as management ownership and block holder ownership. The research also investigates entrenched managers' preference for debt issue over equity issuance, i.e., the trend and pattern of financing capital structure. This paper also examines the impact of corporate governance on business financial performance. The norms and regulations that the corporation follows for its operation are also assessed in regard to management entrenchment and capital structure. In Indian, there is not much paper.

Keywords: Managerial Entrenchment, Capital Structure, Corporate Governance, and Profitability.

1.1 Introduction

The linkage between management entrenchment, corporate governance, capital structure, and business success is unmistakable. Managerial entrenchment is a situation in which managers choose to establish their position, interests, and hunt down their own interest maximization through various organizations' internal

and external control mechanisms. The most essential capital structure-oriented decisions of every organization are the various ways of financing and maintenance, as well as the percentage of debt and equity. On the other hand, the agency problem and approaches to resolve the agency problem conflict among equity holders and administrators are some of

the most important topics in governance. At time of incomplete information and contracts there arise difference of opinion among both, shareholders always wanted to utilize the debt leverage so as to enjoy its benefit; but then managers decline the execution pressure of the firm towards the payment of interest resulting in low of financial distress and cost. Thus, it is said that, equity issuance is most desirable and debt is neglected in most of the cases by self-interested managers, therefore various methods of financing is brought together and new capital composition is formulated. The paper also tries to shed light on the impact of corporate governance and managerial entrenchment over the firm performance. Better the corporate governance the less asymmetry of information, which in turn results in better firm performance. On the other hand, managerial entrenchment negatively affects the firm performance; i.e., it is usually said that entrenched managers chose less risky projects in order to safeguard their personal interest thus giving space to increasing agency conflict in the firm. Entrenchment and ownership structures' relation is generally analysed through the eyes of agency theory, entrenched managers are more likely to go with debt issuance rather than that of equity issuance even when that affects the advantage of the firm. Equity is more preferred by the ones who are less entrenched, (L. L. Lundstrum, 2008). In recent times it is seen that entrenched managers are moreover likely to choose investments that is not in the best terms either for the firm or its stakeholders forgetting the agency theory (Kumar & Rabinovitch, 2013). There are

researchers who said that the entrenchment might add up to the CEOs who play a crucial role in the equity issuance of the firm (Matta & Beamish, 2008; McClelland O'Brien Brien, 2011). While talking about debt agreements the lenders do consider the amount of shares being held by the CEO or chairperson. This shows that the lenders do have concerns about agency conflicts, that is, high conflicts when high managerial ownership. This seems to not only affect lenders demands but also the firm leverage. That is advantage decreases as managerial ownership increases, (Nam et al. 2003). The relation between both entrenchment and capital structure is broadly built on preference of the manager, their incentive as well as the endeavor debt level. The basic preference of a manager is to determine the impact of his attributes on defense mechanism of an organization. This is also discussed by (Huang Guoliang, 2010) where he explains the various incentive policies, manager's mechanism of supervising themselves and also pointed out how entrenchment and capital structure are related. It moreover elucidated that the elite the degree of entrenchment, lower will be liability of managers. Managerial entrenchment is often measured using factors like managers' characteristics and incentive, the managers with greater tenure will prefer debt financing over equity and it is always said that entrenchment will have a negative impact on while considering this incentive factor (Xue-Xia XU, An-Qi LIU, Yu-Hui GU & Sun-Lei YANG, 2018). Managerial entrenchment and capital structure are important topics of finance literature that have remained popular in recent years.

Managerial entrenchment is defined as the extent to which managers entrusted with the affairs of a firm use their positions and perceived weaknesses in the firm's governance structure to pursue self-maximizing interests at the expense of shareholders (Danso & Adomako, 2014; Fabrizio, Juan, & Jordi, 2017; Fagbemi et al., 2020; Tolulope et al., 2018).

1.2 Statement of the problem

Entrenchment provides a substantial impact on value of the firm that is the entrenched managers who face little pressure from the corporate governance mechanism or system there are chances that they may adopt policies that destroy the firm's value (Bebchuk, Cohen & Ferrell, 2009). Similarly, corporate governance suggests that entrenchment has an adverse effect on the firm performance and its value (Cremers & Nair, 2005). Very few researches have been done on managerial entrenchment and its impact with reference to Indian context. In addition to that, research based on relation between managerial entrenchment, corporate governance, capital structure and firm performance have not been done in any context. Therefore, the aim of the study is to bridge this gap by conducting research that studies the relation between all the four factors and other factors.

1.3 Objectives

- To ascertain the link between management entrenchment, corporate governance, capital structure, and business performance.
- To assess the influence of management entrenchment and corporate governance on business performance.

- To assess the effect of management entrenchment and corporate governance on capital.
- To identify the elements that influence capital structure.
- To investigate the trend and pattern of Indian capital structure.

2. Theoretical framework

It's often said that the managerial entrenchment and the age of the manager is positively related to each other. While measuring the said aspects, the age of the manager has an inverse relation with the amount of risk he is willing to take, that is higher the age of the manager the higher the risk averse he is, Eaton and Rosen (1983). Accordingly, the old managers who are nearing their retirement age tend to choose less risky projects with an intention to safeguard their career. De Miguel et al (2005), says that the more the manager is entrenched the more he reduces the debt proportion in the capital structure, this is with a view to avoid risk without even considering the negative consequences that will occur in Spanish firms because of the same. Moreover, they also state that old managers who are nearing their retirement are more of a somewhat entrenched. In another paper, McClelland and Barker (2004), they say that there exists a curvilinear relation between age and performance of firm. They also support the earlier one by stating that the untutored managers take more projects that less defensive than that of the older ones because the younger ones wish to improve their reputation wherein the older ones tend to safeguard their career as they near the retirement

age. While comparing managerial entrenchment, firm performance and age of the manager, we are able to identify a positive relationship between managerial entrenchment and performance of the firm Stiglitz and Edlin (1992), in a way supporting this we have the findings of NejlaOuldDaoudEllili (2012). Here we can see that the relationship between entrenchment and firm performance may not be always negative. They have measured firm performance by taking the total shareholders return and concluded by stating that if it is lower than 0.81 then there exist a negative relation and positively related when its value is greater than 0.81. Dr. S. Moussa, Dr. H. Rachdi, A., Ammeri (2013), says that features like: CEO age, CEO turnover, duality of the general manager, independent directors, size of the board has an effect on entrenchment. They also feature that entrenchment that is measured by manager's seniority, amount of non-mandatory asset and liability, which is recorded, has an impact on the firm performance. Xue-Xia XU, An-Qi LIU, Yu.-Hui GU, Sun-Lei YANG. (2018), identified the relation between entrenchment and capital structure by considering factors like, managers' characteristics and incentives. It is also mentioned that, managers with greater tenure will prefer debt financing to equity and it is always said that entrenchment will have a negative impact while considering the incentive factor. Thus, it is clear that there is a negative correlation between the performance of managers', incentive and managerial entrenchment and there is a positive correlation with firms' debt level. Goyal & Park (2002), talks about the impact of factor like CEO duality

on entrenchment, they report while both the position vests in one person's hand it significantly affects the performance of the firm, that is, it reduces the probability of forced CEO turnover of the firm. When capital structure and entrenchment is considered, there is always a positive relation, which is measured by the amount of anti-takeover provisions as a proxy value. In many studies, we have found that entrenchment is calculated by using corporate governance indices as a proxy value that will help in estimating the amount of takeover measures available to management helping in them to protect from aggressive acquisitions. Rick Smulders (2014) also stated that both entrenchment and advantage have a positive relation, but many opposed by using G and E index and stated that the relation is robust to different models. Having corporate governance, firm value and entrenched managers in the frame, we often tend to hear that, those entrenched managers who are not that pressurized or into the corporate governance mechanism tend to opt policies that are in a way or other resulting in reduction of firm value. Xin Chang and Hong Feng Zhang (2015) says that, change in E- Index which is used to measure entrenchment possesses a very significant negative impact in the firm value. They also looked for the relative power of entrenchment affects the firm value and vice-versa, i.e. firm value affecting the managerial entrenchment, the results shows that entrenchment affecting the firm value is more significant statistically as well as economically also it's stronger than the other one. According to Aswathymohan, S.Chandramohan (2018) stakeholder interest is a major area

of concern over corporate governance factors and there is growing demand to protect the interest of the stakeholders. The inverse relationship between CEO duality and his performance indicated that there is a need of separation between CEO and chairperson, which will encourage efficient decision-making process. The findings also indicate that if the board size increases after a certain limit, it will lead to inefficiency in the operation of the company. Contemplating capital structure, it is often found out that the level of advantage has a positive and has a negative relationship with CEO tenure as well as board of directors. Beger, Philip G, Eli Ofrek and David L Yenmack (1997) states that in general circumstance CEOs with less entrenchment tend to have high leverage, but these findings are interpreted according to various situations. Hence various analyses are conducted to find out changes in leverage on yearly basis by analyzing towards alternative governance variables. Results indicate that in situations where unsuccessful tenders are made, CEO is being replaced in a forced way; the chance of increasing advantage is high. While examining capital structure and shareholding pattern, Kumar (2006), says that firms who don't follow the corporate governance mechanism and shareholding pattern measured by entrenchment and its impact on group affiliation will have higher debt proportion. Moreover, the firms that has either high level of foreign ownership or those having lower institutional ownership tend to operate with low proportion. Apart from various known analyses, Hao Wang (2010) developed a model that characterized equity payout and capital structure with the

help of various agency conflict issues that are mostly identified between entrenched managers and shareholders. To be very precise the entrenched managers usually take decisions regarding finance and payout with an intention to maximize their private rents at the same time they also make sure that shareholders are not able to remove them from organization. This model provides an examination on impact of agency problem of debt and equity on security valuation in a quantitative manner. Several corporate governance frameworks examine documentation from organizations in various nations with CEOs who have dual duties (Hassan, 2017). CEO duality occurs when one individual is in charge of the company's activities as both CEO and chairman of the board. According to Hassan (2017), CEOs with multiple jobs tend to acquire more authority, which leads to entrenchment in the scheme of operations. Abor, 2007; Afolabi et al., 2019). Furthermore, CEO duality might diminish the board's authority and influence in imposing effective monitoring and control over the CEO, particularly when making decisions solely in the interests of the firm's owners. This study hypothesized that CEO duality would lead to entrenchment, influencing CEO decisions and actions to incur greater debt to fund investment opportunities.

3. Research methodology

All companies that were listed on one of India's two stock exchanges after the 2000s and have not yet been delisted are included in the sample. The sample excludes enterprises in the financial services industry because their capital structures are anticipated

to be considerably different from non-financials. After reviewing the data, the sample size was decreased to 94 businesses that possessed all of the required data

for the 5-year period beginning in 2018 and ending in 2022. The data was taken from the CMIE database as well as the different firms' websites.

Table 1. Summary of variable definition

| Factor | Variable | Variable symbol | Variable definition |
|-------------------------|-------------------------|--------------------------|--|
| Managerial Entrenchment | CEO Age | CEO.Age | The actual age of the managers |
| | CEO Remuneration | Remuneration | The total remuneration received by the managers |
| | Managerial Ownership | Managerial. Ownership | Shares owned by all board members to total shares Outstanding. |
| | Institutional Ownership | Institutional. Ownership | Shares that is held by investment firms, funds, and other large entities rather than individual, retail investors. |
| | Block holder Ownership | Blockholder. Ownership | The large amount of shares held by outside investors. |
| Corporate Governance | CEO Duality | CEO.Duality | CEO himself being the chairman of board |
| | Board Size | Board.Size | Total number of directors on the board |
| | Board Independence | Board.Ind | Number of independent directors/ total directors on the board |
| Profitability | ROA | ROA | Net Income/Total Assets |
| Capital Structure | Asset Tangibility | Asset.Tangibility | Net fixed assets / total assets |
| | Debt Equity Ratio | DE.Ratio | Total Liabilities / Shareholder's Equity |
| | PBIT on Total Assets | PBIT...on Total Assets | PBIT / Total Assets |
| | Liquidity | Liquidity | Current assets/ Current liabilities |
| | Size | Size | Natural Log of Assets |

Table 2. Descriptive Statistics

| | Asset Tangibility | Blockholder Ownership | Board .Ind | Board Size | CEO Age | CEO Duality | DE.Ratio | Institutional Ownership | Liquidity |
|----------|-------------------|-----------------------|------------|------------|---------|-------------|----------|-------------------------|-----------|
| Mean | 0.52 | 0.68 | 0.52 | 7.57 | 51.18 | 0.82 | 1.28 | 0.13 | 3.89 |
| Std.Dev | 0.28 | 0.24 | 0.11 | 2.26 | 8.9 | 0.39 | 4.93 | 0.15 | 16.59 |
| Median | 0.56 | 0.74 | 0.5 | 7 | 51 | 1 | 0.01 | 0.01 | 0.83 |
| Skewness | -0.31 | -0.07 | 0.28 | 0.94 | 0.05 | -1.65 | 8.01 | 1.4 | 11.69 |

Table 2 shows the descriptive statistics of each and every individual variable that is been used in the study. From the figure we can see that the average age of the CEOs is 51. The average block holder ownership constitutes of about 68% out of which an average of 55% belongs to managerial ownership. On an average the board consists of 7-8 directors and more than average being independent directors. The minimum debt equity ratio of zero indicates presence of debt free entities.

Multiple linear regression and correlation was performed with the help of R-programming to establish the relationship between managerial entrenchment, corporate governance, capital structure and firm performance. Multiple linear regression models are established to verify the following models

$$ROA = X + \beta_1 CEO_Age$$

$$Age + \beta_2 Remuneration + \beta_3 Managerial.Ownership + \beta_4 Institutional.Ownership + \beta_5 Blockholder.Ownership + \beta_6 CEO.Duality + \beta_7 Board.Size + \beta_8 Board.Ind$$

$$DE.Ratio = X + \beta_1 CEO.Age + \beta_2 Remuneration + \beta_3 Managerial.Ownership + \beta_4 Institutional.Ownership + \beta_5 Blockholder.Ownership + \beta_6 CEO.Duality + \beta_7 Board.Size + \beta_8 Board.Ind$$

$$DE.Ratio = X + \beta_1 PBIT...on Total Assets + \beta_2 Liquidity + \beta_3 Size + \beta_4 Asset.Tangibility$$

Where X is the constant and $\beta_1 - \beta_9$ is the regression coefficient.

4. Analysis and Interpretation

Table: 3 Correlation Matrix

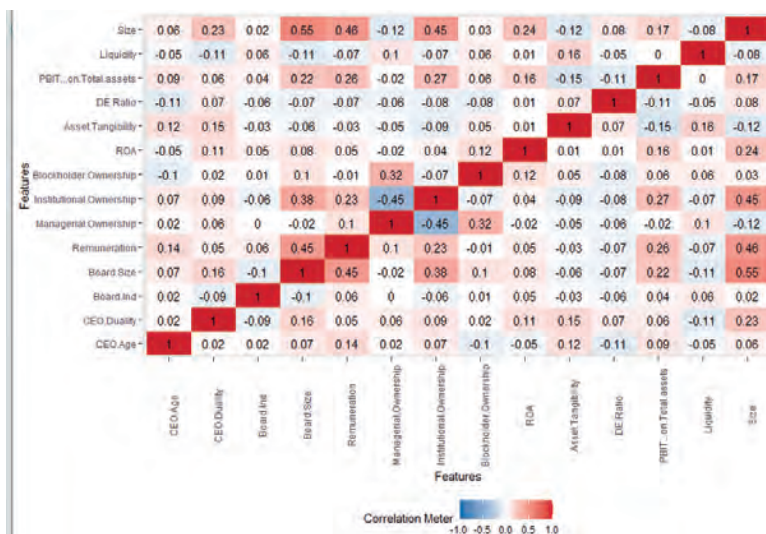


Table 3 shows the relationship between the four factors, i.e., managerial entrenchment, corporate governance, capital structure and firm performance. Notably debt equity ratio negatively deviates from majority variables like: CEO age, board independence, board size, remuneration, managerial ownership, institutional ownership and block holder

ownership. Similarly, asset tangibility also exhibits a negative deviation from remuneration, board independence, board size, managerial and institutional ownership. Adding on to it ROA also negatively deviate from age and managerial ownership. Other performance and capital structure variables reveal positive deviation from entrenchment and governance factor.

Table 4. Regression between ROA and Independent Factors

| | | | | |
|---|------------|------------|---------|-----------|
| Formula = ROA ~ CEO>Age + Remuneration + Managerial.Ownership + Institutional.Ownership + Blockholder.ownership + CEO.Duality + Board.Ind + Board.Size, data = data_1 | | | | |
| Residuals: | | | | |
| Min | 1Q | Median | 3Q | Max |
| -36.838 | -0.131 | 0.060 | 0.289 | 1.470 |
| Coefficients: | | | | |
| | Estimate | Std. Error | T value | Pr(> t) |
| (Intercept) | -1.019e+00 | 7.753e-01 | -1.315 | 0.18928 |
| CEO>Age | -1.005e-02 | 9.341e-03 | -1.076 | 0.28269 |
| Remuneration | 1.440e-09 | 1.762e-09 | 0.817 | 0.41410 |
| Managerial.Ownership | -7.937e-01 | 5.567e-01 | -1.426 | 0.15464 |
| Institutional.Owner-ship | -2.371e-01 | 7.036e-01 | -0.337 | 0.73630 |
| Blockholder.ownership | 9.675e-01 | 3.612e-01 | 2.679 | 0.00766** |
| CEO.Duality | 5.220e-01 | 2.167e-01 | 2.409 | -0.01638 |
| Board.Ind | 9.441e-01 | 7.414e-01 | 1.273 | 0.20352 |
| Board.Size | 3.842e-02 | 4.385e-02 | 0.876 | 0.38140 |
| signif. codes: 0 '***%' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '1' | | | | |
| Residual standard error: 1.771 on 461 degrees of freedom Multiple R-squared: 0.04078, Adjusted R-squared: 0.02413 | | | | |
| F-statistic: 2.45 on 8 and 461 DF, p-value: 0.01325 | | | | |

Table 4 shows the impact of managerial entrenchment and capital structure over performance. ROA is used as a measure

to understand the profitability of the firm, an increase in ROA indicates high profitability and similarly decline in ROA

indicates fall in the profitability. Here we can see that, block holder ownership and CEO duality is highly regressed with ROA. Since the p-value of the model is less than 0.05 the model is considered valid. We can see that as the CEO age or in other words when the managers are nearing the age of

retirement and an increase in managerial and institutional ownership leads to a drop in the profitability, similarly an increase in block holder ownership, remuneration of managers, CEO duality, size and independence of the board will lead to rise in the profitability of the firm.

Table 5. Regression between Asset Tangibility and Independent Factors

| | | | | |
|---|------------|------------|---------|--------------|
| Formula = Asset.Tangibility ~ CEO.Age + Remuneration + Managerial.Ownership + Institutional.Ownership + Blockholder.ownership + CEO.Duality + Board.Ind + Board.Size, data = data_1 | | | | |
| Residuals: | | | | |
| Min | 1Q | Median | 3Q | Max |
| 0.67107 | -0.18739 | 0.01765 | 0.21289 | 0.58317 |
| Coefficients: | | | | |
| | Estimate | Std. Error | T value | Pr(> t) |
| (Intercept) | 3.967e-01 | 1.185e-01 | 3.346 | 0.000886 *** |
| CEO.Age | 2.002e-10 | 1.428e-03 | 3.127 | 0.001877 ** |
| Remuneration | 2.002e-10 | 2.694e-10 | 0.743 | 0.457717 |
| Managerial.Ownership | -2.827e-01 | 8.512e-02 | -3.321 | 0.000967*** |
| Institutional.Ownership | -3.385e-01 | 1.076e-01 | -3.147 | 0.001757** |
| Blockholder.ownership | 1.329e-01 | 5.523e-02 | 2.406 | 0.016521* |
| CEO.Duality | 1.261e-01 | 3.313e-02 | 3.806 | 0.000160*** |
| Board.Ind | -8.100e-02 | 1.134e-01 | -0.715 | 0.475218 |
| Board.Size | -8.071e-03 | 6.704e-03 | -1.204 | 0.229284 |
| signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 Residual standard error: 0.2707 on 461 degrees of freedom Multiple R-squared: 0.07674, Adjusted R-squared: 0.06072: F-statistic: 4.79 on 8 and 461 DF, p-value: 1.128e-05 | | | | |

Table 5 shows the impact of managerial entrenchment and corporate governance over capital structure with the help of asset tangibility ratio. Here we have considered asset tangibility as a variable to measure the borrowing ability of the firms. Higher asset tangibility indicates higher borrowing power of the firm; this is because it enables creditors to easily

make a claim over the firm's asset. This is a main influencer of corporate leverage. From the above table it's evident that asset tangibility is highly regressed by CEO age, duality, managerial, institutional and block holder ownership. A relative change in board independence and board size will cause an adverse effect on asset tangibility; similarly, it also shows a negative impact

of managerial and institutional ownership over asset tangibility. Similarly, a slight change in age, remuneration, block holder

ownership and CEO duality leads to a positive impact over asset tangibility.

Table 6. Regression between Debt Equity Ratio and Independent Factors

| | | | | |
|---|------------|------------|---------|-------------|
| Formula = DE.Ratio ~ CEO.Age + Remuneration + Managerial.Ownership + Institutional.Ownership + Blockholder.ownership + CEO.Duality+ Board.Ind +Board.Size, data = data_1 | | | | |
| Residuals: | | | | |
| Min | 1Q | Median | 3Q | Max |
| -3.785 | -1.513 | -0.756 | 0.115 | 51.232 |
| Coefficients: | | | | |
| | Estimate | Std. Error | t value | Pr(> t) |
| (Intercept) | 7.792e+00 | 2.129E+00 | 3.660 | 0.000281*** |
| CEO.Age | 5.705E-02 | 2.565e-02 | -2.224 | 0.026600* |
| Remuneration | -1.112E-09 | 4.838e-09 | -0.230 | 0.818273 |
| Managerial.Ownership | -2.430e+00 | 1.529E+00 | -1.590 | 0.112609 |
| Institutional.Ownership | -3.957e+00 | 1.932E+00 | -2.049 | 0.041073* |
| Blockholder.ownership | 1.477e+00 | 9.917e+00 | -1.489 | 0.137219 |
| CEO.Duality | 1.072e+00 | 5.949E+1 | 1.802 | 0.072216 |
| Board.Ind | -2.369e+00 | 2.0362+00 | -1.164 | 0.245176 |
| Board.Size | 4.689e-02 | 1.204e-01 | -0.389 | 0.697109 |
| signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 Residual standard error: 4.862 on 461 degrees of freedom Multiple R-squared: 0.04276, Adjusted R-squared: 0.02614 | | | | |
| F-statistic: 2.574 on 8 and 461 DF, p-value: 0.009346 | | | | |

Table 6 also helps in establishing the impact of managerial entrenchment and corporate governance factors over the capital structure of the firm. This model uses debt equity ratio to explain the impact. Usage of debt equity ratio in the study is justified as it indicates the amount of debt component present in the company's capital structure and the financial leverage that is available. The ratio also shows the level of risk that is

tied up with the capital structure. From the table we can observe that, both the entrenchment and governance factors have a negative impact over the usage of debt funds. High negative influence is made by the age factor, followed by board size, institutional ownership, board independence, managerial ownership and so on so forth. This model is also considered valid because the p-value of the model is below 0.05.

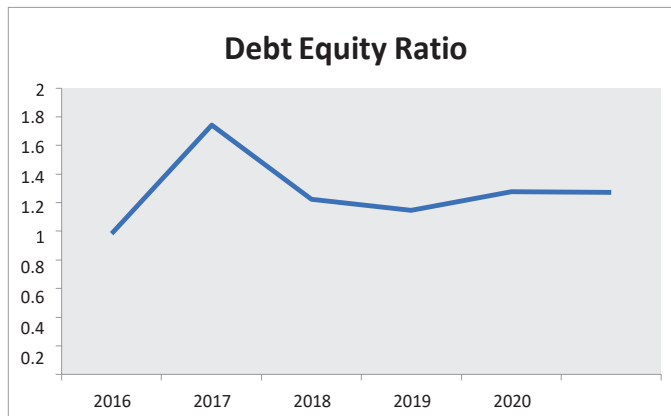
Table 7. Determinants of Capital Structure

| | | | | |
|---|----------|------------|---------|-----------|
| Formula = DE.Ratio ~ PBIT on Total.assets + Size + Asset.Tangebility + Liquidity, , data = data_1 | | | | |
| Residuals: | | | | |
| Min | 1Q | Median | 3Q | Max |
| -4.260 | -1.189 | -0.726 | -0.141 | 52.436 |
| Coefficients: | | | | |
| | Estimate | Std. Error | t value | Pr(> t) |
| (Intercept) | -1.87736 | 1.33663 | -1.405 | 0.1608 |
| PBIT on Total.assets | -0.03162 | 0.01336 | -2.367 | 0.0184* |
| Size | 0.28639 | 0.13150 | 2.178 | 0.0299* |
| Asset.Tangebility | 1.36848 | 0.83090 | 1.647 | 0.1002 |
| Liquidity | -0.01556 | 0.01379 | -1.128 | 0.2598 |
| signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 Residual standard error: 4.878 on 465 degrees of freedom Multiple R-squared: 0.0279, Adjusted R-squared: 0.01953 F-statistic: 3.336 on 4 and 465 DF, p-value: 0.01041 | | | | |

Table 7 shows the determinants of the capital structure. Debt equity ratio is being used as the dependent factor because it shows the usage of debt and equity component in the firm’s capital structure. PBIT as a percentage of sales, size as the natural log of assets, asset tangibility and liquidity are considered as the factors determining the capital structure. From the

table it’s clear that, PBIT as a percentage of sales and size of the firm is regressed with that of debit equity ratio. Size of the firm and asset tangibility causes a positive movement in the debt equity ratio but wherein the increase in PBIT as a percentage of sales and liquidity leads to fall in the ratio. As the p-value is less than 0.05 the model is considered valid.

Figure 2. Trend of Debt Equity Ratio



The above figure shows the trend pattern of the capital structure of the firms. Debt equity ratio is being used to understand the usage of debt and equity financing, the average of the same is being taken for analyzing the trend over the past five-year time period. From the figure it's clearly evident that the debt component in the capital structure is very low. This is due to the fact that nowadays many companies are willing to be debt free and moving towards equity culture of financing. Even though we can see a hike and fall in the trend the range is always in between 1.0-2.0. Moreover, since the average ratio over the period is less than the generally accepted level 2.0, we can also say that majority companies are doing well. Moreover, since the average ratio over the period was less than the generally accepted level of 2.0, we can also say that the majority of companies are doing well.

5. Findings and Recommendation

From this study it's evident that as and when the managers reach older age or when they near the retirement age and alongside when the managerial ownership increases there raises agency conflicts. The managers who attain old age won't be willing to take up a risky project or bring in some innovative ideas into its operations at this time, this is because a shortfall in the project will adversely affect their personal goodwill that they have created over years, keeping this in mind they will just continue with the existing ones and not new ones irrespective of how profitable they are. Then on other hand, they kept CEO remuneration and firm performance tied in together. That is higher the firm performance higher will be their remuneration, through this approach to some extent firms where able

to maintain their profitability even when the CEOs were being aged. Along with remuneration, presence of institutional ownership also had a positive effect on firm performance. Institutional investors always focus on reduction of insider ownership and proper analysis, through this they tried ensuring maximum shareholder value, thus helping in better performance of the firms. The study also indicates that CEO duality, board independence and board size make a positive influence on the firm performance. The study also reveals age and remuneration of managers

do have a significant positive impact on asset tangibility; this indicates the tendency of managers to build a strong financial layout for the firm and on other hand increased presence of managerial and institutional ownership negatively affect asset tangibility because asset tangibility increases the borrowing power but then this negative impact exhibits the unwillingness of existing stake holders to rise funds through debt financing. In accordance with other studies, our study also shows the negative impact of managerial entrenchment factors over the capital structure of the entity. Age is most adversely affecting capital structure followed by institutional ownership, remuneration, managerial and institutional ownership so as the presence of these factors increase, the amount of debt component keeps falling. The negative impact of board independence and board size over asset tangibility shows the unwillingness of management to use debt funds and this effect subdue the high significance of CEO duality over asset tangibility. The outcome of the model based on debt equity ratio is in line with the previous model, which is based

on asset tangibility; that is here also board independence, and size has a negative impact over the capital structure again proving the management's decisiveness over the usage of borrowed funds. The result of the debt equity ratio model is consistent with the previous model, which is based on asset tangibility; that is, board independence and size have a negative influence on the capital structure, demonstrating management's decisiveness over the use of borrowed money. In line with many other research our findings show that size and asset tangibility have a favourable influence on the entity's capital structure. Both of these criteria enable the corporation to use its excellent financials to increase the debt component of their capital structure. Profitability differs from the bulk of prior research in that it has a negligible negative influence on the firm's capital structure. On the other hand, when it comes to liquidity, it is usually assumed that the more liquid the business is, the cheaper the cost of stock will be. Hence, those firms will be interested in employing more of equity funds than debt funds. In the course of the study, we could see that majority of the Indian firms follow equity culture. This signifies that most of the companies are self-sufficient and are able to generate cash internally to finance all its operational, financing and investment requirements. We can also presume that the declining advantage ratio indicates the presence of a more vibrant and constructive stock exchange. Hence, those firms will be interested in employing more equity funds than debt funds. In the course of the study, we could see that the majority of the Indian firms follow an equity culture. This signifies that most of the companies are self-sufficient and are

able to generate cash internally to finance all of their operational, financing, and investment requirements. We can also presume that the declining advantage ratio indicates the presence of a more vibrant and constructive stock exchange.

