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JIM QUEST
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As the Chief Editor of JIM QUEST Journal of Management and Technology, I am delighted to present Vol: 21 Issue: 01 which showcases a collection of fourteen remarkable research papers. The featured papers shed light on critical themes of technological integration, sustainable practices, and consumer-centric strategies, offering valuable insights for academia and industry alike.

The opening paper, "Consumer Insights: The Role of Netnography in Modern Marketing Research," explores the potent potential of netnography as a qualitative tool to decode evolving consumer behavior in the digital age. By examining its integration with established marketing theories, the study underscores the power of internet-based ethnography to craft adaptive marketing strategies and its potential to transcend into other domains.

The impact of influencer credibility on consumer behavior takes center stage in "The New Age of Fashion Marketing: Impact of Influencer Credibility on Brand Attitude and Consumers' Purchase Intention." This research highlights the importance of trustworthiness, expertise, and attractiveness in shaping consumer attitudes and intentions, particularly in the fashion industry. The findings emphasize the need for brands to collaborate strategically with credible influencers to drive engagement and loyalty.

Sustainability's financial implications are addressed in "ESG-Driven Profitability: Exploring the Financial and Market Impact of Sustainability." This study reveals a positive correlation between ESG integration and enhanced financial outcomes, underscoring the strategic advantage of embedding sustainability principles within organizational frameworks.

The entrepreneurial landscape is dissected in two insightful studies-"Anticipating Entrepreneurial Intention of STEM Students by Examining Their Underlying Motivations" and "Examining Intention among Millennials: An Entrepreneurial Attitude Orientation Approach." These papers delve into the factors shaping entrepreneurial intentions, from financial and psychological motivations to attitudinal and social influences, providing actionable insights for fostering innovation among future business leaders.

Workplace dynamics are explored in "A Suggestive Framework for Examining the Influence of Workplace Ostracism and Task Independence on Employee Turnover." Focusing on women in the Indian IT sector, this research advocates for inclusivity, task independence, and self-efficacy as vital strategies for reducing turnover and fostering a supportive work environment.

From the built environment, “Strategies for Stakeholder Integration in the Indian Architectural Practice” examines the evolving role of stakeholders in architectural projects, offering a roadmap for integrating technological advancements and collaborative approaches to achieve business success.

Global and regional contexts are analyzed in “Exploring the Nexus of Governance and Economic Development: A Bibliometric Analysis” and “Financial Inclusion and Efficiency of Small Finance Bank Using Data Envelopment Analysis.” These studies highlight the interconnectedness of governance, financial inclusion, and sustainable development, presenting frameworks for driving equitable growth.

Consumer-brand dynamics are probed in “Understanding Gender-Based Differences in Brand Hate: A Mobile Phone Industry Analysis,” which reveals the nuanced ways gender influences brand relationships, offering marketers actionable strategies to address negative consumer perceptions effectively.

Corporate governance's role in enhancing organizational performance is explored in “The Role of Corporate Governance Practices in Enhancing Financial Performance.” Through comparative insights between small and large organizations, the study underscores the need for tailored governance strategies to optimize financial outcomes.

Investment strategies and market behavior are addressed in “Day of the Week Effect in Indian Mutual Fund Industry: An Empirical Analysis During Pre- & Post-Covid-19.” By examining weekday effects on mutual fund returns, this research offers investors practical insights for strategic decision-making in volatile market conditions.

Finally, “Evaluating Sustainable Agricultural Practices: Economic and Environmental Viability of Inputs in Wheat Production in Uttar Pradesh, India,” emphasizes the urgent need for sustainable farming techniques. This study highlights the environmental and economic challenges posed by excessive energy inputs, presenting a case for eco-friendly agricultural practices.

As we reflect on these diverse studies, it becomes evident that the interplay of technology, sustainability, and human-centric approaches will define the future of business. This issue of JIM QUEST is a testament to the transformative potential of embracing these trends and offers a comprehensive guide for stakeholders aiming to thrive in this evolving landscape.

Happy Reading!

Prof. (Dr.) Anubha

Chief Editor

JIM QUEST

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Consumer Insights: The Role of Netnography in Modern Marketing Research

*Rupa Rathee
**Monika Singh

Abstract

In the ever-evolving landscape of consumer behavior, a principal challenge lies in comprehending the perspectives of modern consumers. Fortunately, the internet has helped with a new means of gaining insight into the workings of modern consumer behavior. Netnography, an internet-based qualitative ethnographic tool, has emerged as a valuable resource for market research in this digital age. The study explores the usage of internet research methodology- Netnography and its potential in marketing. This study examines the use of netnography in marketing and its potential. Literature review data from websites like Scopus and Google Scholars includes 20 research articles on netnography in various fields. Additionally, it evaluates its integration with established marketing theories. The study contributes to the netnography literature in two significant ways. Firstly, it comprehensively analyses prior articles employing the netnography technique. Secondly, it establishes correlations between the theoretical implications and established marketing theories. As customer behaviour evolves, netnography provides opportunities to gain analytical insights that enable enhanced marketing strategies. Furthermore, since netnography has proven to be a successful research methodology, it could be applied to areas other than marketing.

Keywords: *Consumer Behavior, Marketing Function, Netnography, Online Research, Social-Media Platform.*

Introduction

Social networks, such as Facebook, Twitter, LinkedIn, Instagram, and others, have proven highly effective channels for engaging with many customers. This engagement has led to engaging with a substantial number of customers. This engagement has led to the generation of significant volumes of unstructured data. According to Statista, a staggering 5.16 billion people worldwide are using internet services. Consumers actively interact with specialized service providers, including merchants, restaurants, retail banks, healthcare providers, publicly-funded organizations, non-profit associations, and media communication companies (Anderson et al., 2013). However, with the rapid advancement of technology and data innovation, the landscape in which services are delivered and experienced is transforming (Ostrom et al., 2015).

In the present market scenario, consumer engagement occurs before and after interacting with professional organizations. These consumers generate significant volumes of data related to their interactions with products and services, primarily through various websites, blogs, and content creators utilized.

For product promotion in the market. Influencers play a pivotal role in this process. Notably, a vast reservoir of untapped data is available across various data-gathering platforms, presenting an opportunity to gain insights into consumer behavior and their current needs and desires (Kozinets, 2022). The study aims to see the usage of internet research methodology- Netnography- and explore its potential in marketing.

Netnography

Ethnography and netnography share close ties, as both fields explore the study of culture. Ethnography traditionally focuses on examining societal phenomena by observing community behavior, making it a valuable tool for exploring socially relevant issues. Netnography, on the other hand, fuses the realms of the internet and ethnography. By combining "internet" and "ethno," it gives rise to "netnography". This innovative approach allows researchers to focus on understanding how individuals behave online. Netnography employs techniques akin to online advertising research. Dr. Robert V. Kozinets is credited with

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pioneering the concept of netnography. As a research method, netnography offers distinct advantages, being more efficient, cost-effective, and time-saving than traditional ethnography. Additionally, it possesses a naturalistic quality, operates covertly, and does not require physical gatherings or meetings, making it adaptable to various research contexts (Kozinets, 2010)

The appeal of netnography lies in its naturalistic, vivid, and spellbinding qualities, as well as its multifaceted nature and adaptability. It provides valuable insights into the representation, significance, and utilization of online communities and networks by examining the exchange of data (Kozinets, 2010). This central theme of netnography revolves around social and symbolic data experiences, shedding light on online behavior and interactions. Computers have evolved into indispensable communication tools, significantly impacting branding decisions and lifestyles. Buyers actively engage in virtual networks and other web-based social sharing platforms to exchange ideas and establish connections. The candid expressions of users on these social media platforms offer analysts a wealth of unfiltered insights from a diverse and extensive audience. Furthermore, experts can monitor these interactions and conduct thorough analyses using various tools, instruments, and methodologies. Among the techniques used for netnographic analysis is examining communication patterns and content within and among these online groups. Virtual communities often describe these gatherings (Rheingold, 1993). Netnography is considerably less obtrusive than conventional ethnography because it permits researchers to collect enormous amounts of data without drawing attention to themselves among the target culture's members (Beaulieu, 2004; Kozinet, 2010). As a virtual medium platform, it allows businesses to create a platform for communication with their consumers. This platform can actively seek consumer feedback on its product and promotional strategies. Through various participation methods, businesses can foster trust among online community members, address pre- and post-purchase relationship concerns, and refine more user-friendly approaches for analyzing brand associations. This allows a deeper understanding of how brands are embedded in consumer memory (Sharma et al., 2018).