6. Conclusion

The study strived to understand the phenomenon of managerial entrenchment and its impact on the firms' performance and capital structure along with corporate governance. This is a much-debated topic with limited literature and that distinguishes this paper from previous researches. The result of this literature reveals that firm performance is adversely affected by age, managerial ownership and is positively influenced by institutional ownership, board independence and remuneration. The study also shows the reluctance of management towards the debt funds irrespective of the strong financial base they have. It is also presumed that the presence of the effectual stock exchange and this fast-growing Indian economy attracts potential investors to a large extent making the companies financially risk free by reducing the debt component

7. Scope for further study

As intimated the paper was an attempt made to have a complete idea over the impact of managerial entrenchment and corporate governance over performance and capital structure of the firm, but then factors like tenure of manager, seniority of managers, service length, governance ratings could not be included in the study due to its unavailability. A study including the aforesaid factors will help in gaining deeper insight on the same.

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Redefining the Role of Social Media Influencers in Strategic Marketing Communication

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Abstract

For leveraging influencer marketing to shape the consumers' purchasing decisions, the effectiveness of influencers' performance must be evaluated. The study aims to identify significant factors affecting the followers' intention towards the influencers' performance. Further, by applying hierarchical and k-means cluster analysis, profiling of respondents was done based on psychographic factors. EFA results unveiled five underlying dimensions of influencers namely perceived homophily, hedonic value, influencer uniqueness, emotional attachment, and opinion leadership. Hierarchical and k-means cluster methods have segmented 182 respondents into three different groups namely: *Constructive Indifferent*, *Aficionado* and *Gremlin*. Thus, each cluster ascribes varied importance to each factor. The paper contributes useful influencer marketing-based strategic implications for practitioners and brands to effectively target these diverse segments.

Keywords: Social Media Influencer, Homophily, Hedonic Value, Emotional Attachment, Cluster Analysis.

1. Introduction

Since last two centuries, revolutionary changes transpire in the notion of marketing orientation. From production to product and then to selling orientation, now marketers have shifted their concertation

to societal marketing orientation. In 1972, Kotler introduced the concept of societal marketing which appeals to marketers to ensure, in addition to the basic elements of marketing i.e. profitability and customers' satisfaction, another substantial element

i.e. long- term well-being of society. Despite tremendous efforts towards the welfare of society, marketers fail to serve the true essence of societal marketing orientation. A potential reason behind this is the failure to effectively communicate societal marketing endeavours among consumers. Need of the hour is to safeguard the collapsing marketing orientation by adopting conscience-driven marketing behavior and positioning the same in consumers' mind. To communicate and establish much-needed significance of long-term social well-being in the consumers' mind, the role of digitalisation cannot be ruled out. Study conducted by Minton et al. (2013) illuminates the fact that high level of social media involvement helps to mould consumers' behaviour. One of the popular and most widely adopted methods of SMM is Influence Marketing (Jacobson & Harrison, 2022). SMIs are popular personalities on social media platforms with sizable network who have the ability to influence the followers' attitude (Ki & Kim, 2020). Collaboration with social media influencers, to attract consumers' intention toward their products and services is a remarkable evolution in retail marketing (Ki et al., 2020).

2. Literature Review

Mollaie et al. (2023) investigated the factors influencing the food choices of Canadian young adults based on personal & behavioral factors and environmental perceptions. Further, based on the derived factors, 297 Canadians youth were segmented. Findings reveals six major factors beliefs, familiarity & convenience; joy & experience; food influencers &

sociability; cultural identity and body image are prominent factors affecting food choices of young adults.

Kapoor et al. (2023) described how promotion of sustainable fashion brands is affected by sponsored versus non-sponsored SMI posts. Further, the moderation of benefit association (self vs. other-oriented) was investigated. Based on exploratory and experimental analysis, authors concluded that persuasion power of non-sponsored SMI posts is comparatively high, leading to higher message authenticity and behavior intention.

Jacobson & Harrison (2022) evaluated the use of SMI in promotional strategy of sustainable fashion industry. Based on semi-structured interviews, authors identify 'content creation calibration' to understand the future challenges faced by marketers and SMI while establishing a link between sustainability and entrepreneurship in influencer marketing. Study reveals that different type of influencer are impacted in different ways.

Previous literature confirm that authenticity of influencers and their content is attracting considerable attention of researchers, irrespective of the fact that they are real influencers or computer-generated avatars (Thakur et al., 2023; Robinson, 2020; Silva et al., 2022; Kapitan et al., 2022). Authenticity is related to the perceived genuineness, originality and truthfulness of some object, brand, product or opinion (Audrezet et al., 2020; Ki et al., 2020). People prefer 'authentic' influencers who display a broad range of emotions, demonstrate

their imperfect life, talk about mental health, post images without makeup, etc. (Robinson, 2020). Perception of followers towards influencers is also determined by emotional sensitivity (Hareli & Rafaeli, 2008; Vrontis et al., 2021). Emotionally driven market communication shapes the efficiency of influencer (Vrontis et al., 2021). The emotional attachment that SMIs build with their followers, satisfies their demands for the ideal (by inspiration), relatedness (by likeness), and competence by enhancing their persuasive power (Vrontis et al., 2021). Interactivity is another important factor that strengthens the relationship between influencers and followers (Thakur et al., 2023; Jun & Yi, 2020; Silva et al., 2022). Influencer interactivity is described as a two-way conversation between influencers and their followers that takes place through constant feedback and replies on the comments and direct messages (Jun & Yi, 2020). A higher degree of interactivity creates the impression that the influencer performs his Job passionately and has engaged in the real-time direct response to followers (Jun & Yi, 2020). Overloaded information and amplified digitalized lifestyle have made the customers' attention span extraordinarily short. So, marketers must deliver the content that can capture consumers' attention. Consequently, visual representations have become critical in SMI marketing (Hur et al., 2020). Lou & Yuan (2019) defines the informativeness as the potential of advertisement to provide information about alternative items to enhance consumer satisfaction. Thus, if informative content is created by influencers, it will develop follower's perception towards influencers as a human

brand who meet their talent needs (Thakur et al., 2023; Ki et al., 2020). Perceived similarity with influencers based on gender, proximity, area of interest, or mutual values (Hudders & Jans, 2022; Naderer et al., 2021; Vrontis et al., 2021; Argyris et al., 2020) also shape the opinion of followers.

2.1. Need and Significance of the Study

Since followers consider different attributes of influencers thoroughly, brand needs to be more careful and well-strategized about the ideation of advancement to protect its reputation and brand value. Moreover, the size of the industry demands additional investigation into the different groups of followers to formulate appropriate promotional strategy. This study has been designed to address the need of marketers through factor and cluster segmentation method. Through this study, useful insights may be obtained about the expectations of different group of followers and marketing communication may be strategized accordingly.

2.2. Problem Statement

A number of studies have been conducted in the context of human influencer marketing (Thakur et al., 2023; Lou & Yuan, 2019; Kapitan et al., 2022; Ki et al., 2020; Tan et al., 2021; Jin et al., 2019), but practitioners are still unclear about which factors are ascribed due weightage by Instagram users. The present study aims to explore the critical factors in driving SMIs effectiveness, segment online shoppers based on psychographics and to attempt cluster-wise comparison based on demographics.

2.3. Research Objectives

Objectives of the study are as follow:

- To extract the critical factors driving SMIs (Instagram Influencers) effectiveness.
- To segment online shoppers based on psychographics extracted from factor analysis.
- To compare the clusters (Instagram followers) based on gender, education, usage rate and duration of using Instagram.

3. Research Methodology

3.1. Sample Design

Based on judgement sampling technique, effective sample of 182 university students from Punjab (India) were approached (through hybrid mode) who belong to Gen Z. Instagram is the visually appealing and widely used platform in recent times (Boerman & Müller, 2022;

Mirowska & Arsenyan, 2023). The study is associated with specific cohort of Gen Z as they are the most active online shopper group (Argyris et al., 2020), especially on Instagram (Jin et al., 2019).

3.2. Research Instrument

The study is conducted into two phases. In phase one, the eligibility of respondents was checked based on their awareness level and comfort of respondents to share the information. Ten-Point Likert scale was used ranging from 1 to 10. The respondent who marked more than six points were selected for the second phase of the survey.

To measure the authenticity, four items are adapted from Moulard et al. (2016). Items related to emotional sensitivity are adapted from Kowalczyk & Pounders (2016). Interactivity is rated on four items adapted

from Jun & Yi (2020). Visual aesthetics is measured based on four items adapted from Ki et al. (2020). Four items related to informative value are adapted from Asghar (2015) and Xiao et al. (2018). Finally, the similarity is measured based on five items adapted from McCroskey et al. (1975) and Feick & Higie (1992). Seven-Point Likert scale has been used, ranging from 1 to 7 (1 = strongly disagree, 7 = strongly agree). At the end, demographic information was asked from the respondents.

3.3. Analysis Technique

Firstly, an Exploratory Factor Analysis (EFA) is used to identify the underlying dimension of preferred factors of influencers. After that, hierarchical and non-hierarchical cluster analyses are applied to categorise followers based on homogeneity of psychographic factors.

4. Results and Discussion

4.1. Factor Analysis

Value of KMO test (0.906) and significant test statistics ($p < 0.05$) of Bartlett's Test of Sphericity indicates the suitability of data for EFA. Based on the Principal Component Analysis (PCA), EFA procedure was carried out with Varimax Rotation. EFA has grouped 25 items into five distinct components as shown in Table I.

Based on unique characteristics, each factor has been named as follow:

4.1.1. Factor 1: Perceived Homophily

Firstly, the results show that perceived homophily is the most correlated factor with human influencers. Perceived homophily in influencers' appearance positively impacted followers' perceptions (Stein et al., 2022; Lou & Yuan, 2019; Naderer et al., 2021). According to Taillon et al. (2020), the homophily

principle denotes the formation of relationships with people on social media by considering the similarities among themselves. Schouten et al. (2020) state that similarity with influencers makes it easier for the customer to identify the relatedness in overall beliefs and attitudes. In this context, the perceived homophily builds an association between followers and influencers based on similar thoughts, social class, appearance and actions (Tran et al., 2022).

4.1.2. Factor 2: Hedonic value

Hedonic value is the second most correlated factor. According to Hughes et al. (2019), the hedonic value of a post indicates the level of entertainment and enjoyment of the customer. A high level of hedonic value in sharing content may attract more customers towards their posts (Lee & Wan, 2023; Lin et al., 2018). Further, it strengthens the bond between influencer and customer (Leung et al., 2022). The sense of humour and enjoyable content are connected with the aesthetical presentation which enhances a positive intention of followers towards influencers (Barta et al., 2023).

4.1.3. Factor 3: Influencer Uniqueness

The third factor is labelled as influencer uniqueness. This factor consists of all the attributes related to unique performance of influencer i.e. “commitments,” “truthfulness,” and “true passion” towards the job. ‘Being unique’ in influencer marketing indicates that influencer’s persona does not imitate the content or ideas of others (Wellman et al., 2020). Thus, influencers may create a favourable perception among followers by sharing unique content, genuine pictures and video with authentic value (Audrezet et al., 2020). Furthermore, influencer uniqueness creates a parasocial relation

with followers, which encourages the audience to follow them (Chen et al., 2023).

4.1.4. Factor 4: Emotional Attachment

The fourth factor is named as emotional attachment. This factor specifically deals with the sense of ‘bond’ and ‘emotional connection’ with influencer and ‘in-depth belief’ in communication. Emotional attachment plays a significant role in engaging the follower with the human influencer (Fernández & Castillo, 2021). While considering emotional attachment, followers are more bothered by the influencer’s action (Ki et al., 2020). According to Barta et al. (2023), by strengthening their persuasive power, influencers may develop emotional attachment with the followers.

4.1.5. Factor 5: Opinion Leadership

The fifth factor is labelled as ‘opinion leadership’. The factor comprises of those attributes which may influence the opinion of followers i.e. use of content as “source of information,” considering their content “better than internet search,” and provide “informative” content related to products. Opinion leadership signifies the role of an influencer by offering helpful and exciting information (Farivar et al., 2021). As followers give more importance to the informativeness, influencers should frequently provide informative values in content to attract followers (Saima & Khan, 2020).

4.2. Cluster Analysis

Agglomeration schedule and dendrogram suggest three as suitable number of clusters. Results of cluster analysis (as shown in Table II) reveal that cluster 1 contains 82 members, second cluster consists of 61 members, and Cluster 3 is formed by 39 members. P value < 0.01 level indicates that a significant difference

exists among groups. For analysing the significant variances among clusters across different factor, Tukey post-hoc multiple comparison test was performed (presented in table II).

4.2.1. Cluster A (Constructive Indifferent)

Members of cluster A acknowledge the passion and love of influencer towards his job but assign less trust on the truthfulness of information provided by them. Equal weightage is given by these members to Influencer Uniqueness as ascribed by cluster B except to believe on truthfulness of information instinctively. 56% members of this cluster are post graduated who use the social media more responsibly. Perhaps due to this, the purchasing decision of this group is not much effected by the influencer. They find the content shared by influencer as informative but other sources of information on the internet are also duly considered by them. This group reflect low score on emotional attachment with the influencer. This is likely due to the fact that members do not perceive influencer similar to their personality. Based on these prominent psychographic characteristics, Cluster A is labelled as *Constructive Indifferent*.

4.2.2. Cluster B (Aficionado)

Members of cluster B reflected high positivity and loyalty towards influencers. They appreciate the influencer uniqueness and trust the information provided by them. They are more fascinated towards the content provided by influencers. Perceived homophily is significant factor for these people. With a positive outlook towards influencers, this group is having highest emotional attachment with their admired influencer. This group rely heavily on the information provided by influencer and their purchasing decisions get affected by endorser. Reason may be assigned to

the fact that majority of people in this cluster are undergraduate who are younger and more attracted towards social media influencer. Based on these attributes, this cluster may be called *Aficionado*.

4.2.3. Cluster C (Gremlin)

Third cluster comprises of people assigning least emphasis to the underlying dimensions of different factors. Lowest scores on each dimension as compared to other groups show the negative attitude towards influencer. As this group is sceptical about the information shared by influencers, so while shopping these people don't follow their recommendations and rely on other sources. Perceived homophily is least scored factor by this group after emotional attachment indicating their rugged personality. Members of this cluster neither appreciate the efforts of influencer nor reflect any faith in them. Based on their low rating and negative attitude of these members towards influencers, this cluster may be called as *Gremlin*.

Table III indicates that usage rate of Instagram, duration of Instagram account, gender and education level are not act as significant discriminators among clusters. This might be due to the fact that in today's era of social media, psychographic attributes play substantial role in discriminating the cluster. Despite the fact that demographic attributes have not been identified as significant discriminators, but are still essential for visualising group differences.

5. Managerial Implications

With the advancement of digital technologies and plethora of information available over social media platforms, efficacy of influencer becomes essential to transpose the consumers' attitude and habits. Marketers and practitioners

may acquire the key implications to determine which attributes and qualities are predominantly preferred by followers which may instigate behavioural changes in them. Based on the distinct clusters, marketers may strategize their promotional methods which suits to their marketing needs. So far, brand managers should approach influencers who deliver authentic content among followers. Followers pay attention to concrete and truthful information, so influencers must avoid falsified or misleading information. While delivering the any promotional content, hedonic values should also be ensured. Advertising managers should consider human influencers who transmit attractive and admirable content. For *Aficionado*, portrayal of more passionate attitude and uniqueness in content may facilitate to shape their positive perception. Member of this segment demand more convivial atmosphere. Sustaining and delivering the content with interactive posts, live videos, memes etc. may further strengthen their emotional affinity towards them. Members of *constructive Indifferent* experience low emotional attachment and less homophily attribute in influencer which develop cynicism towards the information provided. In order to change the attitude of this group, influencer should adopt emotional pitch in the content. Emotionally driven marketing communication shapes the efficiency of influencer marketing in endorsements (Vrontis et al., 2021). Moreover, *Constructive Indifferent* people demand the influencers with reliable and credible sources of information. Endorser should present their information with creative skills without compromising with the truthfulness and integrity of the content. It is expedient for Influencers

and marketers to monitor the element of perceived homophily to enhance the followers' engagement and to eliminate the dissonance especially among *Constructive Indifferent* and *Gremlin*. Alignment of demographic, behavioural and personality traits of the influencers with that of followers may facilitate in sustaining their interest and long-term relationships. For *Gremlin*, managers may utilise some other promotional techniques as this group is quite pessimistic towards influencers. It may be more appropriate for marketers to develop strategies based on psychographic discriminators rather than demographic characteristics of consumer groups.

Conclusion

Influencer marketing strategy attained great dominance among businesses and practitioners to build a relationship between marketers and customers. As an alternative to widely adopted segmentation strategies based on demographic variables, psychological attributes act as more credible segmentation strategy. This allow marketers to identify the attitudinal discriminators and develop innovative marketing strategies specific to the target audiences. The present study reflects transforming endorsement patterns to inculcated the positive brand attitude among consumer by leveraging advanced marketing techniques. The present study is confined to explore the important factors affecting the followers' attitude towards the performance of human influencers, academicians may tread towards exploring the underlying dimensions determining the performance of Virtual Influencer and discriminating the group based on psychographic and demographic elements.

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Table I: Factor Analysis

| Factor and item | Factor loading | Eigen value | variances |
|--|----------------|-------------|-----------|
| Factor 1: Perceived Homophily ($\alpha = 0.931$) | | 11.479 | 19.926 % |
| I feel that this influencer looks similar to me. | .881 | | |
| I feel that this influencer's background is similar like mine. | .871 | | |
| I feel that this influencer appears similar to me. | .859 | | |
| I feel that social class of this Influencer similar to that of mine. | .844 | | |
| I feel that this influencer thinks like me. | .733 | | |
| This Influencer responds to me quickly and efficiently. | .554 | 3.612 | 19.457 % |
| Factor 2: Hedonic Value ($\alpha = 0.918$) | | | |
| I feel that content provided by influencers isaesthetically pleasing. | .845 | | |
| I feel that content provided by influencers is attractive. | .836 | | |
| I feel that content provided by influencers is visually appealing. | .794 | | |
| I feel that this influencer finds the idea of online interaction with followers as pleasant. | .690 | | |
| This influencer likes to participate actively in online discussions. | .664 | | |
| The visual appearance of the influencer's content in the posts is admirable. | .639 | | |
| I feel that this influencer enjoys initiating a dialogue with his/her followers. | .564 | | |
| Factor 3: Influencer Uniqueness ($\alpha = 0.885$) | | 1.751 | 12.927 % |
| I feel that this influencer loves what he/she does on Instagram. | .856 | | |
| I feel that this influencer does his/her best to share the content. | .817 | | |
| I think I can trust the truthfulness of this influencer regardless of the situation. | .772 | | |
| I feel that this influencer has a true passion for providing content. | .733 | | |
| Factor 4: Emotional Attachment ($\alpha = 0.92$) | | 1.264 | 12.762 % |
| I feel a bond with the influencer that I follow. | .839 | | |
| The influencer says something true and deep about who I am as a person. | .777 | | |
| I am emotionally connected with this influencer. | .763 | | |
| If the influencer would no longer be in the spotlight, I would feel anxiety. | .730 | | |
| Factor 5: Opinion Leadership ($\alpha = 0.897$) | | 1.175 | 12.052 % |

I use the content of this influencer as a source of information. .818The influencer I follow provides me with better information than an internet search. .806 I find this influencer content to be informative. .782This influencer helps me in shopping by providing information related to products with his/her content. .537

Table II: Mean Score and ANOVA between Clusters

| Factors | Cluster A (Constructive Indifferent) | Cluster B (Aficionado) | Cluster C (Gremlin) | F values*** | ANOVA (Sig. Level) |
|---------|--|---------------------------|------------------------|-------------|--------------------------|
|---------|--|---------------------------|------------------------|-------------|--------------------------|

Influencer Uniqueness

| | | | | | |
|---|----------------------|----------------------|----------------------|--------|------|
| True passion for providing content | 5.29 ^c | 5.8 ^c | 3.59 ^{A, B} | 40.489 | 0.00 |
| Influencer does his best to share the content | 5.51 ^c | 5.8 ^c | 3.74 ^{A, B} | 39.484 | 0.00 |
| Influencer loves what he does on Instagram | 5.66 ^c | 5.77 ^c | 4.03 ^{A, B} | 23.579 | 0.00 |
| I trust the truthfulness of influencer | 4.66 ^{B, C} | 5.49 ^{A, C} | 3.31 ^{A, B} | 30.055 | 0.00 |

Emotional Attachment

| | | | | | |
|---|----------------------|----------------------|----------------------|--------|------|
| I am emotionally connected with this influencer | 3.02 ^{B, C} | 5.23 ^{A, C} | 2.13 ^{A, B} | 65.252 | 0.00 |
| Influencer says true and deep about who I am as a person | 3.48 ^{B, C} | 5.44 ^{A, C} | 2.51 ^{A, B} | 56.919 | 0.00 |
| I would feel anxiety if influencer would no longer in spotlight | 2.26 ^B | 5.31 ^{A, C} | 2.13 ^B | 87.753 | 0.00 |
| I feel a bond with the influencer | 3.18 ^B | 5.33 ^{A, C} | 2.51 ^B | 50.526 | 0.00 |

Hedonic Value

| | | | | | |
|--|----------------------|----------------------|----------------------|--------|------|
| Influencer enjoys initiating a dialogue with his/her followers | 4.33 ^{B, C} | 5.62 ^{A, C} | 2.79 ^{A, B} | 63.428 | 0.00 |
|--|----------------------|----------------------|----------------------|--------|------|

| | | | | | |
|---|----------------------|----------------------|----------------------|--------|------|
| Influencer likes to participate actively in online discussions | 4.96 ^{B, C} | 5.82 ^{A, C} | 3.31 ^{A, B} | 61.289 | 0.00 |
| Influencer finds the idea of online interaction with followers as pleasant | 5.06 ^{B, C} | 5.84 ^{A, C} | 3.26 ^{A, B} | 73.205 | 0.00 |
| Content provided by influencers is aesthetically pleasing | 5.45 ^C | 5.7 ^C | 3.64 ^{A, B} | 50.973 | 0.00 |
| Content provided by Influencers is attractive | 5.68 ^C | 5.93 ^C | 4 ^{A, B} | 51.212 | 0.00 |
| Content provided by influencers is visually appealing | 5.66 ^C | 5.9 ^C | 3.85 ^{A, B} | 54.855 | 0.00 |
| Visual appearance of the influencer's content in the posts is admirable | 5.68 ^C | 5.9 ^C | 3.95 ^{A, B} | 51.414 | 0.00 |
| Opinion Leadership | | | | | |
| This influencer helps me in shopping by providing information related to products | 4.9 ^{B, C} | 5.9 ^{A, C} | 3.31 ^{A, B} | 45.492 | 0.00 |
| I use the content of this influencer as a source of information | 5.37 ^{B, C} | 5.89 ^{A, C} | 3.54 ^{A, B} | 53.519 | 0.00 |
| I find this influencer content to be informative | 5.46 ^{B, C} | 5.92 ^{A, C} | 3.46 ^{A, B} | 71.989 | 0.00 |
| The influencer I follow provides me with better information than an internet search | 4.93 ^{B, C} | 5.74 ^{A, C} | 3.26 ^{A, B} | 44.804 | 0.00 |
| Perceived Homophily | | | | | |
| Responds to me quickly and efficiently | 3.09 ^{B, C} | 5.16 ^{A, C} | 2.33 ^{A, B} | 57.166 | 0.00 |
| Influencer thinks like me | 3.4 ^B | 5.34 ^{A, C} | 2.79 ^B | 55.277 | 0.00 |

| | | | | | |
|--|----------------------|----------------------|----------------------|---------|------|
| Influencer Background is similar to mine | 2.67 ^B | 5.2 ^{A, C} | 2.72 ^B | 83.636 | 0.00 |
| Similar social class | 2.55 ^B | 5.36 ^{A, C} | 2.69 ^B | 103.509 | 0.00 |
| Influencer looks similar to me. | 2.21 ^{B, C} | 5.39 ^{A, C} | 2.87 ^{A, B} | 115.588 | 0.00 |
| Influencer appears similar to me | 2.26 ^{B, C} | 5.49 ^{A, C} | 2.85 ^{A, B} | 125.899 | 0.00 |

Note: Level of significance: *** = $p \leq 0.01$; Letters (A, B, C) represent a significant difference to the corresponding cluster (Tukey Post Hoc Test multiple comparison at significant level 0.05).

Table III: Crosstabs among clusters

| | Cluster A (Constructive Indifferent) (N = 82) n (%) | Cluster B (Aficionado)(N = 61) n (%) | Cluster C (Gremlin) (N = 39) n (%) | |
|---|---|---|---|-----------------------|
| Usage Rate of Instagram | | | | $\chi^2 = 12.08$ (NS) |
| Several times a day | 70.73 | 73.77 | 79.49 | |
| Few times a week | 9.76 | 4.92 | 0.00 | |
| Once a day | 7.32 | 11.48 | 5.13 | |
| Weekends Only | 0.00 | 4.92 | 5.13 | |
| Infrequently | 12.20 | 4.92 | 10.26 | |
| Ownership Duration of Instagram Account | | | | $\chi^2 = 6.36$ (NS) |
| More than 3 years | 56.10 | 70.49 | 58.97 | |
| 2-3 years | 21.95 | 16.39 | 25.64 | |
| 1 -2 years | 13.41 | 9.84 | 7.69 | |
| 6 months - 1 year | 3.66 | 0.00 | 5.13 | |
| Less than 6 months | 4.88 | 3.28 | 2.56 | |
| Gender | | | | $\chi^2 = 0.38$ (NS) |
| male | 62.20 | 60.66 | 66.67 | |
| Female | 37.80 | 39.34 | 33.33 | |
| Education Level | | | | $\chi^2 = 0.474$ (NS) |
| Ph.D. | 2.4 | 1.6 | 0.00 | |
| Post-Graduation | 56.1 | 47.5 | 64.1 | |
| Under Graduation | 41.5 | 50.8 | 35.9 | |
| Note: NS = Not Significant | | | | |

Gender Equality and Diversity in Leadership Roles

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ABSTRACT

While some progress has been made in reducing income inequality around the world, women remain disadvantaged compared to men parity in pay, management and leadership positions. Ensuring gender equality and diversity in corporate boards can help change societal perceptions towards women and, in turn, play an instrumental role in facilitating society-wide progress in socio-economic indicators. The gender gap also affects women's growth and employment opportunities.

This study undertakes a systematic review of the available international literature published in the last five years, looking into regulations and trends on gender diversity on corporate boards and discrimination in labour force participation. While the scope is global, specific attention has been paid to women's status in Asian countries. It is found that, despite various regulatory provisions in place in most countries, gender diversity is still considered a tokenism. A global consensus is emerging that a minimum critical number of female representations is 30% of the directors to bring real diversity. Many Asian countries follow this global trend and are attempting to implement national provisions to ensure women's participation. Among other contributions, the paper also reflects on the impact of these policy and regulatory changes on corporate climate at the global level and recommends steps for increased diversity and reducing gender gaps at all levels.

Keywords: gender diversity, corporate governance, gender gap, women in corporate boards, diverse boards, firm performance, decision-making.

JEL: D9, D12, D91, G38, J16, L16, M14,

INTRODUCTION

Struggle against inequality became more pronounced due to the two years of severe Pandemic of Covid-19, adversely impacting working women all across the globe. Women suffered disproportionate job losses, more stayed at home for child-

care and witnessed an increase in gender-based violence. UN Women (2022) in its analysis on 'COVID-19: Rebuilding for Resilience' stated that the pandemic was expected to 'push an estimated 47 million additional women and girls into extreme poverty', which would have

further increased the gender poverty gap. The same report also suggested that state plans to mitigate the reverses in gender inequality have not succeeded and much is required to be done. To a certain degree, the UN's attempt to bring more gender equality through its global initiative of Sustainable Development Goals (UN SDG, 2022), especially SDG-5 on gender equality, has been playing a catalytic role.

Gender equality and diversity have to be addressed at leadership, as well as organised and unorganised employment levels. The formal organisations reflect this with equal women representation on the board of directors of a corporation (Wieczorek-Szymanska, 2020). At the apex level of the corporate world, the Russell-1000¹ shows that the share of women on corporate boards remains dismal as only 3% of the companies have at least 50% female directors on the boards (Taylor, 2022). At the policy level, there is growing evidence of support, but the actual progress in leadership diversity has not been as fast as it should be (Azmat & Boring, 2020). While the global South attempts to fight extreme poverty and employment inequalities, the global North has been struggling to bring more women into the corporate board teams.

Formal regulations on diversity were set under UN provisions in the post-World War II era. The UN accepted a convention on the abolition of all forms of discrimination against women (CEDAW) in 1979 (UNHR, 2020). The UN Commission framed in 1946, had studied the status of women and it took nearly 30 years to come up with the CEDAW. Article 11 of the Convention specifically

mandates that all women should get equal opportunities and the same wages for similar tasks. A study of the regulatory provisions and underlying theories of leadership or stakeholders' perspectives shows the usefulness of board diversities for an organisation. General antipathy and under-representation of women on the corporate boards for many decades forced many progressive governments to enact gender quota legislation, thus legally mandating the appointment of women on the boards (Gupta & Jain, 2020, Dogan & Acar, 2020).

Including women directors in the corporate boards is about celebrating and recognizing the differences in each person in an organisation. Many boards are realising that these different opinions and views enable boards to plan better and indicate success in diversity and decision-making (Kirchbenbauer, 2020). The impact of various corporate board diversity on firm performance has been studied extensively in numerous research. and overall contributions to strategic decision-making (Andrieş et al., 2020; Almutairi & Quttainah, 2020). The Decision-making of corporate boards directly impacts their strategic directions and ultimately organisational performance. Female-led boards are accepted as the most efficient regarding the audit processing and settlement of disputes (Dogan & Acar, 2020).

The recent World Bank report 'Women, Business and the Law 2022' provides a glimpse of relative progress in specific parameters of women's inequality. The capital-rich and high-income group in the Organisation for Economic Co-operation

and Development (OECD) along with Europe, and some parts of Central Asia have the highest average scores on these parameters, indicating substantial progress. On the same parameters, growth in equal rights for both genders has been slow or none in most of the Middle East and North African regions. On a positive score, the report claims that most governments are implementing good-practice laws attempting to improve women's participation in economic activities (World Bank, 2022). Asia has shown varying degrees of progress or stagnation on gender-parity attributes.

Duflo (2012) discussed two sides of development which correspond to women empowerment and economic development. She argued that economic development itself is a major cause of reducing gender inequality. Similarly, women's economic empowerment can bring in more economic development in an area or a country. The author called this a 'bi-directional relationship' and comes from enabling women to participate in economic activities at all levels. Basic social parameters of health, education, job avenues, participation in the political process and normative measures of equal rights can be the prime enabling provisions. Unfortunately, even now the global average 'Women, Business and the Law' score are 76.5 out of 100, which shows that women on an aggregate level have only 75% rights as compared to men in the given parameters (World Bank, 2022).

The empowerment debate is also reflected in the discussion on paid and unpaid work by Blecker and Braunstein (2022). The

authors called for recognising and giving due importance and economic value to unpaid care and domestic work. This has also been mentioned in SDG Number 5 on gender equality and should be a policy agenda toward women empowerment. There is a direct correlation between the low status and low pay of care work in the market economy. Inequality increases with the unequal sharing of care needs within various households in society. Another study on adding household work economics in Turkey criticised the conventional poverty measures as a poor gauge of the quality of life since these do not include household-level inequalities. A multidimensional poverty index was suggested with weightage to education, health, and employment, and included household living conditions. Employment is accepted as a major enabler to address the gender gap in poverty in the Turkish context (Tekgüç & Akbulut, 2022).

Two main issues invite attention to this research. Firstly, at the top-level, how various regulatory provisions on gender diversity are being translated at the global corporate level as well as in Asian boardrooms. Secondly, at the working level, employment opportunities, government interventions to reduce inequalities and the creation of more gender-diverse and non-discriminatory workplaces. The paper attempts to bring into focus the following issues with some recommendations:

1. Global and regional trends in regulatory provisions on gender diversity?
2. Reflection on the impact of these policy and regulatory changes in

corporate climate at the global level and steps for increased diversity in the management boards.

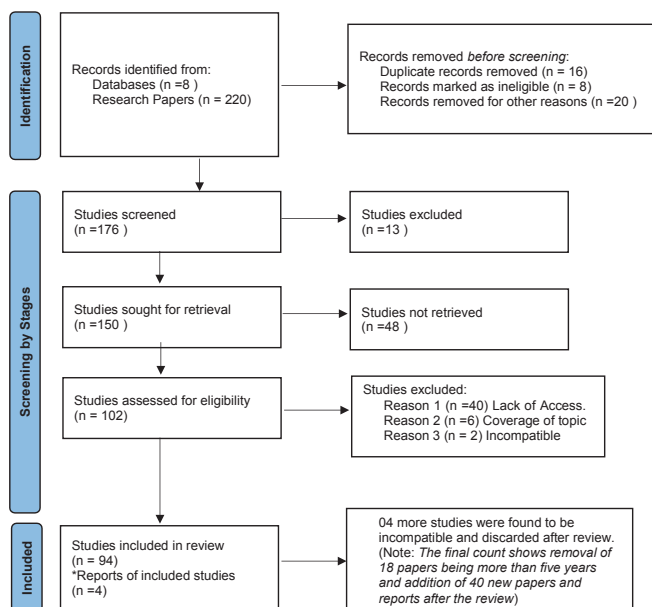
3. Government initiatives in bringing more gender diversity and non-discrimination against women in the workforce.
4. Recommendation on the corporate leadership as well as societal level.

Methodology

The chosen method for collation, coding and analysis of the subject is a systematic

review. There are many methods to carry out a systematic review. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Prisma) Flow Diagram (Page et al., 2020) is one such method where a database search is carried out to find various records that are assessed systematically. A meta-analysis is a part of a systematic review and is considered a statistical process of analysing and combining results from several similar studies.

Identification of Studies via Databases (Prisma Diagram)



Source: Page et al. (2020).

Note: * Reports - Word Bank 2022 Report, UNDP report on SDGs, WEF – 2022 Report, Deloitte 2019 Report.

Search strategy. Keywords used for the search were: *gender-diversity, corporate governance, women on corporate boards, diverse boards, firm performance,*

and strategic decision-making. It was reinforced by adding wildcard characters over the keywords. The database for search started with Google Scholar and included ProQuest, Directory of Open Access Journals, JSTOR, Web of Science, EbscoHost, ERIC, and Scopus. Only scholarly and peer-reviewed journals in the English language were used. Most

review research studies are from the last five years with a few exceptions and over 90% of the studies and reports are from the last three years.

As given in the Prisma flow diagram, based on the keywords and all available electronic databases, the initial identification of studies was 220. These were analysed for relevance, accessibility and scope of each research paper. 44 studies were excluded without downloading due to various reasons as given in the Prisma diagram. Further 13 studies were excluded from the retrieval process, while another 48 could not be retrieved due to cost factors. Out of 102 studies downloaded and reviewed, another four were discarded later. Furthermore, 18 studies were discarded after the first review of the paper, being more than five years old, while 40 new research papers were included. The data of these changes are reflected in the Prisma Diagram.

REVIEW OF LITERATURE

Introduction

Four reports describing gender inequality and the issues of gender discrimination stand out at the global level. These are the World Bank Report on 'Women, Business and Law -2022', UNDP analysis of SDG-5 and its targets, World Economic Forum report on Global Gender Gap -2022 and Deloitte – 2019 report. These provide basic datasets and enable analysis at the global as well as regional levels. The review takes into consideration these reports and builds on the balance of 94 research studies. The review attempts to collate important inferences on the following three issues concerning gender equality and diversity:

1. Theoretical frameworks and trends in regulatory provisions on gender diversity in corporate boardrooms?
2. Reflection on global trends and the impact of these policy and regulatory changes in corporate climate at the global level and steps needed for increased diversity in the management boards and leadership positions.
3. Review of government initiatives in bringing more gender diversity and non-discrimination against the women workforce.

Theoretical Framework and Regulatory Measures

Gender-diversity literature and theories are empirical with a basic correlation to the management literature. Management theories discuss diversity at either individual, group, or organisational levels. Human capital, resource reliance, social identity and agency theory, and social network or social cohesiveness are examples of theories that describe the topic of diversity.

Ng and Khodakarami (2022) explained the focus of **resource dependence theory** on the major strategic actions of a corporate. Organisational influence and interdependence have an important role as each organisation interact with the other. The conflict among the organisations, competitions and state-level treaties are all aimed at sharing scarce resources. Organisations need to be interdependent to survive in a competitive environment. In this environment, directors are required to bridge the resource gaps and maintain collaborative arrangements. This requires appropriate talents and dispositions. More

board diversity studies of recent origin are on resource dependence theory with a gender focus and in particular gender's impact on economic outcomes. The relationship between rewards and self-interest is propagated by **agency theory**, which says that much of organisational activity is based on self-interest. The theory is used to explain the relationship between business principles (the shareholders) and their agents (the managers) (Guping et al., 2020). Al-Jaifi, (2020) described support for gender diversity in the agency theory specifically in associating diversity with a firm's outcomes. Better information flow from the board will serve the shareholders' interests as it will align the managers' interests with those of the shareholders. The agency theory framework has been used in studies to assess the impact of board gender diversity on corporate decisions and the effect on the shareholders (Guping et al., 2020). The notion is primarily focused on the separation of principals and agents in terms of ownership and control (Latif et al. 2020).

The **Resource-Based View Theory** considers a firm to consist of tangible and intangible resources (Utami & Alamanos, 2022). Compared to the agency theory, the resource-based view theory looks at the directors' ability to bring unique resources to the firm. Diverse opinions and mixed board composition are likely to provide a more balanced approach to the application of the resources. Besides that, gender diversity adds to the intangible resources of the corporate boardroom. Huang et al, (2020) stated that based on their studies, women tended to be better qualified because of their independence and high qualifications. Saeed et al. (2022)

through their study of 1542 firms across 31 countries inferred that many socially questionable industries (liquor, tobacco, gambling etc.) have generally acquired a humane face by inducting women on their corporate boards. In a corporate board setting, women directors have displayed tolerance, fairness, benevolence, and creative collaboration among the board members. Some studies also propagate that the composition of the board of directors should reflect the representation of various stakeholders (Grofcikova & Musa, 2020). In addition, Jeroh (2020) studied that the **legitimacy theory** helps firms to achieve their overall value system to reduce the presumed gap between their activities and societal expectations. Thus, Corporate social responsibility is measured by diversity and flows out from many theories of social and gender studies (Wieczorek- Szymanska, 2020).

Taking a cue from the UN intervention regarding CEDAW and other empowering legislations (UNHR, 2022), many countries took to legislative route to enforce diversity and inclusion of women on the board of directors. Nili (2019) discussed increased US congress intervention in gender diversity debates. Ever since the SOX², the US Congress was closely monitored and was concerned with the lack of gender diversity on boards. As in 2017, even after all the pressure from governments, legislatures and investors, women's representation on corporate boards remained at only around 17% in the USA (Nili, 2019).

With constant efforts, the gender gap in educational attainment and employment has substantially narrowed across the globe. There has also been a considerable

increase in the managerial positions held by women. However, the glass ceiling remains intact for the women to reach the top levels, with only 16% of women in the boardrooms and 5.3% in board chair positions in 2018 (Catalyst, 2021). Another report by Egon Zehnder, (2022³) shows that only 23.3% of board positions were held by women in 2020, up from 20.4% in 2018. The overall news is positive but still far from accepted gender parity and the global South is a long way to catch up. France and New Zealand are the only countries with more than 40% of women's board members. Gender representation on business boards in the European Union is highly influenced by legislative measures. Some governments that were earlier opposed to mandatory quotas have moved to implement participation on business boards of directors. Other countries continue to adopt voluntary approaches, resulting in slower overall progress. (Pérez, 2021).

Amongst the Asian countries, South Korea is among the lowest gender parity countries in board composition. This is attributed to the family-controlled chaebols where traditional attitudes around gender roles are very strong. Japan, Russia and China, have rigid lines of board compositions and do not follow any regulations. Malaysia implemented the Malaysian Code of Corporate Governance (MCCG), also known as the 2001 Code, in 2000 to strengthen corporate governance procedures (Zabriet al., 2016). Bernama's (Apr 2022) report in New Strait Times shows that Malaysia has the highest percentage of women board members in Asia. Prepared by Deloitte, it shows 26% female members as against a global average of 19.7%. Malaysia at 34.9%, has the

highest number of women chief financial officers, among the Asian nations.

In India, the Companies Act 2013 introduced some new corporate governance provisions, with a focus on provisions relating to independent directors, female directors, and resident directors. It mandates "*Provided further that such class or classes of companies as may be prescribed, shall have at least one-woman director*" (Companies Act, 2013, Art. 149, p. 98). One of the major goals was to increase board diversity and to strengthen executive directors' roles and accountability. A listed corporation or a public company with a share capital of INR one billion or a turnover of INR one billion or INR three billion must appoint at least one woman director to their board of directors. For some companies, it created a symbolic diversity or 'tokenism' (Chauhan & Dey, 2017).

Global efforts to bring in more diversity have been driven by compliance requirements. Unfortunately, merely sticking to the regulation or mandate is highly intangible and does not validate corporate efforts toward diversity. Even companies like Microsoft have only recently embarked on such changes and the variety of women, Asians, Hispanics, and multiracial employees in the corporation is on the upward push. Looking at the global trends, one determines a slow and uneven pace, highly influenced by the social structures of gender understanding. A comprehensive meta-analysis on the regulation and year of introduction and level of diversity in some of the select countries was carried out by the researchers. Women now comprise about 23% of directors at Russell 3000

companies, up from 15% three years ago, according to data from Equilar. New board appointments are currently about 50-50 men and women. The inclusion was based

on the top 20 economies of the world in 2017, and some other representative countries (Worldometers, 2020). A brief finding of the same is given in Table 1.

Table 1: Women on Corporate Boards

| SN | Country | Year | Important Provisions | Source (Author) |
|---|---------|------|---|--|
| 1 | USA | 2002 | There aren't any national quotas established for women who are on the boards. SOX Act was introduced in July 2002, while GM directors gave their recommendations in 2012. Various state measures have been passed to increase women's representation on boards. While women represent 52% of the U.S. population, just 33% of all financial advisers and only 23.2% of all CFP certificate holders are women. African Americans account for 13% of the population, 8% of advisers, and only 1.5% of all CFP certificate holders. Women hold a total of 28.2% of board seats by 2020. | Tanaka, (2019), Deloitte Report (2019) and CFP Board data (released at the 2019 Diversity Summit); Catalyst (2022) |
| 2 | China | 2001 | There are no regulations, but encouragement on qualifications. Chinese Securities Regulatory Commission incorporated corporate governance regulations. 12% of women directors in 2019 (p. 15). | Economist Report (p. 15, 2019) and Guping et al. (2020). |
| 3 | Japan | 1985 | Equality Opportunity Law of 1985 in Japan bans gender discrimination. 10.7% of women on the boards as of 2020. | Catalyst (2022) |
| 4 | Germany | 2015 | Gender quota legislation was passed in 2015 with a target of 30%. 25.4% of women board members in 2020. | Deloitte (2019); Catalyst (2022) |
| 5 | India | 2014 | In alignment with the Companies Act (2013, Section 149), the SEBI circular of 2014 made it mandatory for all publicly traded corporations to have at least one female director on their board of a total of 16.6% of women board members in 2020. | Gupta & Jain (2020); Catalyst (2022) |
| directors. This comes under corporate governance norms. There was | | | | |
| 6 | UK | 2011 | Davies Review Target of 2011 called for the FTSE-100 companies to ensure at least 25% women representation on boards by 2015. It stands accomplished. A follow-up to the report came in 2016 and it put forth the target of 33%, to be reached by the term ending 2020. Currently, women hold 34.3% of board seats. | Deloitte Report (2019); Catalyst (2022) |
| 7 | France | 2011 | The Copé-Zimmermann Act established a gender quota policy that required large French corporations' boards of directors to have at least 40% female representation by 2017. As of 2019, there were 43.3% women on boards. | Sabatier (2015); Deloitte Report (2019); Catalyst (2020) |

| SN | Country | Year | Important Provisions | Source (Author) |
|----|-----------|-------------|--|--|
| 8 | Brazil | 1988 | The Citizens' Constitution – 1988, declared women equal to men in all legal respects. Brazil too faced the issue of no quota for representation of women on boards. The government's been drafting (2019) a bill that asks for achieving a 30% quota for women on boards by 2022. However, it is still in process with vagueness regarding when Congress shall vote for it. Note that women represented 8.6% of the members on board. | (2020) and Deloitte |
| 9 | Italy | 2012 | In August 2011, Legislation requiring gender quotas for companies listed on regulated markets and those subject to public scrutiny came into force. The directive of 2012 aimed at furthering the board diversity of listed companies throughout the EU. There were 29.3% of women board members in 2018 (p. 122). | Deloitte (2019) |
| 10 | Canada | 2011 | Absence of any national quota in the context of women's representation on board. Since 2011, there exists a 50% gender quota for government-owned company boards in Quebec. New disclosure requirements under Canadian securities laws came into effect in 2015 and were amended in 2020. Women held 31.1% of board seats in 2020. | www.osler.com/osler/media; Catalyst (2022) and Deloitte Report (2019) |
| 11 | Russia | 2018 | No official or mandatory regulation. Sincere advances to improve within the Russian corporate world, women's participation in leadership roles is in progress. 8.5% of women board members in 2018 (p. 9). | Kravtsova, & Rechkalova (2019) and Deloitte, (2019) |
| 12 | S. Korea | 2017 Policy | Formation and implementation of the "The 2nd Framework Plan for Gender Equality Policies". In March 2018, the Democratic Party proposed a legislative bill (the 'Bill') addressing the issues of gender discrimination and sexual harassment. Currently, it is pending before the National Assembly. 2.4% of women on the boards as of 2019. | Ministry of Gender Equality and Family (2020) and Deloitte Report (2019) |
| 13 | Australia | 2016 | Workplace Gender Equality Act 2012 was amended and in force on 1 July 2016. 34% of women directors as of 2020. | Catalyst, (2022) |
| 14 | Spain | 2012 | In 2007, Spain became the first EU nation to launch a gender quota law. The very law proposed private, listed companies to include a minimum of 40% of women directors on board by 2015. Facts, 19.2% of women were on boards in 2018. | Deloitte Report (2019) |
| 15 | Mexico | 2018 | In Mexico too, there aren't any quotas in place for this issue. The Mexican Business Council released a Code of Best Practices of Corporate Governance in 2018, as a move in this direction. 6.5% of women on boards in 2018. | Deloitte Report (2019) |

| | | | | |
|----|--------------|------|--|---|
| 16 | Indonesia | 2000 | In 2000, the National Gender Mainstreaming Policy was enacted. It guides the National Long-term Development Plan 2005-2025, that further confirms the commitment of the Indonesian government to gender equality. 14.9% of women board members in 2019 (p. 15). | UNDP-2020 (Indonesia), Economist Report (p. 15, 2019) |
| 17 | Turkey | 2012 | Communique, “There is at least one female member on the board of directors” principle has been introduced, with no obligation to apply it. 13.2% of women board members in 2018. | Dogan & Acar (2020); Deloitte Report (2019). |
| 18 | Netherlands | 2013 | No quotas in place! The Dutch Management and Supervisory Act, 2013 suggested that large legal business houses confirm the presence of at least 30% men and women on the management and supervisory boards, on a ‘comply or explain’ basis. 25.5% of women on boards as of 2020. | Deloitte Report (2019); Catalyst (2022) |
| 19 | Saudi Arabia | 2018 | As of 2018, the Saudi Arabia workforce is comprised of a mere 23% women workers. 0.7% of women on boards as of 2018. | Deloitte Report (2019); |
| 20 | Switzerland | 2016 | In 2016, a parliamentary proposal was introduced for establishing a diversity disclosure need for listed companies. 26.1% of women on boards as of 2020. | Deloitte Report (2019); Catalyst (2022) |
| 1 | Norway | 2003 | In 2003, Norway used its Companies Act’s equivalent to ensure that women make-up up at least 40% of the board of directors. The seriousness was such that the failure to comply with the same was subject to a fine, and also delisting of the companies in extreme cases. 41% of women on boards as of 2019. | Deloitte Report (2019) |
| 2 | Sweden | 2012 | There were no gender quotas. However, efforts were made to address the ‘diversity’ point via self-regulation and the corporate governance code recommendations. 38% of women on boards as of 2018. | Deloitte Report (2019); Catalyst (2022). |
| 3 | New Zealand | 2012 | No gender quotas but addressing diversity efforts through self- regulation and/or corporate governance code recommendations 17% - 30% diversity. | Deloitte Report (2019) and NZ Exchange (2020) |

| | | | | |
|---|-----------------|------|---|---|
| 4 | Malaysia | 2011 | Malaysian Code of Corporate Governance 2001 is in force to improve the scenario of corporate governance. Set by the government in 2011, the Corporate Governance (CG) Blueprint 2011 and the current Malaysian Code on Corporate Governance 2021 (MCCG 2021) stipulate that if this target is not met, the board should then disclose its action plan and time frame to achieve that mark. The country adopted the target of 30% women in the company's leadership and decision-making positions. 26% women directors in 2020. | Latif et al. (2020) and Economist Report (p. 15, 2019), Bernama (2022). |
| 5 | Global Presence | 2019 | A global analysis of more than 8,600 companies in 49 different countries highlighted women holding a total of 15.0% of board seats on the global platform in 2016. This figure rose to 19.7% in 2020 . The point of concern is that in the same year they held only 5.3% of the board chair positions. | Deloitte Report (2022) and Catalyst (2020) |

Note: *Mata-Analysis: Global Regulatory Measures towards Board Diversity (as of 31 Dec 2019):*

Source: Tabulated by the authors.

Reflection on the Global Trends

World Bank report 'Women, Business and Law' of 2022 considered eight parameters – mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets and pension, to measure specific discrimination in the law, legal rights, and the provision of benefits. These are the areas which if targeted through state reforms, will enable the narrowing of gender gaps and enhance women's employment opportunities. A score of 100 means no gender gaps. The global trends show that 39 economies in the world have a mean score higher than 90, thus closing the gap. Out of these 28 are in the OECD high-income region (World Bank, 2022, p. 28). 12 European economies score 100, which indicates that women have equal legal standing with men when measured on the eight parameters.

Patriarchal as well as traditional 'family-first' norms in most Asian countries result in low levels of women's engagement in the labour force, resulting in unpaid care and differentials in wages (World Bank, 2022). In the regulatory area for corporate boards, as Table 2 shows, European nations have generally over 30% women board members, while other countries have barely reached 20 to 30% objectives, with many still below 10%.

In the post-SOX period, US Congress directly intervened in the board diversity debate and encouraged the Security and Exchange Board to address women's underrepresentation on company boards (Nili, 2019). Due to the stakeholders' pressures, the female numbers went up to 30% on S&P 500 boards. In the S&P 500 companies, all have at least one female

director and the boards include 2.8 female directors on average, up from 1.7 a decade earlier (Spencer Stuart, 2021). In Canada, all companies under Canada Business Corporations Act (CBCA) are obligated to disclose information to shareholders on the corporation's diversity policy and practices from 01 January 2020. Almost all European countries have mandated and followed some form of gender quota on their boards. Uribe- Bohorquez et al., (2018) found evidence of effective monitoring and reduction of agency problems with an increase in independent directors. Women held 25.8% of board positions in publicly traded corporations in EU member states as of October 2018. (Deloitte, 2019, p 76). France is the only EU single nation with 44% female board members.

Trends in women's representation in South American companies show an average of 7.9% in the region representation. Argentina has around 4.7% (Delotte, 2019) while Brazil, the largest economy has less than 9% of women on corporate boards. Almeida et al. (2020) quoted from data from 176 companies; that Women made up 8.2 per cent of the membership. As against South America, Africa, leaving aside the Northern parts, fares better in gender diversity with an overall 24.3% seats on the boards held by women (Deloitte, 2019, p. 64). Kenya recognised women's equal rights in its constitution in 2010 and has 21% women on the boards of all listed companies as against 20% on the Nigerian boards. Scholtz and Kieviet (2020) studied South African companies listed on the Johannesburg Exchange from 2013 to 2017 and found a positive effect on women directors with the country's 26.4% women on the boards.

Asia collectively lags way behind with just 9.3% of women on the boards (Deloitte, 2019). Saitova and Mauro, (2020) studied gender diversity in Japanese organizations and found that women feel discriminated against due to the existence of male cliques. Japan has around 8.4% of women on boards. Based on the study of Chinese companies in Shanghai, Markoczy et al, (2020) summarized those inherent social structures cause biases and lower representation of just 5.2% of women in boardrooms. The Middle East has an average of 9.5% women presence on the boards by the end of 2018, with Israel heading at 21% and Saudi Arabia at 0.7% (Deloitte, 2019). In India, Gupta, and Jain (2020) found an increasing trend in family-owned business companies to appoint women to the top management teams. The analysis showed that factors leading to women's participation included higher education, nuclear families, lack of opportunities outside, and circumstances to help families in times of crisis.

As regards the firm performances, the study of 36 different emerging economies further confirmed that gender-diverse boards are better with accounting returns (Scholtz & Kieviet, 2020; Post & Byron, 2015); carried out more conservative accounting practices (Ho et al., 2015); and had a less volatile share price and higher company performance. Dogan and Acar (2020) evaluated 76 manufacturing companies between 2008 and 2017 and found that the number of members and the ratio of women on the board has a positive effect on the cost of capital. On the contrary, Farmanesh et al., (2020) investigated the relationship between

workforce diversity and organisational performance in Cyprus's educational sector using diversity fatigue as a moderator. The study presented emotional tiredness as a negative outcome impacting organizational performance. Another aspect of increasing female representation on boards was lowering the average age of a board, which looked like a cause of a negative impact on financial performance (Jonson et al., 2020).

The impact of strategic decision-making is highly dependent upon the board of directors (Du Plessis et al., 2018), which is called into strategic leadership function. Cikaliuk et al., (2020) found that the interpersonal dynamics of board directors decide on the efficacy and effectiveness of a board, as these interactions create a boardroom culture of decision-making. This was further reinforced in a study on the Lithuanian industry by Lu et al., (2020) highlighting sociable nature and global thinking as important competencies. A study by Duchek et al., (2020) explained diversity's importance for strategic management in the development of anticipation capabilities, identifying significant changes and planning for future occurrences. Castellanos and George (2020) moved the trends from Agency to Steward Theory. According to the researchers, the primary responsibility of a board is to actively cooperate with managers in the strategy-formulating process. Almeida et al. (2020) studied Brazilian companies to ascertain the role of women directors and the findings were inconclusive on the association of diversity to the efficiency in strategic decision-making. Profeta et al. (2014) suggested that many policy initiatives regarding economic decision-making, based on better gender equality have proved to be beneficial for all demographics.

Gender Equality and Discrimination

The whole initiative of regulation is to bring equality between the genders as the research consistently shows that the presence of women in leadership positions benefits a business in many ways (Profeta et al., 2014). The gender gap on corporate management boards is an issue of equality and by addressing this the European companies have found unprecedented successes. As per World Bank (2022, p 33), since October 2020, 23 economies had implemented gender equality reforms and improved 39 laws to achieve greater equality of opportunity across the eight indicators. The report shows the largest improvement in the Middle East and North Africa, followed by Sub-Saharan Africa, Europe, Central Asia, East Asia and the Pacific. South Asia's average score remained unchanged from the previous year. The difference in the promotion of gender diversity due to regulation is low but positive in most countries.

Globally all states have taken note of the UN SDGs and SDG – 5. There are concerted efforts to bring in better gender diversity at workplaces and improve various parameters reflecting upon the status of women in society. The main impediments are non-implementation of the legal provisions at the grassroots level, parochial societal attitudes and a false front of religion or ethnicity to deny women their equal rights. WEF (2022) report on the gender gap sets a hopeful yet grim picture. While the overall global gender gap is nearly 68%, at the current pace it may take another 132 years to achieve gender parity. The overview for various regions is given in Table 2:

Table 2: *Overview of Gender Gaps*

| Region | Gender Gap | Years Required for Closing the Gap |
|----------------------------------|------------|------------------------------------|
| Global | 68% | 132 |
| Top 10 countries | 80% | 75-85 |
| Iceland | 90.8% | 25 |
| North America | 76.9% | 62 to 59 |
| Europe | 76.6% | 60 |
| Latin America and the Caribbean | 76.6% | 67 |
| Sub-Saharan Africa | 67.9% | 98 |
| The Middle East and North Africa | 63.4% | 115 |
| Asia Central Asia | 69.1% | 152 |
| East Asia and the Pacific | 69% | 168 |
| South Asia | 62.3% | 197 |
| Bangladesh and Nepal | 69% | 168 |
| India | 62.9% | 190 |

Source: WEF – 2022 (Compiled by the author)

Crosen et al. (2009) reviewed the literature on gender differences as the literature support existed on discernible differences in competitive, risk and social preferences. These differences can be the starting points for gender-specific outcomes in the labour markets. Towards better equity, female employment is a major driver of development and growth. Al-Jaifi (2020) examined the linkages between board gender diversity and the non-financial dimension of banks (environmental, social and corporate governance) in the ASEAN context. The findings imply that board gender diversity positively influences corporate governance performance, although it has no impact on the bank's environmental and social performance.