Objectives of the Study

1. To make a conceptual framework that links the work utilizing the netnography technique with its contribution to the marketing domain after evaluating the previously published.
2. To correlate the relationships between 20 research publications and the marketing area in which they originated
3. To investigate netnography possibilities in various fields, including marketing.

Research Methodology

This research paper has been developed by reviewing existing literature about Netnography. The researcher undertook a thorough analysis of marketing literature about Netnography. The data collected for the literature review is from various websites, such as Scopus and Google Scholar, using keywords like “Netnography,” “Online Research,” “Consumer behavior,” and “Social media.” Therefore, published data were differentiated by studying the netnography methodologies used in marketing research papers and other recent fields where this methodology originated. The researcher thoroughly analyzed marketing literature to conceptualize marketing (Maclinnis, 2011). The aim is to establish a linkage between the marketing framework and the possibilities for internet research by applying Netnography as a research methodology within diverse marketing domains.

The paper has compiled work done in netnography, tried to analyze the findings, and correlated them with market research.

In alignment with Psychoanalytic theory (Hirschman & Holbrook, 1982), the comprehension of consumer purchasing behavior is frequently intricate and not readily noticeable to marketing observers and consumers. Probing a consumer's subconscious can influence their purchasing or consumption of a product. Netnography, as a practical approach, empowers researchers and marketers to investigate the recesses of the consumer's subconscious mind.

Review of Literature

Using a different research method to extract data from the computer-generated world is essential in the digital era. There is abundant data available online in various forms: social networking sites, online communities, blogging forums, news groups, Chat rooms, etc., where a lot of valuable data is available. Traditional marketing data collection methods and the data extracted from the internet are enormous, so there is a need to evolve research methodologies such as Netnography (Kozinet, 2002)

TABLE 1- Research on Netnography—Drawing correlation with marketing theory. Sources: (Sharma et al., 2018)

S.No.	Year	Title	Industry/ Sector Services	Author	Marketing Implication	Theoretical Correlation with Marketing Implication
1	2012	We Create, We Connect, We Respect, Therefore We Are: Intellectual, Social and Cultural Value in Online Communities	Air Lines	Mina Seraj	The online communities helped to connect with prospective consumers who will be beneficial to creating and co-creating brand value in the growing market.	Understanding the culture of online communities will aid consumer studies. This study will support the Consumer culture theory of consumer behavior.
2	2012	Marketing Netnography:Prom/ot(ul gat)ing a New Research Method	Branding	Robert V. Kozinet	Netnography is used to understand the new online ethnographic method of marketing in different fields, which helps in consulting and research work.	Study the existing users who face the new emerging needs earlier than others. This article supports the diffusion of innovation theory.
3	2012	Online Group Buying Behavior in CC2B e-commerce: Understanding Consumer Motivations	Electronics	Chih-Ping Chen	Examining the characteristics of online group buying (OGB) as CC2B in an e-commerce platform using netnographic analysis	The role of CC2B is to encourage shoppers to participate in online group buying. Thereby supporting the consumer motivations theory.
4	2012	Investigating Romanian Healthcare Consumer Behaviour in Online Communities: Qualitative Research on Negative eWOM	HealthCare	Iuliana Raluca Gheorghe, Mei-Na Liao	Consumer purchasing decisions are studied with the help of netnography using eWOM reviews. The impact of negative reviews is more effective than positive reviews.	The theory of actions supports the study of consumer buying behavior, which helps to study consumer behavior.
5	2013	Netnography as a Method of Lead User Identification	Food	Frank-Martin Belz and Wenke Baumbach	Netnography was used for lead User identification. It concluded that this method was more reliable as it depended on external assessment rather than self-assessment.	This empirical study helps in the new product adoption theory, which directly implies demand forecasting under the agies of sales and development Management.
6	2014	Invisible Value Formation: A Netnography in Retail Banking	Retail Banking	Gustav Medberg & Kristina Heinonen	Netnography helps to understand the naturalistic approach of customers' experiences of a retail bank. It also helped in understanding customers' expectations beyond the retail bank services.	This study supports the invisible value formation in the customer-bank relationship and introduces the concept of netnography in bank service value research.

7	2015	The Search for Innovative Partners in Co-Creation: Identifying Lead Users in social media Through Netnography and Crowdsourcing	Social media	Alexander Brem and Volker Bilgram	Netnography and crowdsourcing were used to generate the idea of identifying the Lead Users and insights. Crowdsourcing was used for co-ideation and insight, whereas netnography could be used for understanding consumer-centric ideation.	The change in consumer interaction and communication has developed the New Product Identification for the lead user theory.
8	2015	A Netnographic Study of eWOM Motivations to Articulate Dining Experiences	Restaurants	Jin Young Chung & Yeong Gug Kim	Netnography better comprehends the past behavior of the consumer. The study also showed that a memorable dining experience was the most suggested for the restaurant.	EWOM will impact consumer decision-making and sentiments towards a product. (Charlett et.al 1995), Thereby affecting the consumer decision.
9	2018	Understanding a shifting methodology, A content analysis of the use of netnography in hospitality and tourism research	Tourism and Hospitality	Elizabeth A. Whalen	Netnography can be used in hospitality and tourism research. This approach allowed us to understand the marketplace and effectively evaluate the online content in the field.	Examining the influence of online tourism and hospitality will help in consumer research and understanding consumer behavior.
10	2018	Consumer acceptance of smart speakers: a mixed methods approach	Smart Speaker	Pascal Kowalczuk	This study was done to incorporate the netnography and Structural Equation Modelling (SEM) for the consumer acceptance model. The proposed model adequately describes the uptake of smart speakers, and the SEM results offer fresh insights into psychological processes.	The concept of reasoned action supports the research of consumer buying patterns and aids the comprehension of consumer behavior. (Young et al. 2010)
11	2018	The Effects of Online Incivility and Consumer-to-Consumer Interactional Justice on Complainants, Observers, and Service Providers During Social Media Service Recover	Corporate social media	Todd J. Bacile, Jeremy S. Wolter b, Alexis M. Allen c & Pei Xu.	This study examines the nature of online incivility as a C2C on social media platforms through netnographic analysis	The role of C2C online incivility complaints is to help formulate trust among consumers. Thereby supporting integrated marketing communication.

12	2018	Analysis of social media-Based Brand Communities and Consumer Behavior: A Netnographic Approach	Mobile Industry	Monireh Hosseini, Afsoon Ghalamkari	Netnography and axial coding are effective techniques that are used to extract brand value from the abundant amount of available social media data.	Web brand communities improve relationship development (Andersen,2005), helping brands manage relationships.
13	2020	Investigation of customer churn insights and intelligence from social media: a netnographic research	Telecommuni cation (Churn behavior pattern)	Jishnu Bhattacharyya and Manoj Kumar Dash	Customer turnover may be decreased by properly outlining the expectations and pain areas of the customer. The study will act as the foundation for creating future churn prediction models that will aid in making well-informed decisions.	This study is an innovative attempt to jointly examine the customer satisfaction theory and customer retention patterns with eWOM, which aids in studying consumer churn behavior.
14	2020	Firms enabling responsible consumption: a netnographic approach	SDGs	Bipul Kumar and Nikhilesh Dholakia	Netnography examined the firms that have used facilities for responsible consumption to attain SDGs. Co-innovation and cocreation strategies have provided firms with the advantages of choice editing and consumer empowerment to impose behavioral policy guidance to attain SDG consumption goals.	The study of consumer consumption behavior supports the expectancy-value theory for the attainment of SDGs
15	2020	Netnography as a consumer education research tool	Consumer Education	Jennifer A. Sandlin	Netnography helped to learn about informal consumer education.	Online study has opened various opportunities to learn and educate consumers for an extended period, to make them aware of their rights, and to educate them. This study supports consumer education.
16	2021	The market of sports supplement in the digital era: A netnographic analysis of perceived risks, side-effects and other safety issues	Sport	Valeria Catalani, Attilio Negri, Honor Townshend b, Pierluigi Simonatoa, Mariya Prilutskayac, Anna Tippett, Ornella Corazza	Netnography shows that social media has changed consumers' perspective toward the sports supplement provided by the typical advisor.	Opinions are significant in integrated marketing communications, and helpful customer feedback is extracted. This study supports the assumption of consumer socialization.

17	2021	Do connoisseur consumers care about sustainability? Exploring coffee consumption practices through netnography	Beverages {coffee}	Sara Bartoloni, Beatrice Ietto and Federica Pascucc	Netnography study provided an alternate perspective to the prevailing paradigm of linear choice models in sustainable consumption, emphasizing actual behavior rather than desired ones.	This Study supports the social practice theory for identifying alternative sustainable consumption patterns.
18	2021	The Relationship Between Electronic Word-of-Mouth and Consumer Engagement: An Exploratory Study	Generic	Mukta Srivastava, Sreeram Sivaramakrishnan, Gordhan K. Saini	Netnography is a study used to feature an aspect of consumer engagement	Consumer engagement raises consumer interactions, which promotes relationship marketing. eWOM helps in consumer engagement.
19	2021	Exploring the components of meal-sharing experiences with local foods: a netnography approach	Meal-Sharing	Ozan Atsız, Ibrahim Cifci, S. Mostafa Rasoolimanesh	Netnography helped the meal-sharing industry to localize more, as it was seen that knowing about food and destination experience had created more consumer tourism engagement	This study will be beneficial for local food dealers and has an emphasis on online consumer behavior and destination marketing
20	2022	Immersive netnography: A novel method for service experience research in virtual reality, augmented reality and metaverse contexts	Generic	Robert V. Kozinets	Netnography has offered a path to understanding consumer behavior as the increased use of artificial intelligence has changed the pattern of service experience.	The study supports the Consumer Culturally based theory, which will aid in the immersive technology.

Discussion of the Study

Notably, Mina Seraj explored the netnography technique to gain insights into the online consumer culture that aligns with consumer cultural theory (CCT) principles. CCT represents an approach aimed at comprehending and formulating theories about consumer consumption behavior, which is intricately shaped and co-formed by their cultural and social surroundings (Seraj, 2012). Further affirming netnography relevance, Robert V. Kozinet points out the exploration of brands through innovative applications of netnography. The study also examined the global utilization of the Netnography method within the market, with findings indicating predominant usage in North America and, in some instances, in the UK and Australia. The author's analysis further revealed that the Netnography method has found adoption among profit-oriented organizations and within the non-profit sector, extending its application to various other domains (Kozinets, 2012). According to Chen's study, netnography studies are valuable for researchers to gain insights into online consumer purchasing behavior within the (Consumer-to-Consumer-to-Business) CC2B communication process. This knowledge aids marketers in discerning the motivations driving consumer product purchases and optimizing their participation in Integrated Marketing Communication (IMC) strategies aimed at online consumers (Chen, 2012). Moving on to the healthcare sector, Gheorghe and Liao underscore the potential of Netnography as a valuable tool for the healthcare sector in comprehending the phenomenon of negative electronic Word-of-Mouth (eWOM) in the online domain, which has been found to wield more influence than positive eWOM. This aligns with the theory of action that underpins consumer purchasing patterns. In contemporary times, specific online activities significantly impact other consumers' buying behavior (Gheorghe & Liao, 2012). As Belz and Baumbach describe, identifying lead users in facilitating the emergence of new market segments and products contributes to sales and distribution management effectiveness. The study emphasized the reliability of the Netnography method, which aids in identifying external factors that enable organizations to address online service deficiencies, including user-friendly websites, responsiveness, and service quality. Additionally, it assists in the identification of opportunities and threats, enabling organizations to bridge service quality gaps (Belz and Baumbach, 2013).

In the study, Medberg and Heinonen conducted a naturalistic examination of consumers' experiences in retail banking using Netnography. Additionally, the paper explored consumers' future expectations within retail banking. This study embraced the formation of the invisible theory, which entails individuals pursuing their self-interest and the freedom to produce and consume in a manner that ultimately benefits society (Medberg and Heinonen, 2014). Brem and Bilgram's concluded that the focus shifted to crowdsourcing, which incited the idea of identifying a lead user through netnography. Research indicates that netnography and crowdsourcing play pivotal roles in comprehending consumer-centric behavior and facilitating co-creation. Crowdsourcing entails gathering data from a vast online audience, often months or years before these needs manifests in the market. The synergy of these approaches can yield practical insights for co-created products, effectively aligning consumer demands with commercial prospects (Brem and Bilgram, 2015). Researchers Chung and Kim employed analytic coding and hermeneutic interpretation techniques in the study to extract themes from documents and observations using consumer examples. The study revealed data on four primary themes: Expressed feeling, Motivation, Self-Enrichment and Approval. This comprehensive exploration allowed the researcher to gain profound insights into individual experiences and contributed to advancing service experience theory. Consequently, social media is an effective tool for managing customer complaints and proactively understanding their preferences. Restaurant managers can leverage social media platforms to formulate service marketing strategies and promptly address consumer needs (Chung and Kim, 2015).

Table 2: Research Objective with Marketing Concept. Source: **(Sharma et al. 2018)**

Research Objective	Marketing Concept	Sub-Concepts
Understanding Online Consumer Cultural and Social values,	Consumer Behaviour	Online Communities Influences, Co-creation value, e-WOM
Methodology, CC2B, Consumer buying behavior, Purchasing decision	New Technique for gaps, Motivation Theory, Theory of Reasoned Actions	Online ethnographic, Consumer research, Online Participant, Engagement, Word of Line, Service quality
Lead User Identifications	Sales and Management, Distribution, New Product Development, Co-branding	Lead user attributes, segmentation innovation, and demand forecast.
Social-Media Marketing, Online Incivility C2C International Justice.	Digital Marketing	Consumer Engagement, Influencer Marketing, Social-Media Marketing, New Product.
Social Media Brand Communities	Brand Management Relationship	Brand Management, Consumer Engagement

In this paper, Whalen explored the role played by hospitality and tourism in shaping online trust, precisely focusing on the dimensions discerned in consumer-generated online reviews. The application of netnography proved instrumental in assessing best practices and optimal approaches within these two domains. Building upon prior research, the study highlights certain facets that may not hold relevance in the online context. These included non-community-based data analysis methods, ethical considerations related to non-disclosure, and observations conducted by non-participants (Whalen, 2018). It is worth noting that there are similarities between Chung, Kim, and Whalen's papers in certain aspects of their research contexts. In this paper, Kowalczuk focused on deciphering consumer purchasing behavior patterns regarding electronic products through netnography. The Reasoned Behavior theory was employed in this research to expound upon the motivations driving consumers' specific actions when acquiring products. According to this theory, consumer attitudes toward buying and subjective norms are primary determinants of observed behavior. Consequently, Netnography emerges as a valuable means to gain insight into the cultural and decision-making factors that underlie consumer buying behavior (Kowalczuk, 2018). In this paper, Bacile et al. 2018 revealed that firms were actively addressing incivility within virtual social environments, acknowledging the importance of maintaining a positive public image while engaging in open public discussions. Firms were keen on retaining their potential consumers in these spaces. To achieve this delicate balance, companies utilize consumer service media (CSM) channels as platforms to deliver consumer services aimed at resolving grievances. These channels effectively served as digital mediators, facilitating interactions between consumers. Additionally, companies leveraged automated software to assist consumers and gather feedback on their handling of complaints. It was emphasized that the response software should be consistently updated to better understand complaints, perceptions of civility, and methods of conflict resolution. It was emphasized that the response software should be consistently updated to better understand complaints, perceptions of civility, and methods of conflict resolution. This ongoing improvement process was essential for effectively managing social media consumer services (Bacile et al., 2018).