On the employment and general gender equality debates, WEF (2022) report provides an overview of the global gender gap. The index measures economic participation and opportunity, educational attainment, health and survival, and political empowerment of both genders. By establishing a positive relationship between gender parity and per capita income, the report further emphasises an urgent need to close the gender gaps. Another indicator of women's equality is labour force participation (LFP). The world bank report used data from the International Labour Organization database, which reflects changes from 1990 to 2021 in LFP. Selected data are shown in Table 3:

Table 3: *Women Labour Force Participation*

| Region/Country | LFP in 1991 | LFP in 2021 |
|-----------------------------|-------------|-------------|
| Africa Eastern and Southern | 45.68% | 47.13% |
| Africa Western and Central | 45.85% | 44.64% |
| Arab World | 20.02% | 20.6% |

| | | |
|--|---------------|---------------|
| East Asia & Pacific (excluding high income) | 44.43% | 43.84% |
| India | 25.27% | 20.34% |
| Japan | 40.65% | 44.38% |
| Phillippines | 38.4% | 39.3% |
| Malaysia | 35.9% | 38.5% |
| Thailand | 44.62% | 44.91% |
| South Asia (IDA & IBRD) | 24.68% | 22.44% |
| World | 39.27% | 39.22% |

Source: World Bank (2022a). Compiled by the authors.

The data in Table 3 reflects a change in women's participation in the labour force over the last 20 years. There is slow or no progress in many parts of the world. Besides Europe and USA, African regions and East Asia show nearly 44% participation with a slight reduction in a few cases. South Asia too has less participation when compared with 1991. Data from 2021 is captured during the pandemic, which may further confirm that women were the most sufferers during this period. The data is subject to the variable of the added male population and thus labour opportunities going to them in the last 20 years. LFP is also dependent on the education, health and social equation in each country. Islam et al. (2018) evaluated gender stereotypes by looking at pictures and text in school books of four Asian countries. The authors found that the content had 24 to 44% weightage on girls as compared to the boys. These are the indicators, for policy initiatives to bring and keep a girl child in a classroom and enable her to join the labour force.

Social barriers also stem from the non-availability of financial resources. Many countries in the developing world have been using self-help groups and micro-finance routes to empower women. The movement started from Bangladesh's

Gramin Bank founded by Nobel laureate Mohd Yunus in October 1983 spread to many emerging economies. The most critical aspect of micro-finance loans was that their prime recipients were women. Through a survey of the household data, Asadullah et al. (2021) provided evidence of credit benefits on women's work; which eventually changes gender awareness. It also brings in social and psychosocial well-being. LFP is also dependent upon migration and seeking better opportunities in urban centres. There is gender discrimination in many Asian countries as an example was given in the study of Bangladesh. Social barriers to female migration results in rural families paying a higher cost to marry into the low-income families of migrating men (Amirapu et al., 2022).

Discussion: Policy Analysis and Implications

Global trends in gender diversity and women empowerment show slow but steady progress. Theoretical frameworks on gender diversity showed that stewardship theory runs counter to the agency theory. The resource-based theory still applies to most corporate boards. Interpersonal relationships and trust are essential to gain from gender diversity in such board settings (Farmanesh et al., 2020). The

positive results of the regulations are reflected in developed economies, which are nearly 30% of women directors level in their corporate boards. Most multinational firms with offices across various nations tend to follow global norms, while native companies have been restricted due to national or social cultures. Latin & South America, Africa, Asia, and the Middle East are lacking in any momentum as these areas continue to be around 10 to 15% zone for women representation on the boards. In the USA the original discussions on board diversity were based on social justice or equity. The argument and trends have now turned to illegal and immoral discrimination and emphasis on diversity enhancement of organizational effectiveness (Jonson et al., 2020).

Female directors bring diverse perspectives, skills, and knowledge and excel in managerial actions. This also fits well in the social theory as regards work ethics and caring for all the stakeholders (Nadeem, 2022). It is not only the top managerial positions but there is evidence to suggest that a 'critical mass' of women in leadership positions may also benefit less advantaged women in lower-level jobs (Kowalewska, 2020). At the global level, the UN has driven the narrative on women empowerment and gender diversity through its multiple agencies. These include *UN Women*, the UN entity for gender equality and the empowerment of Women, and UN SDG (SDG-5) initiatives, which have coaxed many countries to bring women into the workforce. However, Societal and deep-seated cultural barriers to gender norms have limited women's overall work participation (Asadullah, 2020).

In the Asian context, corporate board diversity mandates in countries like India, Malaysia and Indonesia have addressed

gender-diverse boards, though the critical mass of 30% is yet to be achieved. Malaysia has more girls than boys in school and universities, the best in Asia; yet the gender gap in leadership as well as LFP at 38.5% is low. This lowers the country's position in the WEF's global gender gap index. Similarly, India has shown tremendous progress in girl-child education under the '*Beti Bachao, Beti Padhao*' programs (PM India, 2022), yet the employment scenario and other human development index parameters remain abysmally low. The LFP has fallen to 20% in 2021 from 25% in 1991. Each region and every country have their challenges in terms of diversity.

While the USA struggles to maintain ethnic diversity, countries in Asia too have to balance their ethnicity. In India, it is always caste and community equations. In the Indian corporate context, though the mandatory gender quota increased board gender diversity, it had no impact on caste and community diversity within the boards (Bhattacharya, 2022). Ambedkar recommended comprehensive reforms, and representational politics to achieve equality. In modern India, the political philosophies of leaders like Gandhi and Nehru are losing ground to a strong Hindutva narrative, yet Ambedkar's thoughts are gaining relevance in the social, economic, and political discourses, all at a cost to gender diversity (Kumar et al., 2022).

Conclusion and Recommendations

The objective of the study was to examine the evolution of gender diversity in corporate boards and reflect on the regulatory changes in the corporate climate. Added objective looked at gender gaps and inequalities in employment. The

analysis looked at the impact of regulatory initiatives, and mandated quotas, on firm performance. Gender diversity has been making progress in corporate boardrooms worldwide, albeit at a very slow pace (Markoczy, et al., 2020). There is criticality in the number of female directors as only the critical mass can sustain the representation. Social structures and national cultures play important parts in these issues. Corporations need to follow recommended guidelines of regulators with a well-defined gender policy. Instead of depending on horizontal directorships, new networks can broaden the talent pool and identify suitable women candidates. Diversity must also be across all aspects and social structures and the boards must rise above tokenism by allotting critical roles to women directors.

Measures to address gender discrimination and increase diversity in the workforce are bigger challenges to most Asian countries as well as the Middle East and Northern African region. During the last two years of the pandemic, women faced major challenges resulting in decelerating the progress on gender diversity. Women continue to earn less than men for the same work and face a greater risk of violence inside their homes. Coupled with the pandemic's ongoing nature, the global community has been at risk of reversing the progress that has been made to bring women into the workforce. Women's economic rights should be strengthened so that they can have equal access to education, financial resources, public support programs and digital

technologies, which can help them to start new businesses and find better jobs. All this can only be achieved with better governmental intervention and equitable judicial processes. Countries need to invest in human capital to close the gender gaps, as that will be a critical driver of national prosperity when viewed from a positive relationship between gender parity and per capita income (WEF, 2022).

The study is limited in the inclusion criteria of literature, as 98 research papers and study reports are a limiting factor. Most studies tend to throw up positive relationships of diversity, but a limiting factor of these studies is that these look at large companies listed on the stock exchanges. Larger employment areas of micro, small and medium enterprises remain yet to be explored. Though the inclusion was kept at the global level, there is comparatively less literature on Asian or Latin American countries. Though not assessed, the period of the last five years may have two distinct outcomes – before the pandemic and after the pandemic. Both could be studied separately.

This study contributes to the theme-based collation of important global changes in diversity and inclusion. More focus can be given to equality at the workforce level, unpaid work of care-giver and household distribution of work. The study can be further limited to the women CEOs, the process of succession planning and ways to encourage better diversity at this level. The use of case studies, primary data, interviews and real-life instances can add to the conclusions.

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1 The Russell 1000 Index represents the top 1000 companies by market capitalization in the USA and comprises about 92% of the total market cap of all listed stocks in the U.S. equity market.

2 Sarbanes-Oxley Act

3 Data from 44 countries representing 1685 companies. Analysis covers all publicly traded companies with market cap EUR 6 billion or more or the largest six in each country where fewer meet the criteria.

4 Save the girl child, educate the girls.

An Empirical Analysis of Corporate Governance and Financial Performance in Indian Banks

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Abstract

In recent years, there has been an increased focus on the implementation of corporate governance practices within the banking sector. This study investigates the nexus between the financial performance of Indian banks and corporate governance variables by employing panel data regression analysis spanning from 2012 to 2021, utilizing a suitable model. The findings reveal distinct dynamics, for public sector banks, ROA is notably affected by ownership concentration and audit committee size. Conversely, in private sector banks, a more complex interplay is evident, where board composition, board committees, audit committee size, and ownership concentration all wield substantial influence over their financial performance. This study highlights the crucial role of corporate governance in shaping Indian banks' financial outcomes.

Keywords: Corporate Governance, Financial Performance, Board composition, Board Committees, Audit Committee size, Ownership Concentration

Introduction

Corporate governance constitutes a foundational element of business administration, exerting a pivotal influence on both the financial performance and overall success of organizations. It encompasses the systems, processes, and practices by which companies are directed and controlled, ensuring accountability, transparency, and fairness in their operations (Cadbury, 1992). In the context of Indian banks, corporate governance is of paramount importance due to their significant impact on the country's financial system and economy. The financial performance of Indian banks has garnered considerable attention over the years, given their vital role in mobilizing savings, allocating credit, and

facilitating economic growth (Reserve Bank of India, 2014). The Indian banking sector, which serves as a backbone to the country's financial system, robust corporate governance is essential for maintaining financial stability, investor confidence, and sustainable growth. As financial institutions entrusted with public funds, these banks are subject to complex regulatory frameworks and oversight aimed at safeguarding the interests of stakeholders, particularly depositors and shareholders. However, the effective functioning of Indian banks and their ability to generate sustainable financial performance is influenced not only by regulatory measures but also by various corporate governance variables. These variables encompass a wide range

of factors, including board composition, independence of directors, executive compensation, risk management practices, and internal control systems, among others (Sharma, 2005). Understanding the relationship between corporate governance variables and financial performance is crucial for policymakers, regulators, investors, and bank management. By examining this relationship, stakeholders can gain insights into the mechanisms that drive banks' performance, identify areas for improvement in corporate governance practices, and implement measures to enhance overall financial stability. In the Indian context, where banks have experienced periods of volatility, regulatory changes, and financial crises, it becomes imperative to assess the impact of corporate governance variables on their financial performance. This analysis can shed light on the efficacy of existing governance practices and contribute to the formulation of policies that foster a more robust and resilient banking sector. This research aims to investigate the role of corporate governance variables on the financial performance of Indian banks. By examining empirical studies, regulatory guidelines, and industry reports, we seek to identify the key governance factors that significantly influence financial outcomes in the banking sector. Furthermore, the study will explore the mechanisms through which these variables operate, such as their impact on risk management, decision-making processes, and long-term strategic planning. This study recognizes the pivotal role of corporate governance in the financial performance of Indian banks. By investigating the relationship between corporate governance variables

and financial performance indicators, this research aims to provide valuable insights that can drive meaningful improvements in corporate governance practices and contribute to the continued growth and stability of the Indian banking sector. Ultimately, this study aims to contribute to the existing body of knowledge on corporate governance and its implications for the financial performance of Indian banks. The findings can provide valuable insights for policymakers, regulators, and bank management to develop and implement effective governance practices that enhance financial stability, promote sustainable growth, and maintain the trust of stakeholders in the Indian banking sector.

Theoretical Background of the Study

The study of corporate governance and its impact on financial performance is underpinned by several well-established theoretical frameworks and concepts. Agency theory posits that there exists a principal-agent relationship within organizations, where shareholders (principals) delegate decision-making authority to managers (agents) (Jensen & Meckling, 1976). This delegation can create conflicts of interest, with managers potentially pursuing their self-interests. Corporate governance mechanisms, such as board oversight and audit committees, are designed to mitigate these conflicts and align the interests of shareholders and management. Correspondingly, Stakeholder theory suggests that corporations have multiple stakeholders, including shareholders, employees, customers, and the broader community. Effective corporate governance is viewed as a means to balance the interests of

these stakeholders, ensuring that the corporation's actions consider the well-being of all parties involved (Rizk, 2006). This theory emphasizes the social responsibility and ethical dimensions of governance (Weiss, J.W., 2014). On the other hand, resource dependence theory propounded that organizations are dependent on external resources, such as capital and information, to survive and thrive. Corporate governance practices, including board composition and ownership concentration, can influence a firm's ability to attract and manage these critical resources, ultimately impacting financial performance (Hillman et al., 2000). As per institutional theory organizations should conform to prevailing norms, values, and practices in their environment (Tate et al., 2011). Corporate governance practices are shaped by institutional pressures, including legal regulations, industry standards, and societal expectations. Understanding how these external influences shape governance can provide insights into their effects on financial performance (Amenta & Ramsey, 2010). In contrast, Efficiency and Effectiveness Hypothesis suggests that effective corporate governance enhances the efficiency and effectiveness of organizations. By ensuring that decision-making is transparent, accountable, and aligned with stakeholders' interests, governance practices can lead to better financial outcomes (Kiel & Nicholson, 2013). In addition to this resource based view represents that firm's unique resources and capabilities can confer competitive advantages. Effective corporate governance practices can be viewed as valuable, rare, and non-

substitutable resources. These resources, when leveraged through governance mechanisms, can contribute to sustained financial performance (Penrose, 2009). Parallel with efficiency theory transaction cost economics (TCE) suggests that organizations make governance choices based on minimizing transaction costs. Corporate governance structures, such as board committees and ownership concentration, can influence transaction costs and, in turn, financial performance by affecting the efficiency of internal and external transactions (Williamson, 1987). But legitimacy theory posits that organizations strive to maintain legitimacy in the eyes of their stakeholders. Corporate governance practices, especially those related to transparency and accountability, can contribute to building and preserving this legitimacy, which can positively affect financial performance (Dowling & Pfeffer, 1975).

These theoretical frameworks provide a foundation for understanding the complex interplay between corporate governance variables and financial performance in the context of banking industry. The study draws upon these theories to inform its research design and analysis, offering a theoretical lens through which to interpret its findings.

Review of literature

The literature on the relationship between corporate governance variables and financial performance in the banking industry provides valuable insights into the importance of effective governance mechanisms in shaping the outcomes of banks, both globally and in the context of Indian banks.

Several studies have examined the impact of corporate governance on bank performance across different countries. (Anginer et al., 2018) conducted an extensive study and concluded that enhanced corporate governance practices, such as increased board independence and improved shareholder rights, correlated with enhanced bank performance. This research underscores the importance of governance mechanisms in promoting prudent decision-making, effective risk management, and accountability within banking institutions. In contrast, (Adams & Mehran, 2005) discovered that there was no substantial correlation between the level of board independence and the financial performance of banking companies. Many believe that establishing a specific threshold for board size can enhance a company's performance across various aspects. However, the advantages stemming from heightened oversight by larger boards are counterbalanced by challenges in communication and unwieldy decision-making processes, as indicated by (Obeten et al., 2014). With an expanding board size, the board's capacity to oversee management diminishes, primarily due to an amplified potential for shirking responsibilities and heightened decision-making complexities, as highlighted by (Jensen, 1993). Boards comprising a substantial number of directors can pose drawbacks and become costly for companies to sustain. The challenges encompass planning, coordinating work, making decisions, and conducting routine meetings, as outlined by (Wanyama & Olweny, 2013). Other corporate governance factors, such as the role of auditors, internal control systems,

and disclosure practices, also contribute to the financial performance of banks. These variables have been examined in studies such as those by (Hazaea et al., 2020) found that companies with higher audit quality and more effective internal control systems generally exhibit superior financial performance.

In the specific context of Indian banks, several studies have explored the relationship between corporate governance variables and financial performance indicators. (Chakrabarty & De, 2016) investigated the influence of corporate governance practices on the financial performance of Indian public sector banks. Their findings revealed a positive correlation between board independence, CEO duality, and financial performance indicators, including profitability and efficiency ratios. This suggests that governance mechanisms promoting independence and accountability at the board level contribute to better financial outcomes for public sector banks in India. A study by (Bhatt & Bhattacharya, 2017) examined the impact of board characteristics on the financial performance of Indian banks. They found a positive association between board size and bank performance, suggesting that larger boards with diverse expertise can provide better governance oversight and contribute to improved financial outcomes. The study also highlighted the significance of board meetings and attendance as indicators of board effectiveness in driving bank performance. (Aggarwal & Kaur, 2018) examined the effect of corporate governance variables on the financial performance of Indian

private sector banks. Their study emphasized the significance of factors such as board size, board diversity, and ownership concentration in influencing bank profitability and asset quality. The findings suggest that a diverse and independent board, along with effective ownership structures, plays a crucial role in enhancing the financial performance of private sector banks in India. Furthermore, studies have explored the impact of ownership structure on the financial performance of Indian banks. In their study, (Pandey & Sahu, 2020) explored the impact of promoter ownership on bank profitability and discovered a notable positive correlation. They suggested that elevated promoter ownership could align the interests of bank owners with those of other stakeholders, thereby enhancing financial outcomes. (Gupta & Mahakud, 2020) investigated the impact of CEO tenure and CEO duality on bank profitability. They observed a positive association between extended CEO tenure and increased profitability. Conversely, the presence of CEO duality, where an individual holds both the CEO and chairman roles, was linked to diminished financial performance. These findings imply that maintaining a distinct separation between the roles of CEO and chairman fosters improved governance and financial results.

Another research conducted by (Arora & Sharma, 2016) attention was directed towards assessing the impact of risk management and corporate governance on the financial performance of Indian banks. Their results unveiled a favorable association between proficient risk management practices, including strong

internal controls systems and comprehensive risk assessment frameworks, and bank profitability. The research underscored the significance of governance mechanisms that enable effective risk monitoring and mitigation strategies in augmenting financial performance.

Overall, the existing literature provides valuable insights into the relationship between corporate governance variables and the financial performance of Indian banks. Studies have explored various governance factors, including board composition, risk management practices, ownership structure, and regulatory frameworks, and their impact on different financial performance indicators. However, there is still a need for further research to address certain gaps and limitations in the existing literature.

Research Gap

While extensive research has been conducted on the relationship between corporate governance variables and financial performance in the banking sector, several gaps remain that this study aims to address:

1. Most studies on the corporate governance-financial performance relationship in Indian banks lack recent data. This study will fill this gap by analyzing data from 2012 to 2021, providing a more current perspective on the impact of governance variables.
2. Previous research often examines a limited number of governance variables, such as board independence or CEO duality. This study will expand the scope by considering a comprehensive set of governance factors, including board size, board

composition, women directors, audit committee size, ownership concentration, and board committees, thereby offering a more holistic understanding of governance impacts.

3. While studies have been conducted on both public and private sector banks, there is a need for a comparative analysis that distinctly evaluates how governance practices influence financial performance in these two sectors. This study will address this gap by including both public and private sector banks and comparing the results.
4. There is limited research on the role of women directors in the context of Indian banks. This study will investigate the impact of board gender diversity on financial performance, addressing the gap related to gender-specific governance influences.
5. While some studies have touched upon the role of audit committees and ownership concentration, their combined impact along with other governance variables on financial performance has not been comprehensively studied. This research will explore these interactions in detail.

By addressing these gaps, this research aims to contribute to the literature by conducting an in- depth analysis of the role of corporate governance variables in shaping the financial performance of Indian banks. By considering a comprehensive set of governance factors and their interactions, the study aims to provide a more holistic understanding of the impact of governance on bank performance.

Objectives of the Study:

1. To assess the Impact of board size on financial performance of Indian banks.
2. To evaluate the effect of board composition on the financial performance of Indian banks.
3. To analyze the influence of women directors on the financial performance of Indian banks.
4. To examine the significance of audit committee size on the financial performance of Indian banks.
5. To explore the relationship with board committees and financial performance of Indian banks.
6. To investigate the impact of ownership concentration on the financial performance of Indian banks.

Formulation of Hypotheses

Hypothesis 1 (a): H₀- There is no significant impact of board size on Return on Assets (ROA) in public sector banks.

Hypothesis 1(b): H₀- There is no significant impact of board size on Return on Assets (ROA) in private sector banks.

Hypothesis 2 (a): H₀ – There is no significant impact of board composition on the return on assets of public sector banks.

Hypothesis 2 (b): H₀- There is no significant impact of board composition on the return on assets of private sector banks.

Hypothesis 3 (a): H₀ – There is no significant impact of women directors on the return on assets of public sector banks.

Hypothesis 3 (b): H₀ – There is no significant impact of women directors on the return on assets of private sector

banks.

Hypothesis 4 (a):H0 – There is no significant impact of size of audit committee on the return on assets of public sector banks.

Hypothesis 4 (b):H0 – There is no significant impact of size of audit committee on the return on assets of private sector banks.

Hypothesis 5 (a):H0 – There is no significant impact of board committees on the return on assets of public sector banks.

Hypothesis 5 (b):H0 – There is no significant impact of board committees on the return on assets of private sector banks.

Hypothesis 6 (a):H0 – There is no significant impact of ownership concentration on the return on assets of public sector banks.

Hypothesis 6 (b):H0 – There is no significant impact of ownership concentration on the return on assets of private sector banks.

Research Methodology:

This study adopts a descriptive and inferential research design to investigate the relationship between corporate governance variables and the financial performance of Indian banks. The use of

an empirical framework and secondary data sources ensures a rigorous and systematic analysis. By accessing annual reports, corporate governance reports, and RBI reports, the study captures relevant information on the selected banks' performance and governance practices. The thorough review and content analysis of these reports enable a comprehensive understanding of the variables under investigation. The study's sample consists of 20 Indian banks, with 10 public sector banks and 10 private sector banks. These banks were chosen based on their market capitalization rankings spanning a 10-year period from 2012 to 2021. Statistical techniques such as correlation analysis and multiple regression analysis are applied to examine the relationship between corporate governance variables and financial performance of banks by using Gretl software. The incorporation of the Hausman test is a notable strength of this study. The test helps determine the appropriate model (fixed effect or random effect) for the analysis, addressing potential endogeneity issues and ensuring the reliability of the results. By selecting the most suitable model, the study increases the robustness of its findings and enhances the validity of the conclusions drawn.

Table I -List of Selected Banks under Study

| PublicSectorBank | Market Capitalization (Billion) | Private Sector Bank | Market Capitalization (Billion) |
|----------------------|---------------------------------|---------------------|---------------------------------|
| State Bank ofIndia | 4988.41 | HDFC Bank | 8076.44 |
| Bank of Baroda | 960.93 | ICICI Bank | 6250.86 |
| Canara Bank | 444.73 | KotakMahindra Bank | 3714.03 |
| Punjab National Bank | 423.37 | Axis Bank | 2505.85 |

| | | | |
|----------------------|--------|---------------------|--------|
| Indian Overseas Bank | 330.79 | Indusind Bank | 944.91 |
| UnionBank of India | 309.61 | IDBI Bank | 466.12 |
| IndianBank | 259.67 | Yes Bank | 395.37 |
| Bank ofIndia | 195.74 | Fedreal Bank | 280.47 |
| Central Bank | 171.45 | CatholicSyrian Bank | 191 |
| UCO Bank | 142.28 | RBL Bank | 106.87 |

Source: Annual reports of respective banks

Table II- Description of Variables

| Variable | Variable Type | Description |
|----------------------------------|---------------|---|
| Board Size(BS) | Independent | Total Number of directors onthe board |
| Board Composition(BC) | Independent | Ratio of independent directorson the board or Independent directors/Total no of directors |
| Women Directors(WC) | Independent | Number of women directorson board |
| Audit Committee Size(ACS) | Independent | Number of audit committeemembers |
| Board Committees (BCMTE) | Independent | Total number of boardcommittees |
| Ownership Concentration(OWNCONT) | Independent | % of Shares held by promoters |
| Return on assets(ROA) | Dependent | Ratio of Return on Assets ofbank |

Source: Compiled from Various Studies

Data Analysis & Interpretation

Measuring Financial Performance

The two methods most frequently used by academics to gauge the financial performance of corporations are accounting ratios and market valuation ratios. Accounting ratios have been the subject of some studies, including (Aupperle & Hatfield, 1985; Tyagi, 2014). Market valuation ratios have also been used by others, as can be seen in the writings of (Kiel & Nicholson, 2003) and (Arnold et al., 2012). ROA is a widely recognized accounting statistic that gauges a company's profitability by analyzing its capacity to generate earnings

from its assets. Because ROA is a measure of financial performance in connection to corporate governance performance, it was the primary focus of the current study.

Diagnostic Test

Various diagnostic tests were conducted to assess the suitability of different models. The F- statistics were employed to determine whether the fixed effects model is a more suitable choice than the pooled regression model. Similarly, the Breusch-Pagan LM statistics were used to assess the appropriateness of the random effects model compared to the pooled regression model, as shown in the

table. Subsequently, the Hausman test was applied to make a decision regarding whether the fixed effects or random effects model should be used.

Table III-Summary Statistics (Public Sector Banks)

| Variable | Mean | Median | S.D. | Min | Max |
|----------|---------|--------|--------|-------|-------|
| BS | 10.6 | 10.5 | 2.40 | 5.00 | 17.0 |
| BC | 0.658 | 0.667 | 0.0712 | 0.425 | 0.786 |
| WD | 1.05 | 1.00 | 0.687 | 0.00 | 3.00 |
| BCMTE | 14.3 | 15.0 | 4.67 | 4.00 | 22.0 |
| ACS | 6.21 | 6.00 | 1.72 | 4.00 | 11.0 |
| OWNCONT | 0.726 | 0.721 | 0.118 | 0.543 | 0.958 |
| ROA | -0.0458 | 0.215 | 0.835 | -3.27 | 1.23 |

Source- Author's Compilation using Gretl software

Table IV Multicollinearity Test Results

Dependent Variable: ROA Ratio (Public Sector Banks)

| Variables | VIF's |
|-----------|-------|
| BS | 2.125 |
| BC | 1.481 |
| WD | 1.152 |
| BCMTE | 1.082 |
| ACS | 1.476 |
| OWNCONT | 1.551 |

Source- Author's Compilation using Gretl software

Multicollinearity arises when independent variables exhibit a strong linear relationship with one another, potentially affecting the accuracy of regression parameter estimates (Gujarati, 2012). To identify multicollinearity, one can examine the correlation matrix or use the Variance Inflation Factor (VIF) for each independent variable. A VIF value exceeding 10 indicates high multicollinearity, suggesting that the variable may need to be excluded from the model. In this study, the VIF for all independent variables was calculated (as shown in Table IV) and the values

were well below the threshold of 10, as recommended by (Hair et al., 2010). This indicates a lack of substantial correlation among the independent variables. Therefore, the issue of multicollinearity has been effectively addressed, and the independent variables can be considered reasonably independent for the regression analysis.

Regression Model Equation

$$ROA_{it} = \beta_0 + \beta_1 * BS_{it} + \beta_2 * BC + \beta_3 * BCMTE + \beta_4 * ACS + \beta_5 * WD + \beta_6 * OWNCONT + u_i + e_{it}$$

In this equation, ROA represents the

dependent variable, which is the Return on Assets. The coefficients $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ correspond to the respective independent variables BS, BC, BCMTE ACS, WD, OWNCONT. The constant term β_0 represents the intercept or the value of ROA when all independent variables are zero. The model equation

captures the relationship between the dependent variable ROA and the independent variables by estimating the coefficients. The error term accounts for unobserved heterogeneity and other factors that affect the dependent variable but are not captured by the independent variables.

Table V- Results of Random-effects (GLS) Model, using 100 observations
Dependent variable: ROA (Public Sector Banks)

| | Coefficient | Std. Error | Z | p-value | SignificanceLevel |
|-----------------------------|-------------|------------|---------|---------|-------------------|
| Const | 2.17172 | 1.16953 | 1.857 | 0.0633 | * |
| BS | 0.0242704 | 0.0471164 | 0.5151 | 0.6065 | |
| BC | -0.754103 | 1.30750 | -0.5768 | 0.5641 | |
| BCMTE | -0.0356774 | 0.0224848 | -1.587 | 0.1126 | |
| ACS | 0.105250 | 0.0546808 | 1.925 | 0.0543 | * |
| WD | -0.176650 | 0.111378 | -1.586 | 0.1127 | |
| OWNCONT | -2.66710 | 0.904825 | -2.948 | 0.0032 | *** |
| R-squared | | | | | .350614 |
| Adjusted R-squared | | | | | .308718 |
| F Statistic | | | | | 2.36166*** |
| Breusch-Pagan LMstatistics | | | | | 4.2259*** |
| Hausman test test statistic | | | | | 3.68188 |

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

Source- Author's Compilation using Gretl software

The constant term (2.17172) represents the intercept of the model. The coefficient is statistically significant (p-value 0.0633) at 10% level, suggesting that the intercept have a significant impact on ROA. The coefficient for board size (0.0242704)

showing a positive relationship with ROA, which indicates that an increase in board size is associated with a slight increase in ROA but the coefficient is not statistically significant as p-value 0.6065, indicating that the relationship

is not significant and results support the null hypotheses H01 these findings are in line with (Uwuigbe et.al, 2012). There is a negative but insignificant relationship found between board composition and financial performance of banks with a coefficient of (-0.754103) and (p-value 0.5641) and results consistent with the null hypotheses H02. The coefficient for board committees (-0.0356774) suggests a negative relationship with ROA but this coefficient is not statistically significant (p-value 0.1126) and results support the null hypotheses H03 and sync with (Kituku,

B.M.,2008). There is a positive relationship with audit committee size and ROA of public sector banks with the coefficient (0.105250) and (p-value 0.0543), however this correlation is significant at 10% level only, which indicates that an increase in ACS is associated with an increase in ROA and results are not supported by the null hypotheses H04 and in line with (Agyemang, J. K., 2020). But the coefficient for WD (-0.176650) indicates a negative relationship with ROA and this coefficient is also not statistically

significant with a p-value 0.1127 so our null hypotheses is true that, the relationship between two variables are not significant and results are in consistent with (Muiruri, S. M., 2018). The variable ownership concentration is highly significant impact on the financial performance of public sector banks and it is significant at 1% level, results are consistent with (Pandey & Sahu, 2020). The value of LSDV R-squared is 0.350614, indicating that the fixed-effects model explains 35.06% of the variation in ROA. The within R-squared is 0.308718, representing the portion of variation explained within each cross-sectional unit.