Hosseini and Ghalamkari suggest that an innovative approach combines Facebook data extraction with netnography to examine customer churn insights in the mobile telecommunications sector, namely Bharti Airtel India. This represents a methodological change intended to investigate customer behavior on Facebook within the context of the telephone company to acquire a deeper understanding of churn behavior (Hosseini and Ghalamkari, 2018). On the other hand, Young et al. (2010) conducted a study that examined hypotheses related to customer satisfaction and retention. The research emphasized the profound influence of social media platforms, particularly in their ability to facilitate electronic word-of-mouth and cultivate viral marketing strategies. With the complex tapestry of these social networks, members are intricately interconnected, thus enabling the seamless exchange of product-related information and disseminating invaluable insight within their fellow circles (Bhattacharyya and Dash, 2020). Kumar and Dholakia's findings show that consumers and businesses have a symbiotic relationship towards attaining Sustainable Development Goals (SDGs). Different factors of empowerment significantly affect consumption behavior, therefore, there is a need for situational policy frameworks on the ground to ensure optimal levels of consumption. Different types of co-creation methods can develop an inventive mentality, which will result in goal realization; aspirations-value theory provides insights into one's ability to perform well in a task they are involved in, as well as their volition to put effort towards particular goals. Therefore, firms should formulate grassroots strategies to guide consumers toward increased consumption to enhance the overall value chain (Kumar & Dholakia, 2020). According to Sandlin's research on how consumers engage in informal education through netnography reveals that rather than passively accepting information, consumers actively derive meaning from articles, often interpreting them in alternative ways. This process enhances the understanding of consumer education and serves as a way of informally socializing customers. Similarly, consumer educators can integrate netnography into formal educational settings. In this regard, by tracing their historical evolution, this approach helps consumers follow how goods are produced under different conditions. The information is very important for making informed decisions by consumers (Kozinet, 2020). Further, the sentiment analysis carried out in the study showed that consumers prefer locally-made authentic food products over synthetic ones (Sandlin, 2020). According to researchers (Catalani et al.), individuals increasingly rely on websites as their primary source of information, even supplanting the guidance of coaches, doctors, and other experts. Through the netnographic method, comments were systematically collected and analyzed to ensure accurate information, mitigating potential risks or adverse effects associated with supplements. This analysis involved thematic and sentiment assessments of consumer reviews, yielding valuable insights into consumer behavior. It became evident that these reviews radically impacted consumers' perceptions of supplements, overshadowing traditional advisory sources. Furthermore, netnography was recognized as a valuable tool for integrated marketing communication. It allowed for examining the correlation between independent variables, such as expertise and similarity, and dependent variables, including consumer attention and subsequent behavior (Catalani et al., 2021).

According to Researchers (Bartoloni et al.), A beverage-centered advanced search is one example of an experimental study that pays close attention to users' interactions on social media sites such as Instagram and Twitter. The research was particularly about the Connoisseur Consumer Care reviews and customers' opinions. This work is different from others because it relies on netnography to investigate what customers do rather than their ideal behaviors. For this reason, Social Practice Theory acted as a theoretical basis that facilitated knowledge on consumers' involvement in diverse activities within their local markets and the discovery of new opportunities for action. In this way, the present study has contributed to our understanding of coffee's continuing popularity and the real things that buyers do about it (Bartoloni et al., 2021).

Srivastava and the Authors have, in their paper, discussed consumer engagement and the crucial role that the Social Media Command Centers (SMCC) played in determining the up till now hidden electronic Word-of-Mouth eWOM produced by the influencers. The research was conducted to understand how to make such discoveries to increase consumer engagement with a brand. The research indicated that the level of engagement by consumers differed based on interest in the brand and eWOM, pointing out that there is a high correlation between consumer engagement and eWOM. Thus, the importance of this research is to indicate how it provided valuable insights for companies to identify opportunities to create a dominant position in the market by investing considerably in social media. Based on the principles of Marketing 4.0, which support a strong digital presence and highlight that it is not about product manufacturing but solving consumer needs, the functionality of eWOM is much needed in a digital marketing environment. Heightened consumer engagements, allow more consumer interactions and facilitate relationship marketing, thus helping firms to establish long-term relations that would be of mutual value with their customers (Srivastava et al.,2021).

As per the Researcher (Atsız et al.) examined meal-sharing experiences among international travelers seeking to enjoy the local cuisine. The study's findings shed light on the transformative impact of web-enhanced social media competitiveness and the influential role of online reviews as potent tools for enhancing business value. This transformation was derived from the abundant data on various social media platforms (He et al., 2013). The research emphasized two central components: social interaction and local hospitality. It underscored that positive reviews have the potential to significantly boost consumer engagement with a destination, leading to brand enhancement. Such engaged consumers often evolve into active advocates, fostering loyalty and contributing to increased profits. This phenomenon draws the attention of tourists and holds promising implications for the growth of the country's tourism sector. The study illuminated how experiences that evoke a sense of "home" and create lasting memories, as depicted in reviews, play a pivotal role in shaping the image of service providers. This, in turn, augments brand reputation and elevates the destination's appeal. Additionally, the paper offered valuable insights by suggesting that local business owners should enhance their knowledge of culinary offerings and dedicate efforts to bolster destination marketing. By doing so, they can foster economic growth and contribute to sustainable development (Atsiz et al., 2021). In the paper, Robert Z Kozinet elaborated on various immersive technologies employed in brand marketing through the art of storytelling. These technologies aim to bridge the gap between physical products and narratives, infusing products with vitality. Augmented Reality (AR) and Virtual Reality (VR) have witnessed remarkable growth, effectively intertwined the digital and physical realms, and enriched the consumer experience. Furthermore, immersive netnography services have found innovative applications in communication. For instance, they have been utilized to address issues related to COVID-19 challenges or to provide meditation sessions for individuals in quarantine. These services have served as a medium to convey the human experience in development, utilization, and maintenance. In today's context, Artificial Intelligence (AI) increasingly assumes analytical roles, while organizations emphasize emotional and empathetic approaches in their work and interactions. This trend underscores the growing significance of netnography in connecting and understanding human experiences (Kozinets, 2022).

The previously discussed discussion concerning the purposes of organizational research has been summarised in Table 2. An attempt has been made to understand the netnography methodology and link all the netnography research objectives with suitable marketing domains.

Implications of the Study

The Social Media Model presented by Johan Ronnestaw (Chadwich Martin Bailey and iModerate Research Tech) for companies and consumers to build a strong relationship through netnography, three essential elements must be met: increasing brand-consumer engagement, finding common ground, and actively seeking feedback. This paper is a valuable source for marketers, academicians and practitioners as it sheds light on online research and how social media presence captures consumer engagement.

First, using online content on social media is one of the most effective ways to increase customer interaction and develop a long-lasting brand presence. The study emphasizes that such interaction may lead to long-term behavioral changes. Consumers can independently share their satisfaction or dissatisfaction on social media platforms for products/brands. Using this methodology, businesses can easily find dissatisfied consumers and hear them out to solve their issues. To enable mutual exposure and feedback exchange, netnography emerges as a critical instrument for fostering meaningful connections between consumers and businesses. The paper highlighted the importance of peer influence, electronic word-of-mouth (e-WOM), and social media presence in encouraging participation, explaining that these components play a critical role in creating a strong brand-consumer relationship. Second, the findings show that netnography helps academics, researchers, practitioners, and marketers locate opinion leaders and influencers in online communities. This research helps marketers understand the use of this methodology to get new insight into consumer preferences and predict their buying behavior. Marketing managers may develop tactics to increase customer loyalty and confidence in the company and its products by being thoroughly aware of Internet culture. Netnography also helps businesses to understand user expectations to improve their innovation process.

To increase the productivity of the marketing function in companies by accomplishing particular marketing goals in response to the research aim, this study develops an outline for implementing the method of Netnography.

Conclusion of the Study

The study covers the literature on netnography and has offered knowledge to build the basis of future projections from the customers' perspective. This study effectively demonstrated the success of netnography in multiple marketing situations, meeting its primary goal. Previous research was considered and conceptualized with the marketing concepts to achieve the study's objective. Firstly, it encourages academicians and marketers to use qualitative analysis as an alternative approach for examining and learning about consumer behavior. The paper demonstrates to marketers in many marketing industries the benefits of qualitative techniques and why they should recognize that quantitative methodologies are ineffective in creating particular customer insights. Secondly, it links theoretical implications, known marketing ideas, and how marketers can develop new strategies and relations with consumers. The studies show that netnography is becoming popular and inspiring more creative marketing methods. So, old and modern methods are combined to provide more reliable findings.

Limitations and Future Scopes

This research only analyzed 20 publications, highlighting the enormous potential for additional inquiry and discovery of new insights in these underexplored fields. The study initiates future research efforts, providing a dynamic opportunity to explore the numerous applications of Netnography in other sectors. These disciplines include the analysis of consumer behavior, destination marketing, service marketing, and product creation. Also, there is a significant potential for expanding netnography reach outside the marketing area. Education and finance have already shown potential in utilizing this strategy as a worthwhile research methodology. In addition, modern human resource management research is experiencing the development of new methodologies, such as Netnography tools for analyzing employee behavior. Even within the marketing area, some sectors, such as E-Commerce logistics and the Food Sector, remain undiscovered or have received comparably less attention.

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The New Age of Fashion Marketing : Impact of Influencer Credibility on Brand Attitude and Consumers' Purchase Intention

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Abstract

The present study examines the impact of fashion influencers endorsement on brand attitude and consumers' purchase intention. The study also endeavours to analyse the impact of different elements of source credibility model on brand attitude. Utilizing an integrated conceptual model based on source credibility theory, the study analysed data from 341 Indian consumers through exploratory factor analysis (EFA) and structural equation modelling (SEM) through path analysis. The study findings show that influencers trustworthiness, expertise and attractiveness positively impact brand attitude and purchase intention. Also, brand attitude had a significant positive impact on consumers' purchase intention. The research offers a valuable and interesting insight in the theory and practice of influencer marketing. When adopting influencers marketing campaign, fashion marketers should carefully choose the influencers who seem to be highly attractive, trustworthy and experts in their specific field. The research makes a novel contribution on influencer's credibility and consumers purchase intention particularly in the Indian fashion industry. Furthermore, the participants of study are from various age group as opposed to existing researches that exclusively focused on targeting young consumers.

Keywords: *Influencer marketing, Brand attitude, Source credibility, Fashion influencers, Purchase intention, EFA, SEM.*

1. Introduction

The inclusion of influencers in modern advertising strategies has become increasingly prevalent across the globe (Geng et al., 2023). With the advent of digitalization and modernization, influencers have become an effective and economical form of marketing communication to advertise brands and target potential consumers (Mukherjee, 2020; Kim et al., 2017; Schivinski and Dabrowski, 2016). Social media endorser is an emerging type of independent third-party promoters that use different social media platforms to alter the opinions and beliefs of consumers (Freberg et al., 2011). They are generally recognised experts and content creators, having a substantial following over the internet (Audrezet et al., 2018; De Veirman et al., 2017). In order to remain up to date on the most recent events and trends, individuals or consumers curious about a particular field are following and connecting with influencers. (Leung et al., 2022). Instead of trying to avoid advertising by skipping ads or downloading ad-blocking software, consumers follow influencers of their own choice (Tiwari et al., 2024). Influencers are more effective in personalizing their communications to target audiences as they focus on the interests of a specific audience (Gamage and Ashill, 2023).

Fashion industry is facing high competition in today's marketing environment (Magano et al., 2022). Fashion influencers have a vital role in boosting the sales of fashion goods (Djafarova and Bowes, 2021). Influencer branding provides consumers symbolic information, which influences their purchasing decisions (Choi, 2020). Influencer marketing could be extremely beneficial for fashion businesses trying to broaden their customer base and turn them into lifelong members in building durable connections with the people they serve (Gomes et al., 2022).

The large and growing Indian market is a major focus for many leading fashion brands as a result of several factors, including a

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rise in consumer expenditure, a shift in credit mindset, increased entrepreneurial prospects, knowledge sharing due to substantial access to the internet (Gautam and Sharma, 2017). Influencer marketing is now recognised as the most favoured approach among luxury fashion firms to establish relations with their intended audience while sharing knowledge and preferences. The importance of source credibility for the effectiveness of advertising has been consistently highlighted in the previous literatures (Roy et al., 2013). The impact of trustworthiness, expertise, and attractiveness as components of source credibility on perceived trust, brand awareness, and purchase intentions in the context of influencer marketing has been highlighted in the recent study centred on the source credibility theory (Wang and Scheinbaum, 2018; Munnukka et al., 2016). However, still there is little awareness of social media influencers and their influence on customers' purchase intention (Lou and Yuan, 2019), particularly in light of emerging and rapidly expanding luxury fashion market in India. This study aims to fill the gap in the literature by investigating the relevance of source credibility for influencers in the fashion industry. As a result, the current research attempt to address the following questions:

RQ1. How do the credibility dimensions of fashion influencers affect brand attitude?

RQ2. How does a brand attitude affect the intention of fashion shoppers to buy?

The above-mentioned research questions were answered by using source credibility theory in Indian context. Thus, our primary research aim is to examine the fashion influencers credibility and how it influences purchase intention among consumers. The main purpose of this investigation is to advance the theory of source credibility in the context of fashion influencers and thus, explore how attractiveness, expertise, and trustworthiness affect consumers attitude and opinion toward the promoted brand.

The present study includes the sections listed below. The 'Literature review and Hypotheses development' succeeded by the section of 'Research Methodology'. Subsequent section included 'Analysis and Result' along with findings of the of the study. Next section of the study is 'Discussion and Implications'. The last section is 'Conclusion and Future research directions' which discussed about conclusion, limitation and future scope of the study.