The Hausman test compares the estimates for fixed and random effects and investigates the null hypothesis that estimates for random effect model is more appropriate than those for fixed effects model. The test result insignificant hausman test statistic (3.68188) shows that the random effect estimator is more appropriate and preferable to the fixed effect estimator and that there is no reason to accept the null hypothesis.

Table VI-Summary Statistics (Private sector Banks)

| Variable | Mean | Median | S.D. | Min | Max |
|----------|-------|--------|-------|-------|-------|
| BS | 10.3 | 10.0 | 1.71 | 7.00 | 15.0 |
| BC | 0.777 | 0.800 | 0.128 | 0.200 | 0.923 |
| WD | 1.19 | 1.00 | 0.825 | 0.00 | 3.00 |
| BCMTE | 11.7 | 12.0 | 1.54 | 8.00 | 14.0 |
| ACS | 4.29 | 4.00 | 1.11 | 3.00 | 9.00 |
| OWNCONT | 0.179 | 0.152 | 0.189 | 0.00 | 0.682 |
| ROA | 0.973 | 1.23 | 0.996 | -6.36 | 1.81 |

Source- Author's Compilation using Gretl software

Table VII- Multicollinearity Test Results

Dependent Variable: ROA Ratio (Private Sector Banks)

| Variables | VIF's |
|-----------|-------|
| BS | 1.589 |
| BC | 1.095 |
| WD | 1.628 |
| BCMTE | 1.027 |
| ACS | 1.088 |
| OWNCONT | 1.057 |

Source- Author's Compilation using Gretl software

The table VII presents the Variance Inflation Factors (VIFs) for the independent variables used in the regression analysis with ROA Ratio (Private Sector Banks) as the dependent variable. All VIF values are below the commonly accepted threshold of 10, indicating that there is no significant multicollinearity among the independent

variables. This suggests that the variables do not exhibit strong linear relationships with each other, and thus, the regression estimates should be reliable.

Table VIII- Results of Fixed-effects Model, using 100 observations
Dependent variable: ROA (Private Sector Banks)

| | Coefficient | Std. Error | Z | p-value | Significance Level |
|-----------------------------|-------------|------------|--------|---------|--------------------|
| Const | 0.200619 | 1.42046 | 0.1412 | 0.8880 | |
| BS | 0.0599287 | 0.0783524 | 0.7649 | 0.4465 | |
| BC | 1.83271 | 0.849152 | 2.158 | 0.0338 | ** |
| BCMTE | -0.112591 | 0.0561233 | -2.006 | 0.0481 | ** |
| ACS | -0.204758 | 0.102172 | -2.004 | 0.0483 | ** |
| WD | -0.150982 | 0.137190 | -1.101 | 0.2742 | |
| OWNCONT | 6.18875 | 1.64449 | 3.763 | 0.0003 | *** |
| R-squared | | | | | 0.514347 |
| Adjusted R-squared | | | | | 0.367966 |
| F Statistic | | | | | 5.32558*** |
| Breusch-Pagan LM statistics | | | | | 10.097*** |
| Hausman test test statistic | | | | | 15.6127*** |

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

Source- Author's Compilation using Gretl software

In the table VIII the coefficients represent the estimated effects of the independent variables on the dependent variable (ROA). The constant term represents the estimated average value of ROA when all independent variables are zero. In this case, it is 0.2006, but the coefficient is not statistically significant (p-value 0.8880). In case of board size variable, a one-unit increase leads to an estimated 0.0599 increase in ROA, although this coefficient is not statistically significant as p-value is 0.4465 and results support the null hypothesis (H01) and sync with (Kiambati et al., 2013) (Kathuria & Dash, 1999). The coefficient for board composition, on the other hand, is 1.8327 with a p-value of 0.0338, indicating that it has a statistically significant positive effect on ROA. This means that, when all other variables are held constant, an increase in the proportion of independent directors on the board is associated with an increase in the level of ROA, and it also indicates that hypothesis (H02) is not supported and results are in line with (Müller, V. O., 2014) (Sarkar et al., 2012). There is a negative relationship between board committees and ROA of private sector banks and this coefficient is marginally significant (p-value 0.0481). The coefficient for audit committee size is -0.2048 with a p-value 0.0483 which is statistically significant and results are not supported null hypotheses (H04) and consistent with (Anasweh, M., 2021). On the other hand coefficient for women directors is -0.1510 and showing a negative relationship with ROA but this coefficient is not statistically significant (p-value 0.2742) and results support the null hypotheses (H05) and consistent with (Jadah et al., 2016). The

very low p value (0.0003) indicating that ownership concentration is highly statistically significant and positively associated with ROA, results are in line with (Pandey & Sahu, 2020); (Aggarwal & Kaur, 2018). The R-squared value 51.43% the proportion of the variance in the dependent variable (ROA) that is explained by the independent variables in the model.

The Hausman test compares the random-effects (GLS) estimates with the fixed-effects estimates to determine whether the random-effects model is appropriate. The null hypothesis is that the GLS estimates are consistent. In this case, the significant hausman test statistic (15.6127) indicates that fixed effects model is appropriate over random effect model.

Practical Implications for Banks and Regulators

The findings of this study offer several important implications for policymakers, regulators, and bank management in enhancing corporate governance practices to improve financial performance in the Indian banking sector.

1. The positive impact of board composition, specifically the ratio of independent directors, on ROA for private sector banks suggests that enhancing board independence can lead to better financial performance. Regulators should consider policies that mandate a higher proportion of independent directors on bank boards, ensuring that they provide effective oversight and strategic guidance.
2. The results show that board size has a positive but statistically insignificant effect on ROA in public

sector banks. While larger boards can provide diverse expertise, they may also lead to inefficiencies. Bank management should aim to find an optimal board size that balances these factors, possibly through regulatory guidelines that recommend an ideal range for board sizes.

3. The significant positive relationship between audit committee size and ROA in public sector banks underscores the importance of having a sufficiently large audit committee to oversee financial reporting and risk management. Regulators should enforce minimum standards for audit committee sizes and competencies to enhance their effectiveness.
4. The negative relationship between the number of board committees and ROA, particularly in private sector banks, suggests that too many committees can hinder decision-making and efficiency. Banks should focus on improving the functionality of existing committees rather than increasing their number. Policies that encourage periodic reviews of committee effectiveness could be beneficial.
5. The significant positive impact of ownership concentration on ROA indicates that higher promoter ownership aligns interests and enhances performance. Regulators should consider policies that support concentrated ownership structures while ensuring mechanisms are in place to prevent potential abuses of power and promote transparency.
6. The study found a negative but statistically insignificant relationship between the presence of women directors and ROA. This suggests that simply increasing the number of women directors is not enough. Efforts should be made to ensure that women directors are fully integrated into the decision-making processes. Policies promoting not just the inclusion but also the active participation of women in board activities could be beneficial.
7. Effective risk management, as indicated by the positive relationship with audit committee size, is crucial for financial performance. Banks should prioritize strengthening their risk management frameworks and internal control systems. Regulatory bodies should provide clear guidelines and best practices for risk management to ensure banks are well-equipped to handle financial uncertainties.
8. The differing impacts of governance variables on public versus private sector banks highlight the need for tailored governance strategies. Public sector banks may benefit from more stringent governance reforms to improve performance, while private sector banks should focus on maintaining and enhancing their existing governance strengths. Policymakers should develop sector-specific regulations that address the unique challenges and opportunities within each type of bank.

By addressing these areas, policymakers, regulators, and bank management can foster a governance environment that promotes stability, accountability, and improved financial performance in the Indian banking sector. These implications not only contribute to the academic literature but also provide practical recommendations for enhancing corporate governance practices in banks.

Summary and Conclusion

This study examined the role of corporate governance variables on the financial performance of Indian banks. The analysis provided valuable insights into the relationship between corporate governance and financial outcomes, shedding light on the specific variables that influence the performance of banks in India. The results of the study indicated that certain corporate governance variables have a significant impact on the financial performance of Indian banks. Specifically, a larger audit committee was found to be associated with better financial performance, as measured by the return on assets (ROA) in case of public sector banks. This suggests that an effective audit committee play crucial roles in enhancing financial performance and ensuring good governance practices within banks. The positive relationship between the board composition and ROA in private sector banks suggests that institutions with well-defined corporate governance structures and practices tend to achieve higher financial performance.

These banks may benefit from effective board oversight, clear accountability mechanisms, and strong risk management frameworks. For public sector banks, the study highlights the need for vigilant oversight of ownership concentration and the maintenance of appropriately sized audit committees. These measures can help enhance financial performance. In private sector banks, the findings emphasize the multifaceted nature of corporate governance's impact. A well-balanced board composition, effective board committees, adequately sized audit

committees, and careful management of ownership concentration all contribute to improved financial outcomes. The results highlight the importance of transparency, accountability, and responsible decision-making within private sector banks. On the other hand, board committees have the negative impact on ROA in public sector banks indicates that weaker corporate governance practices within these institutions can hinder financial performance but these results are not statistically significant. Public sector banks often face challenges related to bureaucratic structures, political interference, and less autonomy, which may affect their ability to implement robust corporate governance practices. The findings underscore the need for reforms in the governance structure of public sector banks to enhance their efficiency and competitiveness. There is a significant negative relationship between audit committee size and ROA, found in private sector banks, emphasizes the importance of audit and compliance practices. This suggests that issues such as internal controls, risk management, and adherence to regulatory requirements play a critical role in determining the financial performance of Indian banks. Strengthening audit mechanisms and ensuring compliance with regulations should be prioritized across the banking sector to mitigate risks and enhance financial stability. Board size and women directors imply may not have a substantial influence on financial performance on ROA.

These findings have practical implications for policymakers, regulators, and bank management in formulating governance

guidelines and practices. However, the study's limitations should be considered, and future research should expand on these findings by incorporating a larger sample size, a broader set of variables, and examining the moderating effects of contextual factors.

Limitations of the Study

This study encounters several limitations. Firstly, it heavily relies on secondary data sources, such as annual reports and corporate governance reports, which may vary in accuracy and completeness. Additionally, the sample size, consisting of a limited number of banks, might not fully capture the diversity of the Indian banking sector. The study's chosen 10-year timeframe (2012-2021) may not encompass all relevant changes in economic and regulatory conditions. Furthermore, while correlations between corporate governance variables and financial performance are identified, causality is not established. Lastly, contextual factors like macroeconomic conditions or industry-specific events are not considered, which could influence both corporate governance practices and financial performance.

Suggestions for Future Research

To address these limitations and advance the understanding of corporate governance's impact on financial performance in Indian banks, future research could adopt a more extended longitudinal analysis, delve into qualitative research methods for deeper insights, and engage in cross-country comparative studies to identify global best practices applicable in the Indian context. Exploring the interaction of macroeconomic factors, regulatory changes, and industry-specific events with corporate governance practices can provide a more comprehensive perspective. Sensitivity analyses can test the robustness of findings, and incorporating additional variables like risk management practices or ESG factors could offer richer insights. Expanding the sample to include a wider range of banks, from regional to cooperative banks, can enhance the study's representativeness and applicability. Finally, assessing the impact of recent governance reforms or policy changes can further enrich the research landscape.

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Emerging CSR Initiatives during COVID-19 in India: Implications for Future

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Abstract

Though COVID-19 has receded in India to some extent, it has left indelible impacts on the business and sustainability practices. This pandemic is said to be the most vital global health tragedies of the century. It has posed one of the greatest challenges that the human race had confronted since the Second World War. Going beyond health complications, it was triggered countless difficulties. In view of the magnitude of the troubles triggered by the pandemic, wealthy sections from different fields including the corporate houses were encouraged to be a part of the collective fight against this disaster. Consequently, the socially responsible behaviour of the business organizations had come under public scrutiny. There was a need for the companies to adopt an innovative model to contribute to the social problems while simultaneously advancing their economic objectives. The top 100 business organizations as per the 'Ranking of Responsible Business-2019' in the country had made appreciative CSR efforts amidst the COVID-19 catastrophe. Based on review of relevant literature, along with appreciating their corporate social responsibility (CSR) contributions to the Indian society during COVID-19, the current paper tries to assess its socio-economic consequences on business and society.

Keywords: Business, COVID-19, CSR, India, top 100 companies

Introduction

The pandemic of COVID-19 is considered as the most vital global health tragedies of the century (Subudhi et al., 2020). It was posed one of the greatest challenges that the human race had confronted since the Second World War (Chakraborty & Maity, 2020). The entire world had been disconcerted with this disparaging calamity (John, 2020). Besides the swelling number of cases and mortalities, this destructive disaster had triggered countless socio-economic and cultural difficulties among the human community (Banerjee & Rai, 2020). Globally a number of leading developed countries were completely hit hard by this pandemic and India is of no exception (John, 2020). Beginning from migrants' melancholy and worries from quarantine homes to scarcity of beds in the hospitals and livelihood insecurities, the country had confronted with plethora of socio-economic issues during last several months (Paltasingh & Bhue, 2021; Raja, 2020). Due to continuous negligence of the ruling governments in terms of adequate investment on health sectors; several challenges like lack of required test kits, personal protective equipment (PPEs), hospital beds, ventilators, abysmal health worker-patient ratio and so on were witnessed (Das, 2005; Vijayan, 2020).

In view of the magnitude of the troubles triggered by the pandemic, wealthy sections from different fields including the corporate houses were encouraged to be a part of the collective fight against this disaster (Sledge & Thomas, 2021). There

was a need for the companies to adopt an innovative model to contribute to the social problems while simultaneously advancing their economic objectives (Ostas & Reyes, 2020). Consequently the names of the corporate houses and their CSR obligations had come to the limelight. The top 100 business organizations as per the 'Ranking of Responsible Business-2019' in the country had made appreciative CSR efforts amidst the COVID-19 catastrophe. Based on review of relevant literature, along with appreciating their corporate social responsibility (CSR) contributions to the Indian society during COVID-19, the current paper tries to assess its implications for the economic goals of business.

CSR and COVID-19: Conceptual Understanding

Through conceptual and theoretical analysis, the following section seeks to give readers a comprehensive understanding of the concepts of CSR and COVID-19.

Defining CSR

CSR is regarded as a responsibility of the business organizations for the environment and society along with their business undertakings (Shukla et al., 2019). It is viewed as a crucial instrument that aids businesses in negotiating with environmental and social challenges and enhancing their competitiveness (Narula et al., 2019). According to Howard Bowen's (1953) opinion, businesses must adhere to any rules, decisions, or lines of action that are pertinent to the goals and ideals of our

society. The idea that CSR is the concern and responsiveness of corporations to issues beyond satisfying legal, economic, and technological criteria was advanced by Keith Davis (1960). According to the World Bank (2003), CSR refers to a company's commitment to making a sustainable economic contribution to the local community and society as a whole in order to improve quality of life, which can be advantageous for both business and development.

In India, CSR has developed from the country's unique sociocultural ideals. It has been influenced by the nation's strong religious culture and Gandhian trusteeship philosophy. During the earlier days CSR in India was prevalent in the form of charity and philanthropy. However, with the promulgation of the Companies Act, 2013 efforts were made to legalise it (Elembilassery & Gurunathan, 2018). According to the 135 section of the Act, every business with a net worth of at least Rs. 5 billion, a turnover of at least Rs. 10 billion, or a net profit of at least Rs. 50 million must devote at least 2% of its average net profits over the previous three years to CSR activities (Khandelwal & Bakshi, 2014). It has been amended several times to keep pace with the changing circumstances and requirements. In the Schedule-VII of the Act, a list of tasks that must be carried out by businesses participating in CSR is laid out (Satapathy & Paltasingh, 2022). India is known as the first nation to conduct CSR with legal provisions (Satapathy & Paltasingh, 2019).

Business and Society: Theoretical Framework

An original business model has been presented by Porter and Kramer (2011) in their article on "Creating Shared Value" in the Harvard Business Review. Shared value is defined as the policies and operational practices that increase a company's competitiveness while simultaneously enhancing the economic and social condition of the regions in which it works. Finding and enhancing the connections between societal well-being and economic growth is the aim of shared value creation. Using the shared value management strategy, businesses look to social issues for business opportunity. Today, more businesses are creating or revamping their business models to focus on social good, which helps them stand out from the competition and boosts their success. It strengthens the link between business performance and societal growth, which creates a wealth of options to expand markets, fulfil new demands, improve efficiency, and differentiate products. In a similar vein, COVID-19 has created a context for the companies to develop an innovative business model where both business and society could coexist. In fact, by contributing to the society in this time of distress, business organizations can establish trust with its people and its customers to ensure long-term business success.

COVID-19: An Unprecedented Global Calamity

COVID-19 had created a health emergency

across the globe (Basher & Haque, 2020; Ali & Ullah, 2021). The origin of the virus is yet to be revealed. However it is suspected that it was originated from animals as most of the early cases were detected from the wet market of Wuhan in China (Chen et al., 2020). In fact the very initial case of this Coronavirus disease was found at Wuhan town of China which was informed to WHO Country office of China on 31st December 2019 (He & Harris, 2020). Soon the virus started infecting and quickly moved to other parts of the world and caused a large number of morbidity and mortality. On 30th January 2020, this deadly disease was declared as ‘Public Health Emergency of International Concern’. The name ‘COVID-19’ (Coronavirus Disease of 2019) was declared and propagated by WHO on 11th February 2020 and subsequently the use of the term ‘Novel Coronavirus’ became unusual (Butler, 2020). The “Severe Acute Respiratory Syndrome Coronavirus-2” (SARS-CoV-2) is the name given to the “Novel Coronavirus” by the “International Virus Classification Commission”. On March 11, 2020, the World Health Organisation designated it a global pandemic due to the virus’ quick spread to multiple different nations. (Kachroo, 2020; Mitra et al., 2020). The countries with largest economies like; United States, Brazil, Italy, Spain, France, United Kingdom, Germany and Russia had been affected the most from this pandemic and India was of no exception (Rakshit & Basishtha, 2020).

Methodology

A comprehensive literature review was made in order to conduct the current study. Several publications from both national and international journals, as well as reports from various organisations, were also analysed by the authors for the current work. The paper also examines some pertinent reports and information from websites of several firms to find out the CSR practices of the firms amidst COVID-19 pandemic during 2019-20 in India. Selected samples of top 100 companies operating in the country has been included. Out of those companies, 57 and 43 belong to public sector and private sector respectively. Such companies are selected on the basis of the ‘Ranking of Responsible Business-2019; an extensive list of corporates extending positive efforts in attaining Sustainable Development Goals.

COVID-19: Implications for Business and Sustainability

Through pertinent themes, the current section aims to understand the effects and implications of COVID-19 on the country’s social and business objectives. The COVID-19 calamity had surpassed all the past disasters and had not only made us all face the toughest time but also posed several challenges to the nations and affected almost all other spheres of life. During these difficult times, we had multiple challenges concerning our health, livelihood, business, food, education etc. which had given rise to dispossession,

despair and disorder in the society. In such a situation, many business organizations had expressed their solidarity to the government in tackling the pandemic induced challenges (Ahmed et al., 2021). The pandemic had certainly moulded the very idea of social responsibility. It was truly revealed myriad of issues and worries which could have been addressed through effective social responsibility practices with realistic approach going beyond the conventional practices (Edwin, 2020). CSR obligations of the business houses at global as well as in India were quite visible and given utmost significance to combat against the pandemic. During that time of perplexity many philanthropists and well-known businesspersons at the global level such as Bill Gates, Jack Ma, Mark Zuckerberg, Azim Premji and others were taking innovative efforts to contribute for social wellbeing. They had announced to stand by the people and also extended assistance. Bill Gates and Azim Premji

had declared \$100 million and Rs. 50,000 crores respectively to utilise through their team against COVID-19 (Sundar, 2020). Such good practices with long term vision had demonstrated the commitment of global business tycoons towards helping the human community at difficult times.

Major Provisions Concerning CSR Spending During the Pandemic

Given the severity of the COVID 19 pandemic's suffering, Government of India had streamlined CSR provisions so as to channelize corporate contributions to address the challenges. To make sure that businesses will help the government deal with the crisis, a series of notices had been sent out periodically. In addition to the broad categories of activity stated in Schedule VII of the Companies Act-2013, the Ministry of Corporate Affairs (MCA), Government of India (GoI), had declared the following activities to be CSR-eligible.

Table-1 Promulgations concerning eligible CSR activities in view of COVID-19 in India

| Reference no. | Date | Major promulgations |
|--|--------------------------|--|
| General Circular No.10/2020 | 23/03/2020 | A variety of COVID-19-related activities are eligible for CSR funding under items (i) and (xii) of Schedule VII of the 2013 Companies Act. |
| Office Memorandum eF. No. CSR-05/1/2020 -CSR-MCA Notification no. G.S.R. 313(E). | 28/03/2020 26/05/2020 | Assistance provided to the PM CARES fund in accordance with Companies Act of 2013's Schedule VII, Item (viii). |

| | | |
|--------------------------------|------------|---|
| General Circular No.15/2020 | 10/04/2020 | <ul style="list-style-type: none"> i. Contribution to the State Disaster Management Authority under Schedule VII, Item No. (xii), to combat COVID-19. ii. Ex-gratia payments for COVID-19 relief to temporary/casual/daily wage workers in addition to pay distribution. |
| Notification no.G.S.R. 525(E). | 24/08/2020 | <ul style="list-style-type: none"> i. Support for incubators and projects conducting research and development in the domains of science, technology, engineering, and medicine that are funded by the central or state governments, PSUs, or other government organisations. ii. Contributions to publicly financed universities, institutions, and national laboratories performing SDG- related research in the fields of science and technology, medicine and engineering. |
| General Circular No.01/2021 | 13/01/2021 | Utilisation of CSR funding for COVID-19 vaccination efforts under Items Nos. (i), (ii), and (xii) of Schedule VII of the Companies Act, 2013 public outreach programmes, programmes, and awareness campaigns. |
| General Circular No.01/2021 | 22/04/2021 | Using CSR funds to establish 'temporary COVID Care facilities' and 'makeshift hospitals' under item no. (i) and (xii) of Schedule VII of Companies Act, 2013. |
| General Circular No.09/2021 | 05/05/2021 | Spending on CSR for COVID care infrastructure and equipment, medical oxygen generation and storage facilities, the production and supply of oxygen concentrators, ventilators, cylinders, and other medical equipment, as well as activities similar to these listed under items (i) and (xii) of Schedule VII of the Companies Act of 2013. |

(viii) Source: Compiled from Invest India, 2020; Citadel law chambers, 2021

Table-1 depicts several official declarations made time to time relating to eligible CSR spending in view of COVID-19 in India. With the rapid spread of the pandemic and consequent rising complications, MCA, GoI had been passed multiple notifications permitting several activities under the purview of CSR. Such specific activities were to be carried out under prescribed

broad areas included in Schedule-VII of the 2013 Companies Act. On March 23, 2020, the government announced for the first time that CSR funds could be used for a range of COVID-19-related activities under items no. (i) and (xii) of Schedule VII of the Companies Act, 2013, namely, promotion of health care including preventive health care, sanitation, and

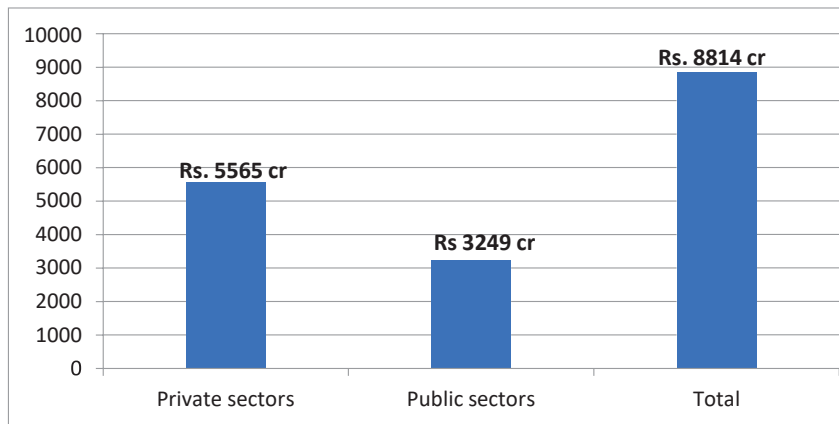
disaster management, respectively. With two separate notifications issued on 28th March, 2020 and 26th May, 2020 it was advised that assistance extended to PM CARES fund is an eligible CSR spending and contribution to various national funds for socio-economic wellbeing and relief and development of the Scheduled Castes, tribes, other backward classes, minorities, and women is permitted under item no. of the Schedule-VII of the Companies Act, 2013. Latter on 10th April, 2020 it was made clear that donations made to State Disaster Management Authority is also an eligible CSR spending like contribution to PM CARES. Additionally, in addition to paying wages under CSR, businesses may also provide ex-gratia payments to temporary, casual, or daily wage workers in order to comply with COVID-19. As a pertinent issue amidst the pandemic on 24th August 2020, companies were encouraged to support incubators, initiatives, and national laboratories, as well as publicly sponsored universities and institutes, in order to support on- going research and development in the fields of science, technology, medicine and engineering.

In an effort to boost vaccination processes, on 13th January, 2021 it was advised that CSR funds can be utilised to conduct different programmes to create awareness for the same. It can be done under items no. (i), (ii), and (xii) of Schedule VII of the Companies Act of 2013, which relate to, respectively, disaster management, promotion of education, and health care

promotion, including preventative health care and sanitization. Recognising the enormity of health disorders, on 22nd April, 2021 and 05th May, 2021 as per items (i) and (xii) of Schedule- VII of the Companies Act, the government was endorsed to establish temporary COVID care facilities, makeshift hospitals, and provide health infrastructure and equipment. Through all these legal initiatives by the government, CSR efforts were directed to address the perils produced by COVID- 19. Having a complete idea on the promulgations regarding eligible CSR spending in view of the pandemic, it is now relevant to look into the CSR contributions of top 100 companies during COVID-19.

Contributions of Top 100 Companies

The top 100 companies had made genuine contributions to the nation during the time of difficulty caused by COVID-19. They had taken substantial initiatives to minimise the adverse impact of the pandemic. We have seen instances of charitable business tycoons providing resources to fight COVID-19 in terms of donation to PM CARES Fund, establishing as well as supporting COVID care hospitals, doing awareness regarding the pandemic, distributing masks, PPE kits, driving relief efforts for the vulnerable groups and so on. A sizable quantity of funds had been directed from corporations to the PM CARES fund since its creation and the statement regarding qualified CSR spending.

Figure: 1 Contribution of companies to PM CARES fund (in crores)

Source: Compiled from Indian Institute of Corporate Affairs, 2020

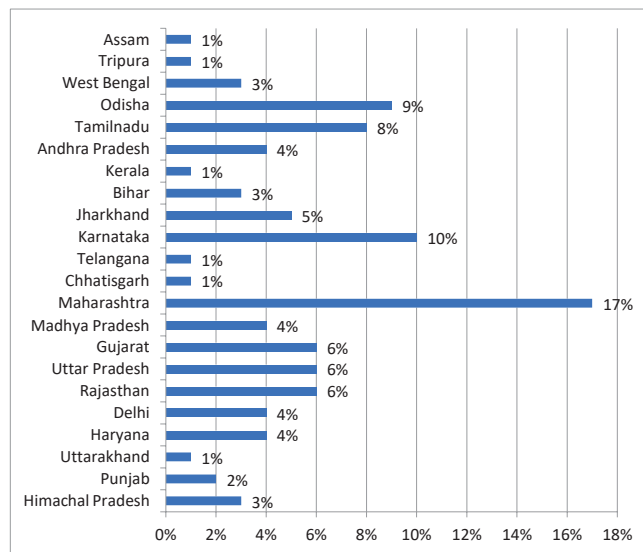
Figure 1 shows the top 100 companies' contributions to the PM CARES fund during COVID-19. Out of the total Rs. 8814.00 crores private sector companies had spent the highest i.e. Rs.5565.00 crores and public sector companies had spent Rs.3249.00 crores. Government had attracted substantial amount of financial donations by making contribution to PM CARES as an eligible CSR spending. In fact 'PM CARES' fund had received 3 times more than what 'PMNRF' had got in 2 years. Some of the leading names who had made substantial financial donation to this fund are Tata Group, Reliance Industries, Larsen and Toubro, Infosys, Adani Group, Jindal South West (JSW) Steel, Vedanta, Hero, ITC Limited, Bharti Enterprises and so on (FICCI, 2020;

Sundar, 2020). All such contributions had truly helped India as a country lagging with resources to combat with the disaster (He & Harris, 2020; Kaushik et al., 2020).