2. Literature Review and Hypotheses Development

2.1 Theoretical Background

2.1.1 Fashion influencers

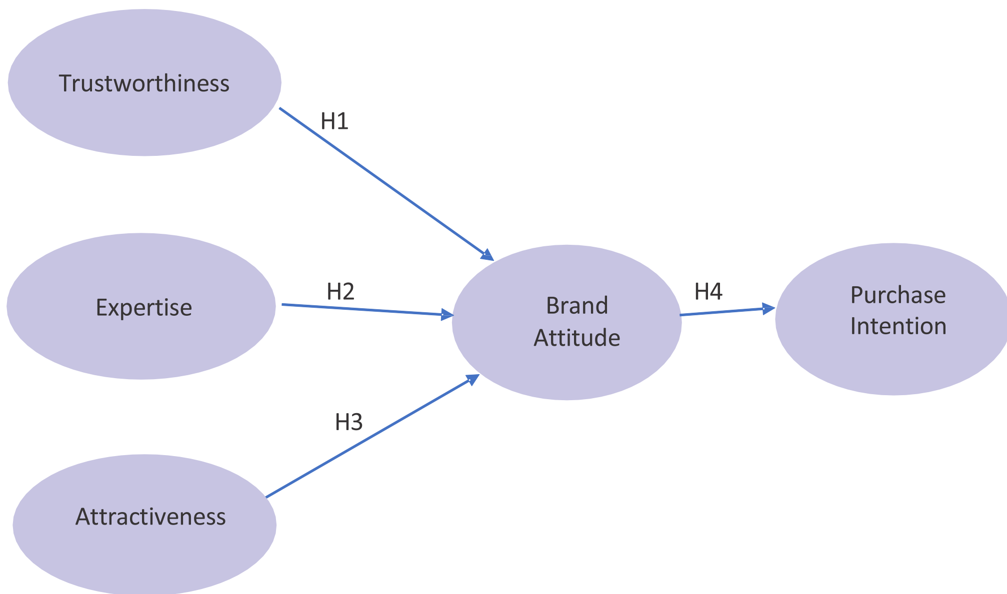
Fashion influencers are regular people with a sizable social media following who deliver updates on fashion and have the capability to affect their followers' opinions and shopping behaviours (Tiwari et al., 2024; Chetioui et al., 2019). Consumers perceive them as being accessible, reliable, and identical to them (Reinikainen et al., 2020). They are seen as ordinary prominent figures in the world of fashion and create customers interest in the latest trends (Park and Kim, 2016). Famous personalities and their content (e-WOM) are more powerful and has a stronger impact on consumers' intents to make purchases on social media (Erkan and Evans, 2016). Various literature acknowledge that influencer marketing impacts the consumer purchase intention (Chetioui et al., 2019; Kim and Ko, 2010), however, there is only few research highlighted the connections between consumers' inclination to buy and fashion influencers (Lang and Armstrong, 2018).

2.1.2 Source Credibility Theory

As per prior study credibility is a crucial element in influencer endorsements. Multiple studies have discovered that information from reliable sources influences the attitudes and actions of consumers (Chakraborty, 2019; Lou and Yuan, 2019). The term "source credibility" refers to how customers perceive the information source. (Hovland and Wiess, 1951). As per the model, an endorsement's effectiveness can be affected by the attractiveness, trustworthiness, and expertise of the endorser perceived by the consumer (Ohanian, 1991; McGuire, 1969). A potential endorser's attractiveness is determined by how much they are deemed to be classy, beautiful, and elegant (Erdogan, 1999). Trustworthiness is the perception of a person's dependability, honesty, and reliability (Ohanian 1990). It was discovered that trustworthiness was a key indicator of source credibility (Friedman et al., 1976). The level of expertise of a celebrity is the extent to which they are seen as competent, experienced, qualified, and generally reliable source (Erdogan, 1999).

Previous investigations on source credibility highlighted the significance of the communicator's expertise, attractiveness, and trustworthiness competence in the context of celebrity endorsement advertisement (Wiedmann and Mettenheim, 2020; Teng et al., 2014). Over the past few years, inquiries about the source credibility have grown in social media and influencer marketing contexts (Lou and Yuan, 2019; Sokolova and Kefi, 2019; Djafarova and Rushworth, 2017). Expertise, trustworthiness, and attractiveness of the sender favourably correlated with attitudes, behavioural intention, and actual purchase behaviours of consumers (Senecal and Nantel, 2004; Ohanian, 1990). Figure 1 displays the conceptual framework of the research. The research model was built on source credibility of fashion influencers as a predictors of consumers' brand attitude and buying intention.

Fig 1. Conceptual Research Framework



2.2 Hypotheses Development

2.2.1 Influencer Trustworthiness

Trust is a significant notion which indicates the validity and believability of the speaker (Wiedmann and Mettenheim 2020). The more trustworthy the endorsers, the more compelling and honest they are found to be by the consumers (Djafarova and Rushworth, 2017). Customers are more likely to follow recommendations from influencers they trust, which could affect their attitude and perception toward the brand and their behavior while making purchases (Hsu *et al.,* 2013). Prior researchers have discovered that trustworthy spokespeople provide higher levels of brand attitude and brand satisfaction (Bora Semiz and Paylan, 2023). Accordingly, a fashion influencer considered as a highly trustworthy had a higher chance to influence brand attitude and purchasing intentions of their followers. Therefore, we hypothesize the following:

H1: Influencer's trustworthiness and brand attitude are positively associated.

2.2.2 Influencer Expertise

The degree to which an ambassador is considered as a reliable source of information is known as their expertise (McCracken, 1989). Ohanian (1990) described expertise as the extent to which the audience perceives an endorser's experience, knowledge, abilities, and qualifications. Customers are more inclined to comply with advice given by influencers who are recognised as experts in a particular field (Munnukka et al., 2016). Numerous studies have demonstrated that expert influencers have a significant impact on consumers' perceptions of a particular brand, which in turn influences their intention to make a purchase (Hayes and Carr, 2015; Bergkvist *et al.,* 2016). Hence, we formulate:

H2: Influencer's expertise and brand attitude are positively associated.

2.2.3. Influencer Attractiveness

The attractiveness is the third crucial axiom as per the source credibility model (Wang and Scheinbaum, 2018). According to McCracken (1989), attractiveness is a person's external visual appearance; thus, someone who is deemed attractive is viewed as beautiful, classy and elegant (Amos *et al.,* 2008). Attractiveness of an endorser helps people form positive brand attitudes by promoting the company's product (Kumar *et al.,* 2019). Additionally, it is influencing a customer's intention to buy (Petty *et al.,* 1983; Erdogan, 1999). Accordingly, when a fashion influencer is highly attractive it will have a favourable effect on brand attitude and consumers' purchase intentions. Therefore, we proposed that:

H3: Influencer's attractiveness and brand attitude are positively associated.

2.2.4 Brand Attitude

Attitude is the term used to describe people's favourable or unfavourable assessments of participating in a specific behaviour (Wu and Wang, 2011). Consumers' favourable or adverse attitude towards a brand are referred to as brand attitudes (Mitchell and Olson, 1981). Brand attitude refers to the emotional and subjective component that makes up a company's advertising branding (Ahmadi and Ataei, 2022). According to prior studies, customers' brand attitudes significantly influence their purchase intentions (Wu and Wang, 2011; Mackenzie and Spreng, 1992). Customers' attitudes towards brands are the foundation of customer relationships, thus it seems sense that these relationships would have an influence on consumers intention to buy (Gautam and Sharma, 2017). Utilising well-liked influencers by the firms leads to favourable attitudes towards the brand and ultimately, increased propensity to buy among consumers (Chetioui *et al.,* 2019). Hence, we postulate that:

H4: Consumers' brand attitude and purchase intention are positively associated.

2.2.5 Purchase Intention

Intention to buy is closely associated with attitudes and preferences towards a specific product or brand (Huang *et al.,* 2011). The term "purchase intentions" describes a customer's desire of seeking out a specific brand in the future (Jaiswal *et al.,* 2021). Customers' intention to make a purchase on social networking sites may be influenced by an influencer's credibility (Sokolova and Kefi, 2019). In relation to influencer marketing, previous studies claims that consumer attitudes towards a specific brand have a direct impact on their urge to make a purchase from that brand (Kudeshia and Kumar 2017; Pradhana *et al.,* 2016).

3. Research Methodology

3.1 Data collection and sample

A well- structured questionnaire was developed using google forms to gather primary data, which was then disseminated via the internet. The data was gathered by using the purposive convenience sampling technique for a period of four months. The questionnaires were distributed among 500 social media users, 341 of whom were deemed suitable for the ultimate evaluation and analysis.

3.2 Questionnaire development and instrument

The structured questionnaire has two parts. The questionnaire covers demographic profile of the respondents represented by section A as well as their opinion related with different variable taken under the study represented by section B. In the survey, five major constructs containing 22 statements were taken from previous research studies they are, Chetioui *et al*., (2019); Martins *et al.,* (2017) Lu *et al*., (2014); Ajzen, (2011); Ohanian (1990). Each questionnaire statement was evaluated on a seven-point Likert scale that varied from strongly disagree to strongly agree.

3.3 Data analysis

The computer programme statistics package for social sciences (SPSS 22.0), along with AMOS 27.0 was used to process the data using statistical techniques. In the present study, the reliability of each construct was assessed using Cronbach's alpha. The study employed an exploratory factor analysis by using three indicators those are KMO measure of sampling adequacy (Kaiser-Meyer-Olkin), Bartlett's test of sphericity and Eigenvalue of variables. Using AMOS, a two-stage SEM (Structural Equation Modelling) process had been carried out to test the proposed model (Kant *et al.,* 2019; Anderson and Gerbing, 1988). The initial procedure involved using confirmatory factor analysis (CFA) to evaluate the measurement model's validity and reliability (Kant *et al.,* 2017).

4. Analysis and Results

4.1 Respondent profile

Table 1 display the respondent's demographic profile by considering gender, age, education, occupation and income (per month). Men and women were found to be equally represented among the 341 participants in total, which is 49.9% (170 respondents) each and 0.3% (1 respondent) would rather was not interested in revealing its gender. More than 76% (260 respondents) were aged 20-30 years old, and about 14.1% (48 respondents) were between 30-40, 7.3% (25 respondents) were below the age 20, 1.8 % (6 respondents) were from 40-50 and only 0.6% (2 respondents) fall under the age group of more than 50. It indicates that the majority of respondents was younger generation of the country. Status of education indicates that respondents are highly educated as majority of respondents 40.5% (138 respondents) were found to be post graduate, while 36.4% (124 respondents) were graduate, 9.4% (32 respondents) from others, 7.3% (25 respondents) were from professionals and only 6.5% (22 respondents) were from MPhil/Ph.D. Occupation- wise distribution of respondents explores that majority of respondents 41.6% (142 respondents) was students, followed by 35.2% (120 respondents) were from pvt. job, then, 14.7% (50 respondents) was self- employed and at last only 8.5% (29 respondents) were doing Govt. job. Income wise, majority of respondents 24% (82 respondents) earn monthly income of Rs. 20K-40K, 23.8% (81 respondents) belong to below income group of Rs. 20K, followed by 22% (75 respondents) were from the income of Rs. above 80K, 17% (58 respondents) earn Rs.40K-60K and last 13.2% (45 respondents) earn monthly income Rs. 60K-80K.

Table 1: Demographic Profile (n=341)

		Frequency	Percent
Gender	Male	170	49.9
	Female	170	49.9
	Prefer not to say	1	0.3
Age (years)	Below 20	25	7.3
	20-30	260	76.2
	30-40	48	14.1
	40-50	6	1.8
	50 Above	2	0.6
Education	UG	124	36.4
	PG	138	40.5
	MPhil/PhD	22	6.5
	Professional	25	7.3
	Others	32	9.4
Occupation	Student	142	41.6
	Govt. Job	29	8.5
	Pvt. Job	120	35.2
	Self-employment	50	14.7
Monthly Household Income (Rs.)	>20K	81	23.8
	20K-40K	82	24
	40K-60K	58	17
	60K-80K	45	13.2
	<80K	75	22

4.2 Exploratory Factor Analysis (EFA)

In the current study, exploratory factor analysis is conducted utilising the principal component approach with varimax rotation. To ascertain whether the factor analysis is suitable for the set of statements (variables), Hair et al. (2015) suggested Kaiser-Meyer-Olkin (KMO) and Bartlett's test. A numerical value known as the Kaiser-Meyer-Olkin measure of sampling adequacy acts as an indication to assess if a sample meets the requirements for factor analysis. Another measure of sampling adequacy is the Bartlett's test of sphericity, which looks at the aggregate relevance of all correlations between all of the measuring instrument's items. The application of factor analysis is supported by Table 2, which shows the significant results of the KMO Measure of sampling adequacy (0.941). Additionally, Bartlett's Sphericity Test delivers significant results (chi-square with degree of freedom (df) 231 = 8705.849 and significance value = 0.000) and hence, facilities the effective application of factor analysis in the present study (Malhotra and Das, 2014).

Table 3: Communalities and Table 4: Rotated component matrix, indicates the end products of the factor analysis by employing principal components analysis with varimax rotation. Variables exhibiting communalities more than 0.50 and factors having eigen values greater than 1 has been retained for further analysis (Kant and Jaiswal, 2017; Hair et al., 2015). Overall, 22 variables were considered suitable to conduct this study, and all five constructs were accepted. All the 22 factors when combined explained 86.831% of the variance after varimax rotation.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.941
Bartlett's Test of Sphericity	Approx. Chi-Square	8705.849
	df	231
	Sig.	0.000

Table 3: Communalities

Variables	Initial	Extraction
TR1	1.000	.888
TR2	1.000	.882
TR3	1.000	.904
TR4	1.000	.897
TR5	1.000	.859
EXP1	1.000	.845
EXP2	1.000	.849
EXP3	1.000	.871
EXP4	1.000	.883
EXP5	1.000	.856
AT1	1.000	.842
AT2	1.000	.863
AT3	1.000	.862
AT4	1.000	.854
BA1	1.000	.868
BA2	1.000	.865
BA3	1.000	.821
BA4	1.000	.813
PI1	1.000	.864
PI2	1.000	.896
PI3	1.000	.917
PI4	1.000	.903
Extraction Method: Principal Component Analysis.		

Table 4: Results of Exploratory Factor Analysis

Rotated Component Matrix					
Items	**Component**				
	1	2	3	4	5
TR1	.887				
TR2	.882				
TR3	.894				
TR4	.882				
TR5	.859				
EXP1		.812			
EXP2		.842			
EXP3		.858			
EXP4		.870			
EXP5		.855			
AT1				.850	
AT2				.872	
AT3				.829	

AT4				.852	
BA1					.813
BA2					.808
BA3					.833
BA4					.797
PI1			.802		
PI2			.830		
PI3			.868		
PI4			.865		
Eigen Value	4.533	4.292	3.515	3.466	3.297
% of Variance	20.606	19.508	15.976	15.756	14.985
Cumulative %	20.606	40.114	56.090	71.846	86.831
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
Rotation converged in 6 iterations.					

4.3 The measurement model

In order evaluate both the reliability of the constructs and the convergent and discriminant validity of the measures in the measurement model, the confirmatory factor analysis has been carried out using AMOS 27.0 via maximum likelihood approach. An exploratory factor analysis was performed before that, and the findings were deemed suitable for further investigation.

4.3.1 Reliability and validity of the constructs

The values of average variance extracted (AVE), standardised factor loadings, Cronbach's alpha, and composite reliability (CR) are shown in table 5. The loadings of all items have been determined to verify the reliability and validity of the available data (Jaiswal *et al.,* 2022). As per Hair et al., 2015, item loadings ought to be more than the 0.70 cutoff threshold. Since all scale items have standardised factor loadings between 0.841 and 0.945, all factors are taken into consideration for further evaluations.

Construct validity measures how well the measurement scale reflects the constructs, while construct reliability assessed the internal consistency of the components within all of the constructs (Golafshani, 2003). Cronbach's α coefficients and composite reliability were used to measure the construct's reliability. Table 5, shows the values of Cronbach's alpha coefficients for each construct vary from 3.4 to 9.7, which was higher than the acceptable cut off of 0.70, suggesting adequate reliability (Malhotra and Dash, 2014). Table 5 exhibits that all constructs' composite reliability ranged from 0.941 to 0.967, and that the average variance extracted (AVE) value varied from 0.785 to 0.856, all of which met the required threshold (Kaushal *et al.,* 2021; Hair *et al.,* 2015). Thus, confirming the convergent validity.