It is good to see that, companies operating in different states had played instrumental role in contributing to the fight against COVID-19. The figure-2 reveals the number of CSR projects undertaken by top 100 companies across different states in India during the pandemic. Maximum numbers of projects were undertaken in the state of Maharashtra, Karnataka, Odisha and Tamilnadu accounting to 17, 10, 09, and 08 per cent of the total projects. It is a well-known fact that, Maharashtra was one of the worst affected states of COVID-19 across India and the contribution of companies is certainly

praiseworthy. Other states like Kerala, Delhi, West Bengal, Assam, Tripura, Kerala, Telangana, and Chhattisgarh had witnessed some interventions through CSR nevertheless these are less than Maharashtra.

Figure: 2 State wise CSR projects undertaken during COVID-19 (in percentage)



Source: Compiled from Indian Institute of Corporate Affairs, 2020; Invest India, 2020

Table-2 reveals the information on Schedule VII activities related to COVID-19 and explores its connection with the SDGs. Out of the 12nos of Schedule VII activities listed in the Companies Act, 07nos are relevant in the context of COVID-19. Examining the linkage of those 07nos of activities with the SDGs can give a better idea on understanding the contributions of top 100 companies during the pandemic and how such effort were impacted SDGs. As per the figure, the first Schedule VII activity related to COVID-19 relief has connection with SDG no. 01, 02, 03

and 06. The second activity is relatively holistic in nature and it has direct link with SDG no. 01, 02, 03, 04, 05, 06, 08, 09 and 11. The third activity is related with SDG no. 04 and 08 while the eighth and ninth number of Schedule VII activity resembles with SDG no. 05 and 09 respectively. The tenth number of activity is connected with SDG no. 01, 02, 03, 04, 05, 06, 08 and 09 and finally the eleventh number of Schedule VII activity is related to SDG no. 01, 02 and 03. Moreover, it is found that the 07 numbers of Schedule VII activities relevant to COVID-19 are connected to SDGs 01, 02, 03, 04, 05, 06, 08, 09 and 11.

Table: 2 SDGs resemble with Schedule VII activities related to COVID -19 reliefs

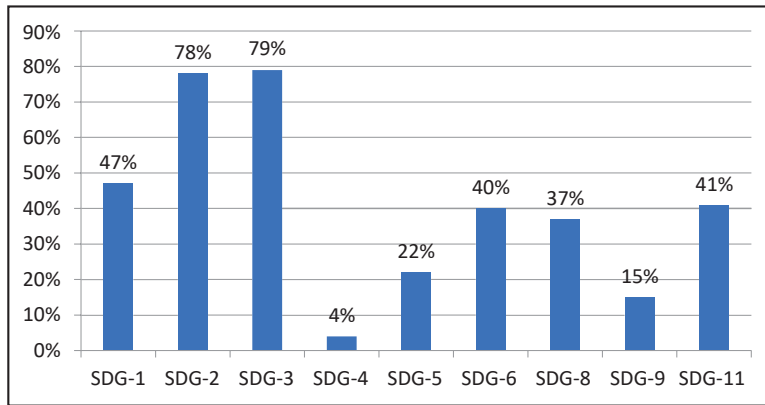
| Schedule VII activities related to COVID -19 reliefs | | Connection with SDGs | |
|--|--|----------------------|---|
| Schedule VII No. | Name of the activities under Schedule VII | SDG No. | SDGs |
| I | Eradicating hunger, poverty and malnutrition, promoting preventive health care and sanitation, including contribution to the <i>Swachh Bharat Kosh</i> set-up by the Central Government for the promotion of sanitation and making available safe drinking water. | 01 | No poverty |
| | | 02 | Zero hunger |
| | | 03 | Good health and well-being |
| | | 06 | Clean water and sanitation |
| II | Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects. | 01 | No poverty |
| | | 02 | Zero hunger |
| | | 03 | Good health and well-being |
| | | 04 | Quality education |
| | | 05 | Gender equality |
| | | 06 | Clean water and sanitation |
| | | 08 | Decent work and economic growth |
| | | 09 | Industry, Innovation and Infrastructure |
| III | Promoting gender equality, empowering women, setting up homes and hostels for women and orphans; setting up old age homes, day care centres and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups. | 04 | Quality education |
| | | 08 | Decent work and economic growth |
| VIII | Contribution to the PM's National Relief Fund/ PM CARES Fund/any other fund set up by the central govt. for socio economic development and relief and welfare of the SCs, STs, OBCs, minorities and women. | 05 | Gender equality |
| IX | Contributions or funds provided to technology incubators located within academic institutions which are approved by the Central Government. | 09 | Industry, Innovation and Infrastructure |

| | | | |
|----|---|----|---|
| X | Rural development projects | 01 | No poverty |
| | | 02 | Zero hunger |
| | | 03 | Good health and well-being |
| | | 04 | Quality education |
| | | 05 | Gender equality |
| | | 06 | Clean water and sanitation |
| | | 08 | Decent work and economic growth |
| | | 09 | Industry, Innovation and Infrastructure |
| XI | Development of slum area declared by Central Government/State Government/other competent authority under any law for the time being in force. | 01 | No poverty |
| | | 02 | Zero hunger |
| | | 03 | Good health and well-being |

Source: Compiled from Ministry of Corporate Affairs, Government of India, 2013; United Nations, 2015

As we saw earlier that, companies through their CSR activities during COVID-19 had impacted SDG no. 01, 02, 03, 04, 05, 06, 08, 09 and 11. Now it seems important to know about their engagement in each SDGs. Figure-3 deals with the percentage of top 100 companies impacted SDGs through their CSR activities in each case. This will help us to know the commitment of the companies with specific SDGs and how the efforts impacted the global goals of sustainability. Out of the top 100 companies in each eleven SDGs, 47%, 78%, 79%, 04%, 22%, 40%, 37%, 15% and 41% of companies have impacted

SDGs 01, 02, 03, 04, 05, 06, 08, 09 and 11 respectively. It is found that, SDG no. 02 and 03 i.e. zero hunger and good health and well-being respectively witnessed more engagement of top 100 companies. Whereas goal no 01, 06, 08 and 11 i.e. no poverty, clean water and sanitation, decent work and economic growth and sustainable cities and communities respectively experienced mediocre involvement. Other goals like 04, 05 and 09 i.e. quality education, gender equality and industry, innovation and infrastructure had also received some involvement though it is less than the earlier goals.

Figure: 3 Top 100 companies impacted SDGs through CSR during COVID-19

Source: Compiled from Indian Institute of Corporate Affairs, 2020; Invest India, 2020

COVID-19 had brought the sustainability practices of the companies to the front. Corporate entities, big and small had accepted the clarion call of the pandemic and supported the nation. They had expressed solidarity with the government to reduce the difficulties. Particularly, the top 100 companies of India had undoubtedly made sincere stride in the line of the fight against the pandemic.

Socio-Economic Consequences and Implications for Policies

In the contemporary world, it has become highly relevant to live more responsibly. The changing time has made us realise that, if we are to succeed in the economic pursuit, the non-economic aspects need to be given equal attention (Clarke & Clegg, 2000, Ghosh & Malpani, 2022). Performing CSR by the firms during the time of pandemic was a challenge

or an opportunity to prosper is worth investigating. Some may argue that the financial hardships and growing pressure for survival caused by this disaster had pushed the firms to take short-term initiatives, sometimes even manipulation of expenditures and minimise long-term CSR venture. Contrarily it was observed that many companies had come forward during this crisis and pursued various CSR activities based on immediate assistance to combat COVID-19. So performing CSR during this time of crisis was not only a challenge, rather it was an opportunity to the firms to promote their brand value by undertaking social responsibility (He & Harris, 2020). Genuine and authentic CSR practices of firms had affected the bond of the business houses with its customers, general public and the stakeholders positively. Stakeholders had

been pleased for their brands working for the society during the period of crisis. The relationship between the company and stakeholders during COVID-19 had become more meaningful and lasting than earlier (Bapuji et al., 2020). Along with the potential to create capital, COVID-19 had provided a platform for creative thinking and innovative ideas that would benefit society as a whole (Khan, 2021). Thus, the disaster had presented profound opportunities to firms for proactively getting involved following effective strategies. Due to their adherence to moral business principles and CSR commitments to stakeholders, they have been able to get more social acceptance, social recognition, and maintain a positive global reputation for business prospects (Rodrigues & Noronha, 2021). In fact by doing business through the lens of humanity, business organizations had established a crucial reservoir of trust with its people and its customers. Demonstration of sustainability was no doubt a step towards ensuring long-term business success. Besides several difficulties, COVID-19 had opened up a large window of opportunity for the firms that never existed before to define what social responsibility could be (Manuel & Herron, 2020). The pandemic had enabled the companies to gain long-term economic advantages by understanding the opportunities that

the pandemic had presented with new business models (Subudhi et al., 2022). History suggests that companies that had resorted to innovative approach during a crisis out-perform during the recovery. In fact, businesses who had continued to innovate throughout the 2009 financial crisis had become stronger competitors, surpassing the market by more than 30%. Over the following three to five years, they had likewise kept up their rapid expansion. Thus, during the era of post-pandemic situation, the flourishing firms are envisioned as those with resilient and effective CSR commitment.

Conclusion

The COVID-19 pandemic had posed fathomless sufferings in all the spheres across the globe. It was adversely affected India due to its socio-economic peculiarities. Though this pandemic had created an exceptional situation where companies were facing survival challenges, they had got profound opportunities to bring positive outcome for both business and society. The pandemic had shaped the practice of CSR significantly. The MCA, GoI had passed a series of provisions regarding CSR spending keeping in mind the pandemic. The top 100 companies of India had made many appreciative efforts in the mitigation of the pandemic induced crisis. What was worth admiring is the

companies through their CSR actions on the relevant areas had impacted SDGs. During COVID-19 firms were confronted with survival challenges and at the same time social expectations from them were rising. Therefore, the only option to deal with these increasing challenges was to be able to innovate and build CSR strategies that would benefit society and company alike. Hence, business houses need to see their existence within practice of social responsibility based on innovative strategy. It is morally required of businesses to consider how their actions will affect society as part of their decision-making processes in a way that will produce social benefits in addition to the usual economic rewards the business seeks. Hence it is quite relevant to give back to the society which can positively influence the business. It is well evidenced

that, the business houses that adopted innovative approach during the time of turbulent situation gain recognition and their businesses flourish. *Tata* in India can be a good example in this regard. Indian firms need to uphold the innovative trends during future turbulent time going beyond conventional approach. By promoting the idea of “creating shared value” Porter and Kramer argue that people should work to achieve a healthy balance between business and society. The United Nations (2020) has properly called for coordinated efforts to create post-COVID-19 economies that are more equitable and sustainable and more resilient to a range of socioeconomic and environmental challenges. Moreover companies in India need to develop more such innovative business model to overcome the future turbulent times.

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Assessment of Sustainable Livelihood Approach towards Poverty Alleviation through MGNREGA: A Study of Selected Tribal Districts of Madhya Pradesh

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Abstract

By creating economic and social infrastructure in rural areas, MGNREGA is anticipated to increase people's livelihood security over time. The present study conducted in the Dindhori and Annupur which are tribal dominant districts, of Madhya Pradesh attempts to examine the implementation process of MGNREGA and its impact on the creation of sustainable livelihood for tribes towards poverty alleviation. Both quantitative and qualitative methods were used to determine the impact of MGNREGA among 640 households in the selected districts. After factor loading calculations, the final items with high factor loading were selected. Statistics were used to analyze the data. For all items, the Cronbach's alpha reliability coefficient was 0.917. The socioeconomic effects of MGNREGA beneficiaries varied significantly across the districts in a statistically meaningful way ($p, 0.000$) and different tribes ($p, 0.00$),

age groups (p, 0.000), gender (p, 0.038), occupations (p, 0.0188) and Education (p, 0.000). The results show that income from MGNREGA work supports small household expenditures, impoverished households' options for generating money remain limited.

Keywords: *MGNREGA, sustainable livelihood, impact, implementation.*

Introduction:

For the advancement of India's socioeconomically disadvantaged sections, the development of the tribal population is a crucial concern in our nation. The main issues facing tribal communities are illiteracy, a lack of possibilities for development, a low level of education, poverty, and unemployment. The government has consequently created numerous programs and programs for the growth of tribal communities to aid in the socioeconomic rehabilitation of the tribes. One of the government's programs put into place in Madhya Pradesh with this background is MGNREGS. Many social scientists have attempted to research the effects of MGNREGA as well as the methods used in its implementation. Saikia, & Borah (2017) Data regarding various parameters related to core characteristics of good governance, such as participation, accountability, transparency, efficacy, productivity, and equity were taken into consideration in that study by Roy, & Samanta (2010), which sought to quantify the results of

good governance practiced by Gramme Panchayats (GPs) of the West Medinipur district of West Bengal. The direct and indirect benefits of MGNREGA on job creation and poverty reduction in rural regions have been explored by Khan, Ullah, and Salluja (2007). In the West Bengali district of Birubham, Arulraj & Rena (2021) investigated how the MGNREGA operated between 2006 and 2009. According to their research, the program has to offer more days of employment, particularly during the slow season, and may need to be paid on time to function effectively as an "employer of last resort". In Orissa, research by Nayak, Behera, & Mishra (2008) examined some physical and monetary factors, such as maintaining the wage-to-non-wage ratio and offering employment to people who request it. However, it did a poor job of using finances effectively and stimulating the labor market. According to Mathur (2007), it's crucial to have a system of reliable information flow. Concurrent evaluations, improved monitoring, time-series analyses, and

targeted reporting on crucial issues like minimum salaries and muster rolls are all effects the government may pursue. The government must resolve issues, alter policy directives, and release operational guidelines for the district, block, and village levels to improve implementation. According to Singh et al (2022) study on MGNREGA, it can be concluded that the Scheme has had a significant positive impact on the social status of these tribal areas. To further improve the advantages for rural areas, these gaps must be closed.

MGNREGA and Livelihood:

In developing nations where reducing poverty is the top priority, the idea of creating national and regional employment generation plans has gained relevance over the last 10–15 years. The implementation of food-for-work initiatives as a means of alleviating people's economic struggles has a long history. MGNREGA as a development intervention has not only enthused policymakers and development practitioners but also drawn the attention of researchers from varied disciplines. The program has not only ensured employment and decent wage to the poor in rural areas in lean seasons thus reducing distress migration but also pushed the agricultural wages up both for male and female workers (Reddy et al,

2014; Narayanan et al, 2017). According to studies, MGNREGA has almost equally benefited all types of households, farm sizes, and income groups in terms of employment benefits and income growth, which has helped to reduce poverty (Desai et al., 2015; Kumar and Joshi, 2013). Pogge (2017) revealed that the plan had prevented the poverty of an additional 14 million people and decreased overall poverty by up to 32 percent. Farmers and workers in rural regions now have a safety net against crop failures and a lack of employment possibilities during lean seasons thanks to the pay income from MGNREGA. According to Pankaj, 2022, Ranaware et al., 2015; Singh, 2013, the assets developed by individuals and communities under MGNREGA have a substantial impact on enhancing the quality of land and productivity and resulting in increased income for beneficiaries. Assets and increased income allowed small and marginal farmers to switch to multi-cropping and vary their cropping patterns, which opened up new prospects for alternative livelihoods for the rural poor (House, 2019). Poor rural households have benefited from MGNREGA in that it has increased household food consumption, altered dietary habits, provided nutritional food security, and improved human capital (Joshi, 2016; Ravi and Engler, 2015). In recent years, MGNREGA has also been

viewed as a program for climate adaptation with substantial potential to lessen the vulnerability of the poor and marginalized to climate change (Godfrey-Wood and Flower, 2018; Tiwari et al., 2011). These assets are intended to revitalize the rural natural resource base, which is expected to increase the rural populations' potential for adaptation. Millions of people throughout the world depend on local food production and other natural ecosystem services for their livelihoods, and climate change and variability are predicted to have negative effects on these functions (Morton, 2007; Siva Kumar et al., 2011). Due to their predominantly tropical locations and limited capacity to adjust due to many intrinsic socio-economic, demographic, institutional, and policy trends, developing nations in the south are more susceptible to the negative impact (Dulal et al., 2009; Kattumuri, 2017). Vulnerability is determined at the micro level by both personal and societal influences. Vulnerability and coping skills are determined by the livelihood context, geography, degree of income, education, asset holdings, gender, age, social class, and ethnicity, among other factors. Darcombe (2006). MGNREGA appears to be a successful adaptation strategy for rural India in this setting, and it has a great deal of potential to lessen the vulnerabilities of the rural poor.

In the Madhya Pradesh state about 69.0 percent of India's rural poor, including those in Madhya Pradesh, lived in just five high-poverty states in 1999–2000, according to Thorat & Mahamallik(2005). Madhya Pradesh was created in its current shape after the state of Chattisgarh was split off on November 1, 2000. With a total area of 308,000 square kilometers, Madhya Pradesh is the second-largest Indian state by size. It contains 55393 villages, 23040 panchayats, 313 blocks, 50 districts, and 341 tehsils. 52117 settlements are populated as a whole. Around 60,348,000 people are living in Madhya Pradesh, according to census reports from 2001. The population is divided between urban and rural areas, with rural areas making up about 73.54% of the total population. Males make up about 51.1% of the population. ST makes up 20.30% of the population, whereas SC makes up 15.20% (Census 2001). The male-to-female ratio in the state is 920:933, and the literacy rate is 64.1% (male literacy level is 76.5% and female literacy level is 50.6%). In Madhya Pradesh, 42.74% of the population is employed, of whom 31.65 percent are major employees and 11.09% are marginal workers, according to the 2001 Census. Out of the entire labor force (main and marginal), cultivators make up 42.79%, agricultural laborers 28.69%, domestic industry employees

4%, and other occupations 24.51%. In Madhya Pradesh, the percentage of the population living below the poverty line (BPL) is 38.3, while the all-India average was just 27.5 in 2004-2005, according to the State Government Office Diary for 2010. According to the aforementioned information, Madhya Pradesh has not performed well in terms of socio-economic measurements.

Statement of Problem:

The guarantee of wage employment, simplicity of implementation, equality of work and pay, accountability, and transparency of the MGNREGA program continue to draw in the rural poor. In addition, MGNREGA provided numerous socioeconomic advantages to the rural poor to lessen their suffering from insecure living conditions and low standards of living. However, the implementation of the MGNREGA in tribal areas of Madhya Pradesh has been marred by several problems. These include lack of awareness, poor targeting, and delayed wage payments (more than within the stipulated period). As a result of these problems, the MGNREGA has not been as successful in providing employment and improving the livelihoods of tribal areas in Madhya Pradesh. Therefore, the study aims to describe the socio-economic impact of MGNREGA before and after

the scheme for rendering services towards development in the tribal areas of Madhya Pradesh.

The objectives of this paper are:

1. To study the socio-economic impact of MGNREGA in selected districts as taken the study area.
2. To assess the important challenges associated with the implementation of the scheme before and after the study period.
3. To suggest appropriate measures for rendering the services towards socio-economic development.

Hypotheses of the study:

H01: There is no significant correlation between employment after MGNREGA and changes in the economic conditions of beneficiaries.

H02: There is no significant difference between the before and after impact of MGNREGA on the selected districts.

H03: There is no significant association between the number of employment days and the impact on the financial life of beneficiaries.

Methodology:

Multi-stage random sampling method was used. Dindori and Anuppur were chosen for the first stage based on the dominant tribal population. For the second stage,

four villages from each of Dindori and Anuppur were chosen for the performance of the district's collection phase. In the third phase, three blocks from each district were selected. Great performance, poor performance, and moderate performance were chosen from each district. High-performing, moderately performing, and low-performing blocks complete the chosen block. In the fourth phase, two villages from each block were selected. While the other was at least 20 to 25 km away from a semi-urban region, one was near a rural area. The final stage involved selecting 40 beneficiaries at random from

each block according to population size. 640 households were used as the sample size. The job card holders were plotted using both closed- and open-ended questions over the study period, which participated from 2016 to 2023. It is a descriptive form of study. Both primary and secondary data were developed from beneficiaries, PRIs, local organizations, annual reports, and government websites. The preliminary data was collected using the interview schedule. The secondary data was collected from all regional, state, and

| Report on MGNREGA | | | | | | | |
|---|---------|----------|---------|----------|----------|----------|--------|
| Financial Progress: Table 1.1 Financial Performance Under MGNREGA from Financial Year 2017-18 to 2021-22 of Anuppur District (₹ in Lakhs) | | | | | | | |
| Financial Years | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | CAGR |
| <i>Income</i> | | | | | | | |
| Opening Balance | 27.26 | 8.41 | 6.01 | 2.68 | 1.68 | -23.24 | - |
| Release from a State fund to District | 23.62 | 0 | 0 | 0 | 0 | 0 | - |
| Authorisation of EFMS | 8579.76 | 10624.43 | 7704.82 | 17015.35 | 16670.93 | 16492.05 | - |
| Misc. Receipts | 0 | 0 | 0 | 0 | 0 | 0 | - |
| Borrowed fund | 0 | 0 | 0 | 0 | 0 | 0 | - |
| Total Availability | 8630.64 | 10632.84 | 7710.83 | 17018.03 | 16672.61 | 16468.81 | 11.37% |
| <i>Expenditure</i> | | | | | | | |
| On Unskilled Wages | 5935.27 | 7715.88 | 6553.83 | 13732.24 | 11841.65 | 9086.86 | |

| | | | | | | | |
|--|---------|----------|---------|----------|----------|----------|--------|
| On Semi-Skilled and Skilled Wages | 6.41 | 2.13 | 2.27 | 68.95 | 126.34 | 412.48 | |
| On Material | 2633.53 | 2903.51 | 1106.88 | 3202.43 | 4400.71 | 6475.89 | |
| Tax | 0 | 0.4 | 0.05 | 2.49 | 2.15 | 0.66 | |
| Total Administrative Expenditure (Rec and Non-Rec Exp.) | 13.19 | 0 | 0 | 0 | 192.39 | 467.49 | |
| Total Expenditure | 8588.4 | 10621.92 | 7663.03 | 17006.11 | 16563.24 | 16443.39 | 11.43% |
| Percentage of Expenditure with Total Funds Available | 99.51 | 99.90 | 99.38 | 99.93 | 99.34 | 99.85 | |
| Source: Compiled Data From https://nrega.nic.in/ | | | | | | | |

federal government papers and publications. To assess the data and achieve the objective, statistical tools like percentage, CAGR, correlation, paired T-test, factor analysis and ANOVA were applied. SPSS 22 was used to prepare the data for analysis. **Results and Discussion:**

The above Table 1.1 describes the financial progress of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) of Anuppur district by taking the last six years of data from 2017-18 to 2021-22. It reveals that the total availability of receivables from varied sources in financial years 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 was 8630.64 lakhs, 10632.84 lakhs, 7710.83 lakhs, 17018.03 lakhs,

16672.61 lakhs and 16468.81 respectively, exhibiting an uptrend up to financial year 2020-21 but declines by 2.03% in financial year 2021-22, with Compound Annual Growth (CAGR) of 11.37%. Table 1.1 also shows the total expenditure incurred on unskilled wages, semi-skilled and skilled wages, on material and recurring and non-recurring administration. The total expenditure incurred on aforesaid items in the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 was 8588.4 lakhs, 10621.92 lakhs, 7663.03 lakhs, 17006.11 lakhs, 16563.24 lakhs and 16443.39 lakhs respectively with CAGR of 11.43. The utilization percentage for the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-

22 and 2022-23 was 99.51%, 99.90%, years, 99.93% of the total availability was 99.38, 99.93%, 99.34 % and 33.85% spent on the better of the rural household respectively. Overall, considering all six in the Anuppur district.

| Table 1.2 Financial Performance Under MGNREGA from Financial Year 2017-18 to 2021-22 of Dindori District (₹ in lakhs) | | | | | | | |
|---|----------|----------|----------|----------|----------|---------|--------|
| Financial Year | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | CAGR |
| <i>Income</i> | | | | | | | |
| Opening Balance | 212.16 | 122.57 | -6.81 | -23.07 | -29.39 | -133.25 | |
| Release from a State fund to District | 89.35 | 0 | 0 | 0 | 0 | 0 | |
| Authorisation of EFMS | 11316.27 | 17083.86 | 18324.52 | 35787.86 | 28500.48 | 31257.5 | |
| Misc. Receipts | 21.2 | 0 | 0 | 0 | 0 | 0 | |
| Borrowed fund (Refunded to district /state) | -241.33 | 0 | 0 | 0 | 0 | 0 | |
| Total Availability | 11397.65 | 17206.43 | 18317.71 | 35764.79 | 28471.09 | 31124.2 | 18.23% |
| <i>Expenditure</i> | | | | | | | |
| On Unskilled Wage | 7823.8 | 12104.75 | 13999.26 | 26717.27 | 22664.67 | 19862 | |
| On Semi-Skilled and Skilled Wage | 26.74 | 20.16 | 23.8 | 92.61 | 229.44 | 331.57 | |
| On Material | 3467.01 | 4940.26 | 4260.98 | 8973.54 | 5184.96 | 10200.3 | |
| Tax | 1.61 | 9.36 | 0 | 5.91 | 4.92 | 26.21 | |
| Total Administrative Expenditure (Rec and Non-RecExp.) | 83.61 | 0 | 0 | 0 | 231.11 | 578.8 | |
| Total Expenditure | 11402.77 | 17074.53 | 18284.04 | 35789.33 | 28315.1 | 30998.8 | 18.13% |
| Percentage of Expenditure with Total Funds Available | 100.04 | 99.23 | 99.82 | 100.07 | 99.45 | 99.6 | |

Source: Compiled Data From <https://nrega.nic.in/>

The above Table 1.2 describes the financial progress of MGNREGS of Dindori district by taking the last six years of data from 2017-18 to 2022-23. It reveals that the total availability receivables from varied sources in the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 were 11397.65 lakhs, 17206.43 lakhs, 18317.71 lakhs, 35764.79 lakhs, 28471.09 lakhs and 31124.24 lakhs respectively, exhibiting a consistent uptrend except in the financial year 2021-22 which declines by huge 20.39%, with overall CAGR of 18.23%.

Table 1.2 also shows the total expenditure incurred on unskilled wages, semi-skilled and skilled wages, material and recurring and non-recurring administration. The

total expenditure incurred on aforesaid items in financial years 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 was 11402.77 lakhs, 17074.53 lakhs, 18284.04 lakhs, 35789.33 lakhs, 28315.10 lakhs and 30998.84 lakhs respectively with CAGR of 18.13 % and exhibiting consistent increase as similar to total availability except in the financial year 2021-22. The utilization percentage of the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 was 100.04%,

99.23%, 99.82, 100.07%, 99.45% and 99.6% respectively. Overall, 99.74 % of the total availability was spent on the better of the rural household of the Dindori district considering all six financial years. Physical Progress:

Table 2.1 Employment Generation Under MGNREGS of Anuppur District

| Year | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | Total | CAGR |
|---|---------|---------|---------|---------|---------|---------|--------|-------|
| No. of Registered Household | 127764 | 127764 | 138019 | 152711 | 151027 | 155074 | 852359 | 3.28% |
| No. of Job Card Issued to Household | 126643 | 130284 | 136536 | 150116 | 148332 | 152038 | 843949 | 3.09% |
| Employment Demanded by No. of Household | 89460 | 97598 | 88631 | 133770 | 123723 | 110428 | 643610 | 3.57% |
| Employment Offer to No. of Household | 89385 | 97575 | 88580 | 133736 | 123680 | 110359 | 643315 | 3.58% |
| Employment Availed by No. of Household | 84465 | 88959 | 81433 | 119917 | 113309 | 98031 | 586114 | 2.51% |

Source: Compiled Data From <https://nrega.nic.in/>

Table 2.1 describe the physical progress of MGNREGS in the Anuppur district. The no. registered household was 127764 (2017-18), 127764 (2018-19), 138019 (2019-20), 152711 (2020-21), 151027 (2021-22), 155074 (2022-23) overall, 852359 with CAGR of 3.28%.

The job card issued to the household of Anuppur district in the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 was 126643, 130284, 136536, 150116, 148322 and 152038 respectively with CAGR of 3.09% and overall, the job card issued in last six

was 843949. In the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 the employment demand was 70.64%, 74.91%, 64.91%, 89.11%, and 83.41%, 72.63 and in total 76.26% of the registered household with CAGR of 3.57%, whereas the employment offer was 99.92%, 99.98%, 99.94%, 99.97%, 99.97 and 99.94% and in total 99.95% of the demanded employment with CAGR of 3.58% out of which 94.50%, 91.17%, 91.93%, 89.67%, 91.61%, 88.83% and in total of 91.11% household were availed the employment.

Table 2.2 Employment Generation Under MGNREGS of Dindori District

| Year | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | Total | CAGR |
|---|---------|---------|---------|---------|---------|---------|---------|-------|
| No. of Registered Household | 169207 | 176207 | 185865 | 193858 | 193077 | 199996 | 1118210 | 2.82% |
| No. of Job Card Issued to Household | 168439 | 175235 | 185210 | 193327 | 192131 | 198769 | 1113111 | 2.79% |
| Employment Demanded by No. of Household | 144019 | 157577 | 160903 | 194494 | 188137 | 183761 | 1028891 | 4.14% |
| Employment Offer to No. of Household | 143963 | 157542 | 160873 | 194490 | 188125 | 183729 | 1028722 | 4.15% |
| Employment Availed by No. of Household | 129840 | 145016 | 150922 | 187733 | 181890 | 177309 | 972710 | 5.33% |

Source: Compiled Data From <https://nrega.nic.in/>

Table 2.2 describe the physical progress of MGNREGS in the Dindori district. The number registered household was 169207 (2017-18), 176207 (2018-19), 185865 (2019-20), 193858 (2020-21), 193077 (2021-22), 199996 (2022-23) overall, 1118210 with CAGR of 2.82%. The job card issued to the household of the

Dindori district for the financial year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 was 168439, 175235, 185210, 193327, 192131, 198769 respectively with CAGR of 2.79% and overall, the job card issued in last six year was 1113111. In the financial year 2017-

18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 the employment demand was 85.11%, 89.43%, 86.57%, 100.33%, 97.44%, 92.45% and in total 92.43% of the registered household with CAGR of 4.14%, whereas the employment offer was 99.96%, 99.98%, 99.98%, 99.99%, 99.99% and 99.98% and in total 99.98%

of the demanded employment with CAGR of 4.15% out of which 90.19%, 92.05%, 93.81%, 96.53%, 96.69%, 96.51% and in total of 94.56% household were availed the employment.

Table 3.1: Demographic characteristics associated with the impact of MGNREGA beneficiaries

| Variable | N | P |
|---------------------------|-----|-------|
| District | | |
| Dindori | 320 | 0.000 |
| Annuppur | 320 | |
| Tribe | | |
| Gond | 160 | 0.000 |
| Pradhan | 160 | |
| Panika | 160 | |
| Baiga | 160 | |
| Age | | |
| Below 25 Yrs | 46 | 0.000 |
| 26 - 30 Yrs | 73 | |
| 31 - 35 Yrs | 105 | |
| 36 - 40 Yrs | 184 | |
| Above 41 Yrs | 232 | |
| Gender | | |
| Male | 320 | 0.038 |
| Female | 320 | |
| Occupation | | |
| Agro- Based | 249 | 0.039 |
| Wage Earner | 218 | |
| House Wife | 121 | |
| Others | 52 | |
| Educational Status | | |
| Illiterate | 451 | 0.000 |
| 8th Pass | 87 | |
| 10th Pass | 52 | |
| 12th Pass | 17 | |

Sources: Computed from Primary Data

The demographic characteristics associated with the effects of MGNREGA beneficiaries. The population of the specified districts is spread out across the different age groups very equally. There was just a very modest predominance in the 25–45 age range. The age group of productive workers is this one. The workforce in this village has a lot of potentials, therefore it makes sense to provide them with sufficient job possibilities (Dahlin et al., 2019). Being relatively young at 36 years old, they can work effectively. Women farmers who are 36 years old can labor effectively on agricultural land because of their physical strength. Although the respondents had been selected at random, those who were still sound worked as farm workers (Sudrajat, et al., 2017). Since the majority of workers are illiterate in terms of education, it is still difficult for them to further their education. The government anticipates the need for education to improve the population's capacity to generate rapid economic development because education has a significant role (Hamidah et al., 2021). A population's ability to do tasks and the development of a productive and efficient workforce are both influenced by occupation. They are anticipated to obtain competency and skills from the knowledge acquired, which will allow for an equal distribution of income (Triyono et al., 2020). To create more employment opportunities outside of the agricultural sector and take on additional workers, rapid economic growth must be achieved. This is because an expanding labor force is continuously correlated with an expanding population, which will raise the unemployment rate.

Therefore, if additional innovations are made, the inhabitants of the selected village will undoubtedly be able to accept them as long as they can enhance their welfare (Lisanty & Tokuda, 2015). Among all the selected tribes, the overall impact is large. As confirmed in Table 3.1, there is a statistically significant variation in how the MGNREGA has affected various districts ($p, 0.000$), various tribes ($p, 0.00$), age groups ($p, 0.000$), gender ($p, 0.038$), and depending on employment ($p, 0.0188$) and education ($p, 0.000$).

KMO and Barlett's test

It shows an adequate sample size with Kaiser–Meyer–Olkin measure of sampling adequacy of 0.837.

Based on all instances with reliable data for each process variable, reliability statistics were calculated. User-defined missing values were treated as though they were missing. For all 12 items, the Cronbach's alpha reliability coefficient was 0.917.

Three components with beginning Eigenvalues of 1 were identified as common determinants of the influence of MGNREGA on beneficiaries' social lives on a scatter plot. These three components were loaded with all the variables. High loadings were seen for all variables (Eigenvalue >0.700). For analysis, the final rotated matrix was used. Four items made up the first element relating to individual livelihood, four items made up the second-factor involving economic

condition variables, and four items made up the third factor regarding social factors.

Table 3.2: Variables involved in each principal factor and their factor loadings

| Factor | Variables | Loadings |
|---|---|----------|
| Factor 1 Individual Livelihood | Improve decision-making and social participation | .900 |
| | Enhanced family social status and self-reliance | .885 |
| | The overall level of satisfactory MGNREGA | .861 |
| | Social life involves spending time with others | .846 |
| Factor 2 Economic Condition | Satisfied with the benefits received from MGNREGA | .854 |
| | Involvement in community-related activities | .851 |
| | Improve infrastructural facilities | .830 |
| | MGNREGA Programme is useful | .803 |
| Factor 3 Social Factors | Involvement in Panchayat activities | .833 |
| | More interaction with other caste people | .804 |
| | Poverty alleviation through better working conditions of SHGs | .738 |
| | Availability of sufficient food grain | .712 |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization. Rotation

Method: Varimax with Kaiser Normalization.

The results of the inter-correlation matrix between selected variables are presented in Table 1.2, the relationships found among the variables are expected. The outcome variables of employment number of days before and after MGNREGA and change in economic condition have a positive correlation with the highest significance

of 0.223, which is significant at a 0.01 probability level. It provides evidence that the measures have predictive validity. No correlations between employment before MGNREGA and change in economic condition. Hence, a null hypothesis is rejected and an alternative hypothesis is accepted. The study found a positive

impact of the program a sharp drop in the number of people who asked for jobs during 2017–2018, 2018-2019, 2019-2020, 2020-2021 and 2021-2022. The

level of employment generation has been evidenced that better livelihood security provided them with better opportunities to be involved in MGNREGA.

Table 3.2: Inter-correlation matrix between Employment Variables

| Employment | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | Change in Economic Condition | Before MGNREGA |
|------------------------------|-----------|-----------|-----------|-----------|-----------|------------------------------|----------------|
| 2017-2018 | 1 | | | | | | |
| 2018-2019 | .635** | 1 | | | | | |
| 2019-2020 | .209** | .153** | 1 | | | | |
| 2020-2021 | -.127** | -.066 | .083* | 1 | | | |
| 2021-2022 | -.435** | -.274** | .100* | .199** | 1 | | |
| Change in Economic Condition | .079* | .080* | .150** | .223** | .189** | 1 | |
| Before MGNREGA | -0.031 | -0.031 | -.020 | .076 | 0.05 | 0.02 | 1 |

Sources: Computed from Primary Data

** Correlation is significant at the 0.01 level (2-tailed). * at the 0.05 level (2-tailed).

In this table there is a major difference between before and after the financial life of MGNREGA beneficiaries, the t values are significant at the confidence level of 0.01. Agriculture (M=1.5594. SD = 1.01302), t = 38.94, p< 0.01, Non-Agriculture (M=1.5359. SD

= 0.87852), t = 44.23, p< 0.01, Subsidies from government (M=1.2844. SD = 1.03328), t = 31.45, p< 0.01, Family members migrated (M=1.1859. SD = 0.95343), t = 31.47, p< 0.01, For children education (M=1.9891. SD = 0.83818), t = 60.04, p< 0.01, Repayment of bank loan (M=1.9297. SD = 0.85015), t = 57.42, p< 0.01, Medical treatment (M=1.9594. SD

= 0.86213), t = 57.5, p< 0.01, Saving Money (M=1.9797. SD = 0.86012), t = 58.23, p< 0.01. The null hypothesis is therefore rejected and there is a major difference between before and after the financial life of MGNREGA beneficiaries. To support access to income, particularly to mitigate the issue of seasonal unemployment and migration, in the long run, to transform rural livelihoods through savings in agricultural and rural infrastructure to improve production. This will provide an effective safety net for the poor who are primarily dependent on agricultural wage labour. Evidence from our research areas in Madhya Pradesh suggests that participation in MGNREGA may have helped to some

degree in accomplishing the first objective. According to respondents, household food expenses, other essential household expenses, and children's education account for the majority of earnings from MGNREGA. Households occasionally have a little bit easier access to credit, and MGNREGA has changed the migration

pattern by cutting back on the number of household members who migrate and the number of days of migration. Overall, our research indicates that MGNREGA income helps impoverished households with minimal household expenses and revenue-generating options.

Table 3.3: Paired Samples Test Before and After Financial Life of Beneficiaries

| Mean | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|--------|---------------|--------------------|--------------------|---|--------|--------|-------|-----|-----------------|
| | | Std. Deviation | S t d . Error Mean | 95% Confidence Interval of the Difference | | | | | |
| | | | | Lower | Upper | | | | |
| Pair 1 | AIAM – AIBM | 1.5594 | 1.01302 | 0.04004 | 1.4807 | 1.638 | 38.94 | 639 | 0 |
| Pair 2 | NAIAM - NAIBM | 1.5359 | 0.87852 | 0.03473 | 1.4678 | 1.6041 | 44.23 | 639 | 0 |
| Pair 3 | GSAM - GSAM | 1.2844 | 1.03328 | 0.04084 | 1.2042 | 1.3646 | 31.45 | 639 | 0 |
| Pair 4 | MFAM - MFBM | 1.1859 | 0.95343 | 0.03769 | 1.1119 | 1.2599 | 31.47 | 639 | 0 |
| Pair 5 | CEAM - CEBM | 1.9891 | 0.83818 | 0.03313 | 1.924 | 2.0541 | 60.04 | 639 | 0 |
| Pair 6 | RBLAM - RBLBM | 1.9297 | 0.85015 | 0.0336 | 1.8637 | 1.9957 | 57.42 | 639 | 0 |
| Pair 7 | MTAM - MTBM | 1.9594 | 0.86213 | 0.03408 | 1.8925 | 2.0263 | 57.5 | 639 | 0 |
| Pair 8 | SMAM - SMBM | 1.9797 | 0.86012 | 0.034 | 1.9129 | 2.0465 | 58.23 | 639 | 0 |

Sources: Computed from primary data

Table 3.4 presents the statistical values of the identical sample group for employment 2017- 2018, 2018-2019, 2019-2020, 2020-2021 and 2021-2022. The analysis shows that the employment 2017-2018 ($p = .056$) variable is statistically insignificant ($p >$

$.05$). In contrast, by employment 2018-2019 ($p < 0.016$), 2019-2020 ($p < 0.031$), 2020-2021 ($p < 0.048$) and 2021- 2022 ($p < 0.040$) variables are statistically significant ($p < .05$). Except employment 2017-2018 are accepted and the rest are rejected.

Table 3.4: ANOVA

| Variables Variances | | SS | df | MS | F | P |
|------------------------|-------|---------|-----|-------|-------|------|
| 2017-2018 | BG | 22.736 | 23 | .989 | 1.525 | .056 |
| | WG | 399.239 | 616 | .648 | | |
| | Total | 421.975 | 639 | | | |
| 2018-2019 | BG | 29.577 | 23 | 1.286 | 1.763 | .016 |
| | WG | 449.421 | 616 | .730 | | |
| | Total | 478.998 | 639 | | | |
| 2019-2020 | BG | 17.579 | 23 | .764 | 1.641 | .031 |
| | WG | 286.982 | 616 | .466 | | |
| | Total | 304.561 | 639 | | | |
| 2020-2021 | BG | 15.565 | 23 | .677 | 1.554 | .048 |
| | WG | 268.184 | 616 | .435 | | |
| | Total | 283.748 | 639 | | | |
| 2021-2022 | BG | 16.817 | 23 | .731 | 1.588 | .040 |
| | WG | 283.619 | 616 | .460 | | |
| | Total | 300.436 | 639 | | | |

Sources: Computed from Primary Data

Development of rural India is one of the major areas of the socio-economic programs initiated by the government of India, MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) is one of the programs which very much target oriented and plays vital roles in the development of rural India via employment generation and helping significantly in uplifting the livelihood rural people of India. This study was focused on comparing the financial and physical progress of MGNREGA between the Anuppur and Dindori districts of Madhya Pradesh and to compare it the study used six years of data from <https://nrega.nic.in> website, by using the Compound Annual Growth Rate (CAGR)

formula $CAGR = \{(FV)^{1/n} - 1 \times 100\}$, where FV= Final Value, BV= Beginning Value and n= no. of years from beginning value to final value, which is used to determine the growth rate for anything that can rise or fall in value overtime. In terms of financial progress both districts have significantly jumped over the last six years exhibiting the total availability with a Compound Annual Growth Rate (CAGR) of 11.37% (Anuppur district) and 18.23% (Dindori district), total expenditure also found in a similar line of total availability with Compound Annual Growth Rate (CAGR) of 11.43% (Anuppur district) and 18.13% (Dindori district). The financial progress of MGNREGA in the Dindori district has

shown better evolution of the MGNREGA scheme than that of the Anuppur district, this may be due to having a higher employment demand resulting in a higher number of issuance of household job cards and employment offers than that Anuppur district. The physical progress of MGNREGA has also shown good growth in both districts but the Anuppur district has shown better results in terms of Compound Annual Growth (CAGR) by 0.30% in the issuance of Job cards than that of the Dindori district, this is due to lesser Compound Annual Growth (CAGR) by -0.57% in the employment demand resulting in lesser employment offer Compound Annual Growth (CAGR) by -0.58% in Dindori district.

Due to covid pandemic during 2019-2021, the working condition has been impacted severely and caused light threat, migration and other factors responsible for every individual for which the income has been reflected in the analysis is found to be less.

Concerns have been raised about the MGNREGA's ability to continue in Madhya Pradesh's tribal districts. According to a report by the Institute of Economic Growth, tribal people have not been able to establish sustainable means of subsistence thanks to the program. The program, which has forced people away from farming to work on MGNREGA projects, has, according to the report, resulted in a drop in agricultural

production. The program has increased migration, according to the report, as more people leave their areas in quest of better prospects. MGNREGA has also impacted the livelihood of tribal people in Madhya Pradesh. According to a National Council of Applied Economic Research research, tribal members' employment and income have not increased as a result of the program. The program has decreased the number of days that tribal members work, according to the report, and the wages they receive through it are insufficient to cover their essential needs.

The experience of Madhya Pradesh determines that it is only partially true, although there has always been a dispute over the usefulness of MGNREGA in terms of reaching the target population and that it is also criticized on two grounds: it is expensive and corruption will prevent it from succeeding. The plan is effective in creating assets, developing watersheds, preventing drought, managing large-scale rural public works projects, and reducing large-scale migration. The program's coverage of the less fortunate segments of society is also not all that effective. The main issue is with creating jobs since in practically every region of Madhya Pradesh, the number of households receiving 100 days of employment and the number of man-days produced are

both fairly low. Even after fifteen years of MGNREGA implementation, less than 60 days of employment are generated per household annually in Madhya Pradesh. The proportion of SC and ST households that generate employment has been steadily declining over time. The state's low MGNREGA pay could be the result of inaccurate productivity measurement techniques. The other issues with wages include the workers' lack of knowledge about wage rates for various sorts of employment in various environments, their lack of bargaining power, the misrepresentation of muster rolls that results in low wage payment, etc. The MGNREGA is a considerably superior program to other employment-related initiatives. Making its presence known throughout the nation will need a lot of work. Although this will

require higher levels of cooperation in the public sector, connecting employment guarantee plans with other public works schemes is certain to improve worker skill levels.

Impacts of MGNREGA:

The main sources of income in the study areas are labor and agriculture. According to the study, MGNREGA has been successful in raising income by giving rural households in both districts paid work. 50.9% of households with annual incomes up to 30,000 rupees stated that

their family's income from MGNREGA work has increased by somewhere between 5,000 and 20,000 rupees. Similar to this, 29.1% of all households reported having an annual MGNREGA income of greater than Rs 25,000.

Following are some points that outline the overall effects of MGNREGA on rurallivelihoods:

Increase in Income:

It has been noted that MGNREGA assisted in providing rural impoverished people with cash payments, increasing their level of economic independence. The survey showed that 86.1% of rural employees are more assured about their responsibilities as financial providers for their families and in making career decisions. They are also showing greater assertiveness in their place in society.

Improvement in Consumption Level:

MGNREGA helps rural households earn more money. It was shown that a sizable majority (82%) of the respondents claimed to have spent money from MGNREGA jobs on everyday items like food and consumer goods. They believed that the additional local money made possible by MGNREGA work was assisting in ensuring at least two regular meals per day. Through favorable impacts on household food security and child feeding, it may lower infant malnutrition.

Reduction in Indebtedness:

Rural people's financial burden is lessened because of MGNREGA. 32% of those surveyed admitted to using their earnings to pay off petty debts. Additionally, it aids them in avoiding the grasp of the neighborhood moneylenders.

Improved Literacy: MGNREGA supports raising the educational level of Madhya Pradesh's rural people. MGNREGA rules gradually raise the percentage of literacy rate. Nearly 50.5% of workers used their MGNREGA wages to pay for their children's education.

Enhanced Healthcare:

MGNREGA initiatives also aid in enhancing the health of the underprivileged tribal population in the Dindori and Anuppur districts. MGNREGA health care earnings help cover a portion of the cost. About 47.8% of the survey members reported spending money on this. Therefore, it appears that the MGNREGA implementation has made a slight improvement in the health of the chosen locations.

Improved Standard of Living: It has been observed that the MGNREGA has raised the level of living for the rural poor in the districts of Anuppur and Dindori. Up to 1.98 lakh job cards were issued in total between 2022 and 2023. As a result, the average person's income increased

which lowers the rate of poverty. The quality of life is consequently improved.

Major Problems: MGNREGA, however, faces several significant **issues:**

Worksite Facilities: It is required to have basic amenities including clean drinking water, first-aid supplies, shades, a place to rest, and a creche facility, per MGNREGS guidelines. However, it was found that in the sample villages, there were no other facilities set up close to the worksite. Thus, there were unsafe and poor working circumstances created as a result of manipulation by the local implementing agencies and the simultaneous lack of any monitoring mechanism.

Delayed Wage Payment: The data collected on the ground showed that there are significant disparities in wage payments. Only 25% of beneficiaries said they received their wages within a month, while the remaining 75% said there is no assurance that they will. Most people had it after two months, on average. Poor involvement of women is also caused by payment delays, especially when single women are the primary breadwinners in the household. It has been noted that 82% of beneficiaries do not receive the center-set minimum wage. Widows and elderly women, in the opinions of a few respondents, get paid less than men.

No Social Audit Held: The operating guideline outlines the steps for the Social Audit forum that Gramme Sabha will hold on MGNREGS's six-monthly schedule. However, the majority of respondents (76.7%) were unaware of the term "social audit."

Children on Work: Only adults over the age of 18 who are interested in performing unskilled jobs at the legal minimum pay are eligible to participate in MGNREGA, according to the program's rules. But it has been found that youngsters work under it in the Dindori and Anuppur districts.

Under Employment: Respondents admitted that they haven't worked all 100 days of a year in terms of employment. The majority of respondents have had 41.4% of their 80 days of employment even in the 2020-2021 covid pandemic. In the past two years, only 15.3% of beneficiaries received about 60 days of work.

Anomaly in Job Cards: The fact that no thorough verification is done when allocating the job card and assigning the work is one of the major issues with MGNREGS. On occasion, children have been observed in the field employing their deceased father's job card.

Grievances Redressal: The MGNREGS program includes the redressal of

grievances as a key component. The vast majority of respondents in both districts were unaware of the existence of a grievance redressal procedure.

Level of Awareness: Additionally, it was shown that Dindori (73.8%) performed poorly in comparison to Anuppur districts (89.1%), perhaps as a result of a lack of knowledge of the program's procedures and benefits. Many men have stopped working as wage earners and started working for MGNREGA.

Conclusion and Suggestion:

In conclusion, the sample beneficiaries of the MGNREGA have slightly benefited from improved employment prospects and a rise in the number of employment days, which has raised their per capita income and allowed them to live in better conditions. According to the quality of life index, tribal households, particularly those that are below the poverty line, have low socioeconomic indices and need to raise their income levels to improve living conditions. The MGNREGA development has a great deal of potential to be used as a strategy to lessen tribal households' long- and short-term livelihood vulnerability. A thorough plan of action must be developed for the program's effective implementation while taking into account tribal-specific issues like the high rate of illiteracy, a lack of employment and income-generating opportunities, land alienation, debt, distressed migration, etc. Although the primary objective of MGNREGA is to increase the livelihood stability of the rural poor by ensuring

100 days of wage employment for every household whose adult members agreed to perform unskilled manual labor in every fiscal year, we found that the program is still far from reaching its goal. The study indicates that the program's total growth impact is greater than its actual impact. Another way to look at it is that, as evidenced by their per capita food and non-food expenditures, MGNREGA has not been successful in increasing the achievement households' income and capacity to acquire resources to meet their fundamental needs. Priority should be given to the tribe members in the process of putting their developmental program into action. Savings should be focussed more on community-level activities that help the underprivileged, and job cards

should be distributed to homes based on their economic standing. Above all, a rise in political consciousness and awareness among the most disadvantaged members of society is necessary for any program of such kind to be successful.

Acknowledgment

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OTT- Marathon of Entertainment or Brand War

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Abstract

People are shifting from old entertainment concepts like TV or movie theatre to OTT platforms due to their variety of services and less time constraints. The new Market movements show that consumer behaviour has become far more volatile, reflecting their deep love and loathe of firms. Marketers must now comprehend brand behaviour. The report shows that boosting brand awareness, trust, and experience can enhance brand loyalty. The study examines how new customers become loyal customers from the brand awareness stage and also tries to identify the mediation effect of trust and experience toward loyalty.

Keywords: OTT, Brand Experience (BE), Brand Loyalty (BL), Brand awareness (BA), Serial Mediators

Introduction

The pervasive use of the internet and other communication technologies has led to a transformation in the customary cognitive processes of media consumers. Customers can now enjoy a wide variety of video content without encountering any difficulties due to the proliferation of internet-connected smart devices and technologies as well as the digitalization of video content (Malewar & Bajaj, 2020). The terms "mobile" and "internet"

are frequently used to describe the new media ecosystem, traditional media have been significantly altered as a result of the proliferation of the Internet, which has also caused shifts in the ways that consumers interact with various forms of media (J. Kim et al., 2016).

The increasing desire of consumers to place a greater emphasis on customized content has resulted in the development of new platforms such as over-the-top services (OTT). Over-the-top (OTT)

services and other online entertainment platforms have witnessed a substantial transition in consumer behaviour in recent years. These platforms offer consumers continuous access to a wide variety of content, such as music, films, television series, and series. The proliferation of digital content streaming has endowed individuals with an unparalleled degree of authority regarding their media consumption patterns. Concurrently, there has been a surge in the prevalence of personalised viewing experiences, as individuals appreciate the ability to customise their preferred content. Furthermore, the proliferation of binge-watching has occurred, propelled by the ease of obtaining entire seasons of television programmes simultaneously. Sophisticated algorithms are integral to this domain as they aid users in uncovering content that corresponds to their individual preferences and areas of interest. According to the definition provided by the Federal Communications Commission (FCC) of the United States, “an over-the-top (OTT) video distributor is an online video distributor that provides consumers with video programming content via the internet” (Federal Communication Commission, 2013). OTT services not only tailor the consumption experiences of their original series but also customize perceptions of quality, brand personality, and ultimately, brand equity and loyalty towards their brands through design, style, and performance. Consumer experience has also been scrutinized to deepen comprehension of OTT subscription behaviour (Palomba, 2022). Conversely, OTT platforms provide diverse program offerings tailored to individual customers,

offering recommendations for specific content consumption. Aligning with consumer preferences also assists OTT services in determining which content to renew, relicense, discontinue, or allow to lapse. Consequently, OTT brand experiences are likely to vary among consumers.

Hotstar dominates the Indian OTT industry with a significant 4.92 Crore paying customers, while Jio Cinema follows with 2.5 Crore subscribers. Amazon Prime holds the third rank with 2.1 Crore subscribers, while Sony Liv and Zed 5 closely trail after with 1.2 Crore and 0.75 Crore respectively. MX Player (Amazon MiniTV) has a substantial user base of 2.8 Crore, which is financed by advertisements. Alt Balaji, Aha (Telugu), and Apple TV+ have comparatively lesser but nevertheless significant numbers of subscribers (Jha, 2024).

Previous research has looked at brand and consumer personalities across a variety of different media and entertainment brands; however, very few studies have measured BA, BL, BT and BE. A conceptual ROI content valuation paradigm was presented by (Kübler et al. 2021) in their research. This framework outlined how content might affect subscription fees as well as retention on OTT services. The study aims in understanding consumer approach towards selection of various brands of OTT platform in different dimensions.

Brand Experience

BE is the grade to which consumers relate a brand with a favourite product (Sasmita & Suki, 2015). The more a consumer’s

BA, the greater the likelihood that a certain product/brand will be included in the consumer's collection of brands under consideration (Qasim et al., 2017).

Previously, experience was viewed as familiarity as a result of exposure and information gained via engagement with customers (Ha & Perks, 2005; Park & Stoel, 2005; Patrikar, 2014). BE encompasses concrete attributes such as brand layout, personality, packaging, message, and the physical surroundings (Huang, 2017).

Brand Trust

In the current highly competitive global market, the success of a brand relies on its capacity to create and maintain a reliable and long-lasting relationship with its consumers. In recent years, both practitioners and academics have paid a growing amount of attention to BT due to its importance (Alhaddad & Alhaddad, 2015).

Brand Loyalty

Two primary methodologies have been utilised in loyalty research: the stochastic method and the deterministic approach in which the stochastic method undertakes that customer loyalty is a totally arbitrary process that is based on the preceding purchase of the identical product, as opposed to further precursor variables. On the other hand, a deterministic viewpoint asserts that customer loyalty is not capricious, but rather a methodical procedure in which subsequent purchases from the same customer are a direct result of particular consumer behaviours that lie beneath the surface (Mathew & Thomas, 2018).

Brand Awareness and Brand Experience

The integration of live brand events, particularly when integrated into an experiential marketing approach, possesses the capacity to efficiently attend to every phase outlined in the AIDA model (Awareness, Interest, Desire, Action). While it's occasionally argued that live brand experiences struggle to reach a broad audience, this perception isn't always accurate. In certain scenarios, the live brand experience, often a centrepiece of an experiential campaign and typically conducted face-to-face, may indeed only engage with a limited number of individuals initially. However, through the power of word-of-mouth, this impact can extend to a wider audience over time. (Smilansky, 2018).

A substantial constructive rapport between BE and BL (BILGIN, 2018; Sasmita & Suki, 2015), brand equity (Sasmita & Suki, 2015), brand image (Saleem et al., 2015), brand personality (Molinillo et al., 2017) is depicted in previous research. There is a scarcity of literature to reveal the relationship between BA and BE which generates the interest to investigate it thus positing the uniqueness of the paper. In accordance with the literature, the hypothesis is structured as follows:

H1: Brand Awareness influences Brand Experience to a considerable extent.

Brand Awareness and Brand Trust

Marketing communications to consumers may be used to increase the company's brand recognition so that consumers

continue to recognise the company's product brands. A consumer's awareness of a brand also reduces the chance of making a purchasing blunder because the brand ensures product quality (Mudzakkir & Nurfarida, 2015). In this context, people utilise brands to determine the quality of particular products. If buyers already have faith in a brand, they do not need to investigate the quality / characteristics of a product in detail (Mourad et al., 2011). In accordance with the literature, the hypothesis is structured as follows:

H2: Brand Awareness influences Brand Trust to a considerable extent.

Brand Awareness and Brand Loyalty

Knowledge plays a pivotal role in the selection of products and services, akin to the significance of awareness in memory and recognition (Saleem et al., 2015). BA contributes to the formation of brand preference. They concluded that fulfilling the brand promise is of utmost importance to enhance consumer preference for the brand. When consumers are tasked with choosing one brand from several options with similar reputations, they are more inclined to base their decision on awareness rather than reputation (Saleem et al., 2015). Thus, creating awareness about the brand through proper advertising becomes a vital function for the marketer. Loyalty to a brand ought not only to take external behaviours into consideration, but also the consumers' internal justifications or attitudes in relation to these activities (Huang, 2017). In accordance with the literature, the hypothesis is structured as follows:

H3: Brand Awareness influences Brand Loyalty to a considerable extent.

Brand Experience and Brand Trust

Overall, brands that are able to provide a superior BE can win over customers, stand out from competitors, and grow BT and evangelism (Brakus et al., 2009; Iglesias et al., 2011b). Favorable emotional and cognitive states are often produced by a positive brand experience, which eventually results in BT (Chinomona, 2013; H. S. Kim, 2005). Additionally, there is mounting evidence in the literature that a positive BE encourages repeat business, and individuals are more inclined to trust a company they have previously had a positive encounter with. (Chinomona, 2013; H. S. Kim, 2005) Customers are therefore more satisfied and more likely to trust a business when they have a higher degree of good brand experience. BE and BT have a favourable association, according to prior empirical research (Chinomona, 2013; H. S. Kim, 2005). In accordance with the literature, the hypothesis is structured as follows:

H4: Brand Experience influences Brand Trust to a considerable extent.

Brand Experience and Brand Loyalty

Direct experience emerges as the most potent influencer in shaping Brand Loyalty (BL). Consumer emotional sentiments and rational perceptions significantly aid to the brand-development process. The relationship between Brand Trust (BT) and brand image marks the inception of brand construction, exerting a crucial influence on purchasing decisions. Brand Engagement (BE) exerts a positive and impactful influence on brand attachment, brand image, and purchasing decisions. (Mekebbaty et al., 2020).

Consumers are looking for a brand to suit their emotional requirements rather than their financial ones. As a result of the combination of sensory, emotive and behavioural factors, Consumers possess the capability to assess the overarching stature of a brand (Brakus et al., 2009; R. B. Kim & Chao, 2019). The connections between these elements promote consumer interest and loyalty towards the brand (Westhuizen & Marié, 2018). There are a number of factors that contribute to brand experience, such as design and identity, packaging, and messaging. These factors all have an impact on the consumer's perception and experience of the brand. Such cues influence consumers' perceptions of brands and their interactions with them (R. B. Kim & Chao, 2019). A study conducted by Westhuizen and Marié (2018) revealed that Brand Experience (BE) exerts a notable influence on Brand Loyalty (BL) and the self-brand connection. The impact of BE on BL has been studied by (Iglesias et al., 2011; Walter et al., 2013). There has also been research into the impact of BE on the personality, satisfaction, and loyalty of a brand (Jung & Soo, 2012). In accordance with the literature, the hypothesis is structured as follows:

H5: Brand Experience influences Brand Loyalty to a considerable extent.

Brand Trust and Brand Loyalty

Confidence and readiness to acquire the brand from the product category among clients who know and understand the brand's specific functions (Zohaib & Muhammad, 2014). The trust that a customer has in a specific trusted brand goods can lessen the ambiguity

of the circumstance. Trust or pledges made by a brand help to develop strong relationships with customers. According to some academics, "commitment" means "the desire to preserve an important relationship for a long time" (Moorman et al., 1992). Therefore, promises are the cornerstone that upholds and sustains a business's relationship with its customers, ensuring its strength and continuity. This study examines the impact of BT on BL (Setyawan & Kussudiyarsana, 2015). The significance of customer loyalty to a brand has intensified within the realm of marketing. This topic has been the subject of numerous studies. Loyalty to a brand is a key element of relationship marketing. BL & BT trust have a strong association in relationship marketing theory (Alan & Kabadayi, 2012). In accordance with the literature, the hypothesis is structured as follows:

H6: Brand Trust influences Brand Loyalty to a considerable extent.

Brand Awareness, Brand Experience, Brand Trust and Brand Loyalty

The role of brand personality and brand commitment as mediators between BE and BL is studied positively (Ramaseshan & Stein, 2014). The consumer's perception of CSR influences BL via BE & BT as a mediator (Khan et al., 2019). The mediating part of brand engagement amid brand love and loyalty intension is also studied significantly (Joshi & Garg, 2021). The function of brand relationship quality as a mediator between BE and customer citizenship behaviour is illuminated in the study (Herrmann et al., 2007). BE mediating effect is also studied in pre event and post event brand

equity (Zarantonello & Schmitt, 2013). The research on e-consumer behaviour depicts that BT is achieved through the mediating effect of various dimensions of brand experiences (R. B. Kim & Yang, 2019). When compared to the indirect effect of CSR on BL brought about by BT, the indirect effect brought about by BE is far more powerful in FMCG sector (Ramaseshan & Stein, 2014). As per the results of the study, a customer's BT in and contentment with a retailer serve as a mediator between the impacts of a customer's trust in and happiness with a brand and their intents to repurchase (Zboja & Voorhees, 2006).

In research conducted in Malaysia on local vehicle brands, BT was identified as a mediator in the association between brand personality and BL. However, BT was not identified as a mediator in the relationships between brand image and BL (Mabkhot & Salniza, 2017). The study by Florence and Valette (2020) corroborates the impact of brand emotion and personality on consumer obligation, with trust and brand attachment acting as mediating factors. Less study is conducted in knowing the mediation effect of BE and BT on BA and BL hence the association of these factors are taken in the study and the subsequent hypothesis are formulated.

H7: Brand Experience serves as a mediator in the connection between Brand Awareness and Brand Trust.

H8: Brand Experience acts as a mediator in the link between Brand Awareness and Brand Loyalty.

H9: Brand Trust serves as a mediator in the relationship between Brand Awareness and Brand Loyalty.

Serial Mediation of Brand Experience and Brand Trust

BE is pointedly inclined by BA (Aaker, 1996). It is the capacity of an individual to identify and recall a particular brand (Aaker, 1996). BA aids individuals in establishing favourable associations with a particular brand. It is considered a key element in creating brand added value and is believed to be a significant determinant of customers' brand knowledge (Ekhveh & Darvishi, 2015; Quan et al., 2020). According to BE theory, there is a chance for customers to develop BL, which strengthens ties between consumers and brands. Additionally, it can foster a stronger emotional bond with a brand, which can enhance BT (R. B. Kim & Chao, 2019). BA is greatly influenced by BT. As a result, developing BT is the first step a company should take if it wants to leverage on the competitive advantage of BA. The application of the idea of BE to the web has shown that BT, consumer satisfaction, and brand familiarity are all significantly impacted by web BE (Başer et al., 2016). On the other side, BL is a result of BT. It results from BT's capacity to establish deeply cherished relationships (Chaudhuri & Morris, 2018). It demonstrates that BL is a crucial component of the ongoing process of significant relationships that BT creates (Alan & Kabadayi, 2012). In light of the academic arguments raised above, we think that BA improves BE, which further inspires BT and ultimately results in BL. Therefore, the following hypothesis has proposed:

H10: BE and BT are serial mediators between BA and BL.

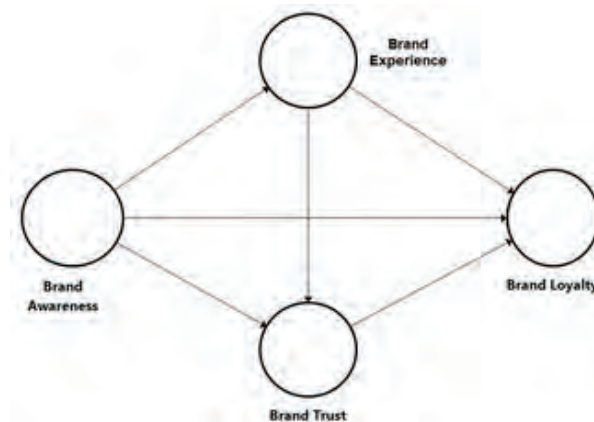
Brand Experience- Brand Trust- Brand Loyalty

The primary influence on brand love is BE. Customers' BT is mostly driven by brand experience, but cerebral experience has no bearing on BT. Customers' behavioural and attitudinal loyalty are mostly formed through BT, respectively. The links between BE and BL are mediated by brand love (Madeline & Sabrina, 2019). A positive BE frequently results

in favourable emotional and cognitive states, which eventually lead to BT. The degree of uncertainty in the situation can be reduced by a customer's faith in a particular trusted brand of goods. Strong relationships with customers are created through trust and commitments made by brands, which eventually results in BL. Therefore, the following hypothesis has proposed:

H11: The effects of BE and BL are mediated by BT.

Figure I: Conceptual Model



Research Methodology

The study aimed to examine the association among BE, BA, BT, and BL. Smart PLS software was used to conduct the analysis, and the researchers chose four constructs and 16 items to examine.

Mumbai was selected as the study location due to its cosmopolitan nature, characterized by residents hailing from diverse backgrounds across India. An initial survey, known as a pilot survey, with the purpose of validating the research

instrument's validity and reliability. Thirty individuals were chosen to take part in the pilot survey. It was deemed trustworthy enough to follow.

In the process of carrying out this study, the research process was employed to acquire the necessary data and a questionnaire developed in google form was distributed by email and different social media. Partial Least Squares-Structural Equation Modeling (PLS-SEM) was subsequently employed to analyze the gathered data.

The study makes use of a five-point Likert scale, with five signifying extreme agreement and one indicating extreme disagreement. Table I illustrates the sources of all of these items.

Table II: Reflective model's quality assessments

| Sl. No | Constructs Name | No of Items | Source |
|--------|-----------------|---|--------------------------|
| 1 | BA | <ol style="list-style-type: none"> 1. "I can recall the emblem or insignia of the specific business or product that surfaced on social media with ease." 2. "Some traits of the specific brand or product that surfaced on social media immediately come to mind." 3. "I am aware of this specific brand or product that surfaced on social media." 4. "In contrast to the other rival product/brand that surfaced in social media, I can identify this specific product/brand." 5. "I am familiar with how this specific brand or product looks." | (Sasmita & Suki, 2015) |
| 2 | BE | <p>From a sensory standpoint, I find this brand intriguing. My senses are not stimulated by this brand. This brand evokes emotions and feelings. I don't feel strongly about this brand.</p> | (Nysveen et al., 2013) |
| 3 | BT | <p>I use this brand. This company is trustworthy. This product is secure. I believe in this brand. This product is secure</p> | (Molinillo et al., 2017) |
| 4 | BL | <p>"I like the brand or product that was advertised on social media. I would use social media to advocate this specific brand or product to others. The following time, I won't choose a different product or brand that I saw on social media. When compared to other products/brands, I typically use this specific one as my first option. I frequently recommend this specific brand or product on social media"</p> | (Sung & Kim, 2010) |

Source: Author's calculation

Composite Reliability (CR), RhoA, and Factor Loading are used to evaluate the reliability. To verify the validity of the data, the researchers used the Average Variance Extracted (AVE) method.

To establish the instrument's internal reliability, the factor loading, RhoA, and CR should be higher than 0.7, and the AVE has to be greater than 0.5 in order to verify the instrument's (Hair et al., 2020;

Koner et al., 2021). Table II summarises the reliability and validity findings for all reflective constructs that are above the threshold limit.

Table III: Discriminant Validity Assessments

| Constructs | BE | BA | BL | BT |
|------------|-------|-------|-------|-------|
| BE | 0.782 | | | |
| BA | 0.616 | 0.760 | | |
| BL | 0.664 | 0.553 | 0.742 | |
| BT | 0.599 | 0.514 | 0.631 | 0.727 |

Source: Author's calculation

The researchers assessed the Fornell Larcker and heterotrait –monotrait (HTMT) ratio to test the discriminant validity (Fornell & Larcker, 1981;

Henseler et al., 2016). The values presented in Table III for Fornell and Larcker's tests exceed the correlations observed among the variables. Consequently, the study is now primed for further investigation.

Table IV: HTMT Ratio analysis for Discriminant validity Assessments

| Constructs | Brand Experience | BA | BL | BT |
|------------------|------------------|-------|-------|----|
| Brand Experience | | | | |
| BA | 0.792 | | | |
| BL | 0.869 | 0.745 | | |
| BT | 0.799 | 0.705 | 0.874 | |

Source: Author's calculation

After checking the discriminatory validity using Fornell Larcker's discriminatory validity test, HTMT ratio analysis also has done by researchers. HTMT values should be lower than 1, with a maximum correlation ratio of 0.85 (Henseler et al., 2014), which will allow for a value of 0.90 (Gold et al., 2001) to be considered acceptable. Table IV presents evidence that all of the HTMT ratios fall below the cutoff value of 0.90, enabling researchers to assess the structural model.

Structural Model Assessment

The VIF, is a statistical tool that evaluates the degree of multicollinearity among multiple regression variables

(O'Brien, 2007) and the threshold value is 3.33 (Diamantopoulos & Sigauw, 2006; Malewar et al., 2023). All of the constructs considered in this study had inner VIF values between 1 and 1.955 and substantially less than 3.33. The VIF results show that there are no collinearity problems with the model (Hair et al., 2017).

Before proceeding with the evaluation of the structural model, it is essential to ascertain the coefficient of determination (R²) (Ali et al., 2018). R² values over 0.2 are often considered very good in the realm of behavioural research (Rasoolimanesh et al., 2016). As per the research, R²

values of Brand Experience, BT, and BL are 0.380, 0.393, and 0.539 respectively, and highly acceptable.

In order to determine the quality of the criteria, the global fit indices SRMR were

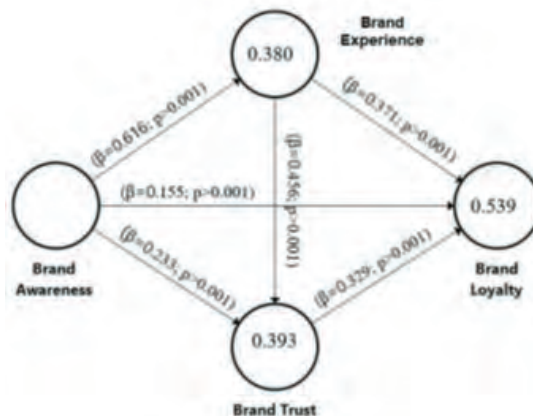
also computed, and their value needed to be lower than 0.08 (Hair et al., 2021). The value of the SRMR in this investigation is 0.071, which indicates that the model has a high capacity for explanation (Henseler et al., 2014; Hu & Bentler, 2009)

Table V: Structural Model Assessments

| “Hypothesis” | “Path Relationships” | “Std. Beta” | “t - v a l - ues” | “CI 2.5%” | “CI 97.5%” | “Relation- ship Status” |
|-----------------|----------------------|-------------|-------------------|-----------|------------|-------------------------|
| H ₁ | BA -> BE | 0.616 | 22.786 | 0.563 | 0.668 | Accepted |
| H ₂ | BA -> BT | 0.233 | 5.394 | 0.148 | 0.317 | Accepted |
| H ₃ | BA -> BL | 0.155 | 3.545 | 0.069 | 0.240 | Accepted |
| H ₄ | BE-> BT | 0.456 | 10.882 | 0.373 | 0.535 | Accepted |
| H ₅ | BE-> BL | 0.371 | 7.236 | 0.269 | 0.470 | Accepted |
| H ₆ | BT -> BL | 0.329 | 6.937 | 0.237 | 0.422 | Accepted |
| H ₇ | BA -> BE-> BT | 0.281 | 10.086 | 0.228 | 0.337 | Accepted |
| H ₈ | BA -> BE-> BL | 0.229 | 6.955 | 0.165 | 0.294 | Accepted |
| H ₉ | BA -> BT -> BL | 0.077 | 4.487 | 0.046 | 0.112 | Accepted |
| H ₁₀ | BA -> BE-> BT -> BL | 0.092 | 5.423 | 0.062 | 0.128 | Accepted |
| H ₁₁ | BE-> BT -> BL | 0.150 | 5.540 | 0.102 | 0.207 | Accepted |

Source: Author’s calculation

Figure II: Structural model Assessment



Source: Author’s calculation

Using the PLS Algorithm's bootstrapping technique with 10,000 sub samples, we first analyzed the route coefficients' significance and relevance after checking the acceptability and global model fit index. The purpose of this was to evaluate

the usefulness of the route coefficients. Table V displays the results of the structural model evaluation, while Figure II displays the results of the hypothesis testing. All of the null hypotheses (H1 through H11) have been rejected, as shown in Table V.

| Items | “PLS-SEM” | | “LM” | | “PLS-SEM – LM” | |
|-----------|-----------|---------------------------|--------|---------------------------|----------------|---------------------------|
| | “RMSE” | “Q ² _predict” | “RMSE” | “Q ² _predict” | “RMSE” | “Q ² _predict” |
| BndExp3 | 0.934 | 0.232 | 0.929 | 0.240 | 0.005 | -0.008 |
| BndExp4 | 0.916 | 0.254 | 0.920 | 0.249 | -0.004 | 0.005 |
| BndExp1 | 0.893 | 0.190 | 0.885 | 0.205 | 0.008 | -0.015 |
| BndExp2 | 0.928 | 0.239 | 0.931 | 0.235 | -0.003 | 0.004 |
| BndLty4 | 0.832 | 0.178 | 0.838 | 0.165 | -0.006 | 0.013 |
| BndLty2 | 0.833 | 0.141 | 0.831 | 0.144 | 0.002 | -0.003 |
| BndLty3 | 0.906 | 0.213 | 0.903 | 0.219 | 0.003 | -0.006 |
| BndLty1 | 0.953 | 0.130 | 0.951 | 0.135 | 0.002 | -0.005 |
| BndTrust1 | 0.904 | 0.132 | 0.909 | 0.122 | -0.005 | 0.010 |
| BndTrust2 | 0.855 | 0.122 | 0.858 | 0.117 | -0.003 | 0.005 |
| BndTrust3 | 0.882 | 0.155 | 0.889 | 0.144 | -0.007 | 0.011 |
| BndTrust4 | 0.890 | 0.138 | 0.892 | 0.135 | -0.002 | 0.003 |

Table VI: SMART-PLS Predict Assessment

Source: Author's calculation

The predictive efficiency of the structural model was explored using PLSpredict in Smart-PLS, as detailed by Hair et al. (2017). A total of 393 samples were utilized as training data, with 43 samples held out for validation purposes, following the approach outlined by Shmueli et al. (2016). The analysis involved comparing the predictive relevance of the structural model using root mean squared error (RMSE) for PLS-SEM and Q²predict (LM) for linear regression models. Results indicated a negligible difference in RMSE

between PLS-SEM and LM. Notably, seven out of twelve indicators exhibited lower RMSE values compared to LM, suggesting better predictive performance for these indicators within the PLS-SEM framework. However, there was a positive difference in Q² predict, indicating that while the model demonstrated moderate predictive power overall, there were certain areas where it performed better than linear regression models, as highlighted by Shmueli et al. (2016).

Mediation Analysis

Indirect effects have been shown for hypotheses 7 through 11, indicating the existence of mediating effects. These outcomes were the result of a complex web of direct and indirect causes. Initially,

BE was examined as a potential mediator between BA and BL, and BA and BT. It was found that BE is the most significant mediator between BA and BL with a VAF value of 0.596. Then, the function of BT as a mediator between BE and BL, and BA and BL were studied.

Table VII: Mediating Effect of Brand BT

| Mediation root | Indirect Effect | Total Effect | Variance Accounted for (VAF) | Mediation |
|---------------------|-----------------|--------------|------------------------------|-----------|
| BA -> BE-> BL | 0.229 | 0.384 | 0.596 | Partial |
| BA -> BT -> BL | 0.077 | 0.232 | 0.332 | Partial |
| BA -> BE-> BT | 0.28 | 0.513 | 0.546 | Partial |
| BE-> BT -> BL | 0.15 | 0.521 | 0.288 | Partial |
| BA -> BE-> BT -> BL | 0.092 | 0.247 | 0.372 | Partial |

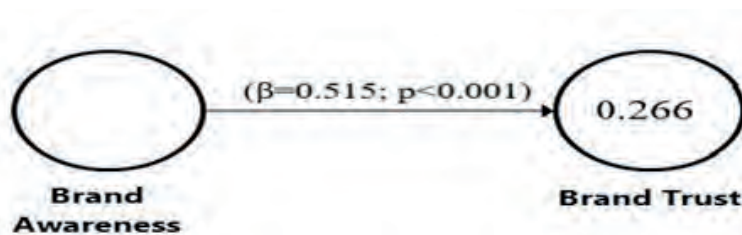
Source: Author's calculation

Furthermore, BE and BT were investigated as serial mediators amid BA and BL. According to the literature, a mediated effect is considered partial when its VAF value is between 0.2 and 0.8, and complete when its VAF value is larger than 0.8. (Aglar & De Boeck, 2017; Loeys et al., 2014). According to Table IX, the total impact of all constructions was larger

than 0.2 but less than 0.8, showing that all constructions had a partial mediating influence, demonstrating that the mediation effect was only partial across all constructs (Meher & Mishra, 2022).

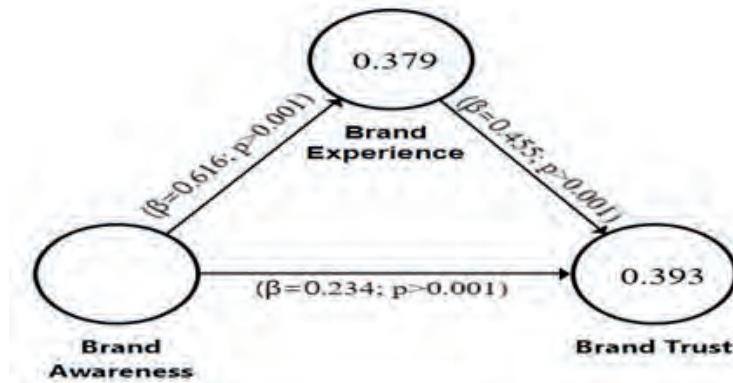
After assessing the impact of mediation, further research was conducted to determine if all mediators were competing or complementary.

FIGURE III-A: Basic Relationship Between BA and BT



Source: Author's calculation

FIGURE III-B: Mediation Effect of BE between BA and BT



Source: Author's calculation

The R² and beta values for a basic association between BA and BT were 0.266 and 0.515, respectively. (Figure 3-A). But, the value of R² increased to 0.393 when the BE variable was included as a mediator, and the beta value decreased to 0.234. (Figure 3-B). R² quantifies the proportion of a dependent variable's variance that can be attributed

to a given set of independent variables in a regression model. In this research, the increasing R² implies that the explanatory power of the variables has increased considerably (J. Hair et al., 2013; Koner et al., 2023). This demonstrates that when BE is included, the primary relationship degrades, and BE competes with the basic association between BA and BT, operating as a competing mediator.

FIGURE IV-A - Basic Relationship BA and BL

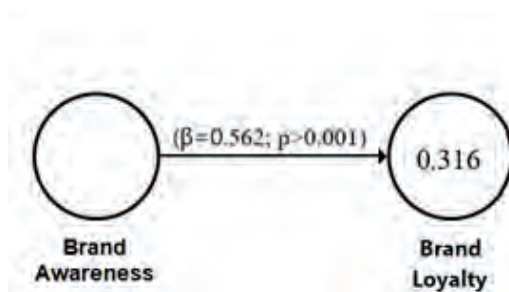
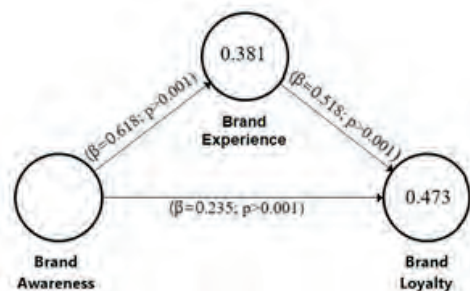


FIGURE IV-B: Mediation Effect of BE between BA and BL

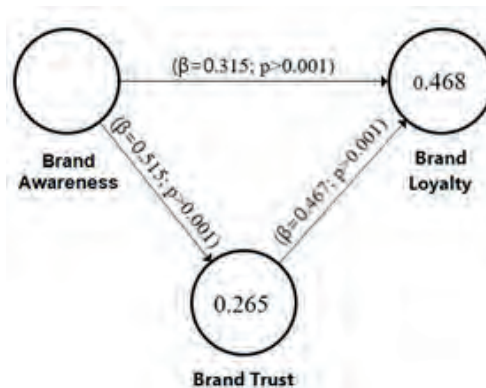


Source: Author's calculation

Furthermore, the mediation affection of BE and BA and BL was investigated. In a straightforward model of the connection between BA and customer loyalty, the R2 and beta values came in at 0.316 and 0.562, respectively (Figure 4-A). However, when BE was incorporated as a mediator between brand identification and BL, the

explanatory power of the variables rose substantially. The R2 value rose to 0.473, while the beta declined to 0.235 (Figure 4-B). Consequently, the relationship between BA and BL has weakened with the introduction of BE. In other words, BE acts as a competitive mediator and completes the main relationship.

FIGURE IV-C - Mediation Effect of BT between BA and BL

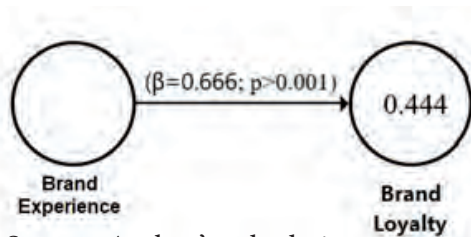


Source: Author’s calculation

Researchers also looked at how BT plays a role as a mediator between BA and BL. The coefficient of determination (R2) and the beta coefficient (β) in a simple model assessing the connection between BA and customer loyalty were 0.316 and 0.562, respectively (Figure 4-A). But, when

BT was added as a mediator between brand identification and BL, the R2 value increased to 0.468 and the beta decreased to 0.315 (Figure 4-C). It proved that BT completes the fundamental connection between BA and BL and it serves as a competitive mediator.

FIGURE V-A - Basic Relationship between BE and BL



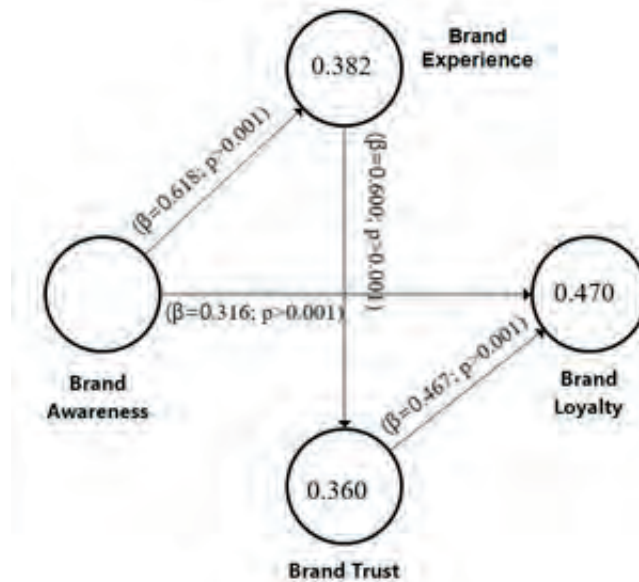
Source: Author’s calculation

FIGURE V-B - Mediation Effect of BT between BE and BL

The researchers also investigated the mediating function of BT in the relationship between BE and BL. In a basic model examining the bond between BE and BL, R2 was 0.444 and beta was

0.666. (Figure 5-A). But, adding BT as a mediator between BE and BL increased R2 to 0.528 and decreased beta to 0.447 (Figure 5-B). It established that BT acts as a competitive mediator between BE and BL.

FIGURE VI - Serial Mediation Effect of BE and BT in between BA and BL



Source: Author's calculation

After thoroughly exploring each mediation impact in this model, the researchers next looked at the serial partial mediation effect between BA and BL. After adding BE and BT in the basic model, the beta coefficient (β) between BA and BL decreases from 0.515 (Figure 3-A) to 0.316 (Figure 6), while the correlation coefficient (R2) rises from 0.266 to 0.470. As a result, the connection between BA and BL is fading as a consequence of the proliferation of BE and BT as serial mediators. In addition, it was observed that BE and BT function as competitive serial mediators, placing the relationship between BA and BL under intense competition.

Conclusion

Consumer behaviour has become much more dynamic in recent years, which reflects both their fierce attachment to and hatred of businesses, as shown in market movements. Knowing the factors that influence brand behaviour is now essential for marketers. The paper claims that marketers may promote BL by raising BA, BT, BE. By analysing representative consumption and the emotional elements of an OTT platform user experience as pathways to loyalty creation, the study expands on prior sociological and psychological studies. The study tries to comprehend how consumers choose

different OTT platform brands in many dimensions. BL, BA, BT and BE are all combined into one model on the OTT platform. Also consider the mediation effect of the various variables. In light of this, the current study examines how BE may be applied to leave a lasting impression on users of OTT platforms. BL and BT are positively impacted by BE. Therefore, as users interact with a brand, their trust increases and ultimately, they develop a stronger sense of loyalty to that brand. Additionally, BA enhances the BE and BT. This indicates that when a consumer becomes more aware of a brand, eventually their trust and experience will increase.

Besides, while BA and BL are linked, BE serves as a bridge between the two. It was found that BE is the most significant mediator between BA and BL. In spite of that, it was found that BT has partial mediation between BA and BL and BE has partial mediation between BA and BT. This means BA will generate BT and eventually it will increase BL. And BA promotes BE and eventually it leads to BT. Furthermore, BA and BT were investigated as serial mediators between BA and BL. As a result, that BT acts as a competitive mediator between BE and BL. In addition, it was observed that BE and BT function as competitive serial mediators, placing the relationship between BA and BL under intense competition.

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