Table 6 presents the findings of the discriminant validity measures. The satisfactory level of discriminant validity was confirmed by the finding that the square root of the AVE for all of the construct was greater than the squared correlation among the constructs (Jaiswal and Kant, 2017; Hair *et al.,* 2015; Fornell and Larcker 1981). Thus, the findings demonstrate that all the study's constructs indicated adequate reliability, convergent validity, and discriminant validity.

4.4 The Structural Model

After the evaluation of the measurement model, the goodness of fit statistics was examined in order to estimate the structural model. Table 7 demonstrates the values of multiple indicators of model fit which includes, Chi square/df =2.186, GFI=0.892, AGFI=0.865, IFI= 0.972, NFI= 0.950, CFI= 0.972 and RMSEA= 0.059, and the results revealed that adequately match the data in accordance with the suggested thresholds (Kant *et al.,* 2017; Malhotra and Dash, 2014). According to recommendations made by Baumgartner and Homburg (1995) and Doll *et al.,* (1994), a numerical value of GFI and AGFI is considered acceptable if it is greater than 0.8. therefore, in our study, even though the GFI and AGFI values were less than 0.9 (the cutoff point), they continue to fulfil the required condition and therefore, accepted.

4.4.1 The results

Table 8 exhibits the path analysis findings, where coefficients (β) and p-values indicate that every hypothesis (H1, H2, H3 and H4) were found significant and accepted at $p < 0.001$. The research's findings indicated that brand attitude and consumer purchase intention are positively and significantly correlated (H4; β = 0.642, $p < 0.001$), and it was found that it is the strongest predictor of purchase intention. Thereafter, attractiveness (H3;β

= 0.349, p< 0.001), trustworthiness (H1; β = 0.277, p< 0.001) and then expertise (H2; β = 0.207, p< 0.001) significantly influence brand attitude. Additionally, the findings revealed that, in the present model, expertise had the least favourable impact on brand attitude and, consequently, on consumers' intention to buy. (β = 0.207, p<0.001) shown in figure 2.

Table 5: Factor Loadings, Composite Reliability, Average Variance Extracted

Constructs	Items	Factor loadings	Composite Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's alpha
Trustworthiness	TR1	0.922	0.967	0.855	0.967
	TR2	0.921			
	TR3	0.942			
	TR4	0.936			
	TR5	0.901			
Expertise	EXP1	0.897	0.957	0.818	0.957
	EXP2	0.894			
	EXP3	0.915			
	EXP4	0.917			
	EXP5	0.900			
Attractiveness	AT1	0.878	0.941	0.801	0.941
	AT2	0.895			
	AT3	0.908			
	AT4	0.898			
Brand Attitude	BA1	0.924	0.936	0.785	0.935
	BA2	0.922			
	BA3	0.841			
	BA4	0.854			
Purchase Intention	PI1	0.897	0.960	0.856	0.959
	PI2	0.930			
	PI3	0.945			
	PI4	0.928			

Table 6: Discriminant validity results of the measurement model

	BA	TR	EXP	AT	PI
BA	**0.886**				
TR	0.491	**0.925**			
EXP	0.523	0.472	**0.905**		
AT	0.563	0.374	0.562	**0.895**	
PI	0.628	0.545	0.514	0.445	**0.925**

Note: Diagonal values show square root of AVE for each construct.

Table 7: Evaluation results of the modified model

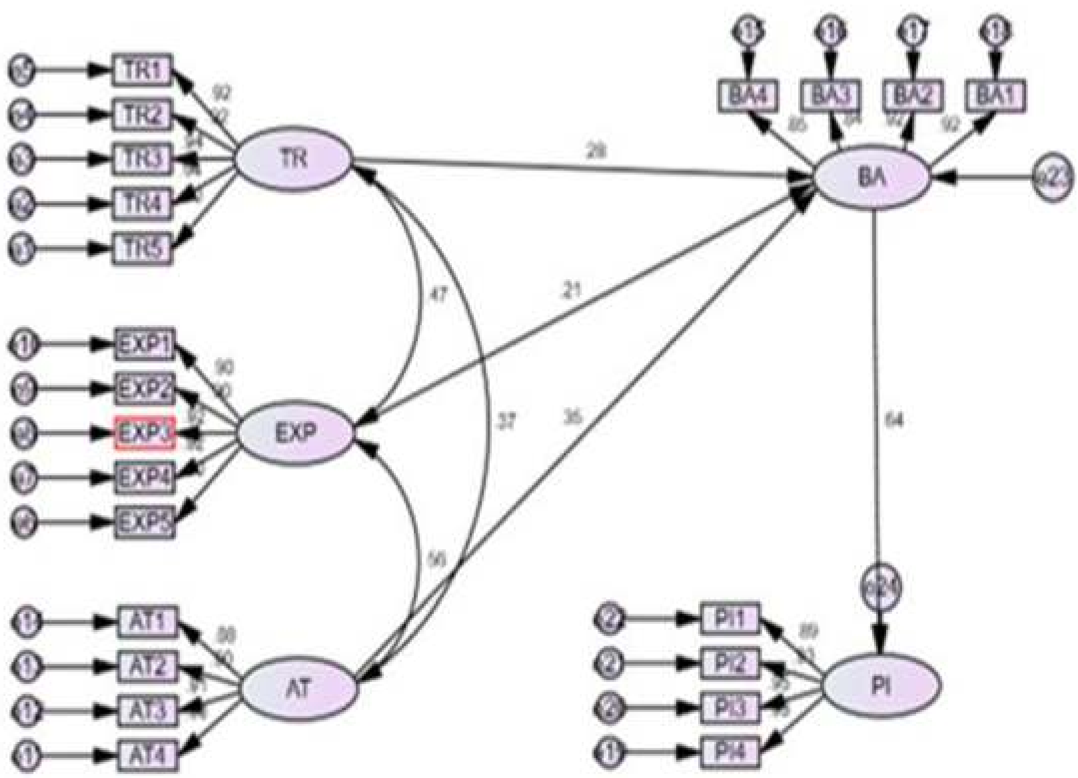
Indicators	Norm	Results	Judgement
GFI	>0.9	0.892	Yes*
AGFI	>0.9	0.865	Yes*
RMSEA	<0.08	0.059	Yes
NFI	>0.9	0.95	Yes
CFI	>0.9	0.972	Yes
IFI	>0.9	0.972	Yes
$\chi 2$ /df	<4	2.186	Yes

Note: * value of GFI and AGFI is acceptable if it is greater than 0.8
(Baumgartner and Homburg 1995; Doll *et al.,*1994)

Table 8: Results of hypotheses testing: direct effects

Hypothesis	Path			Estimate	S.E.	C.R.	P
H1	BA	<---	TR	0.277	0.039	5.375	***
H2	BA	<---	EXP	0.207	0.052	3.555	***
H3	BA	<---	AT	0.349	0.056	6.142	***
H4	PI	<---	BA	0.642	0.063	12.598	***

Notes: *** Significant at the 0.001 level.



5. Discussion and Implications

The current study validating relationships among considered constructs taken under the research and provide managerial guidance to the marketing managers of fashion industry for successful implementation of influencer marketing campaign. The present research identified the elements of source credibility model in the fashion industry context using factor analysis, and analysed the effects of the source credibility model's dimensions on brand attitude followed by the effect of brand attitude on purchase intention. Within the research, the three elements of source credibility—trustworthiness, attractiveness, and expertise of a fashion influencer were identified as a predictors of brand attitude. A model that was created in the study was evaluated, supported, and verified with the sample collected from Indian consumers. The findings confirm previous study and support H1, H2, H3 and H4 by showing a favourable impact on brand attitude, and purchase intention. The results of the investigation revels that each of the three factors related with fashion influencers exerted a substantial positive influence on brand attitude. Thus, the earlier research offered strong backing for these findings (Trivedi and Sama, 2020; Lim et al., 2017). Furthermore, brand attitude turned out to significantly impact the purchase intention; this result complied with the previous findings (Torres et al., 2019; Kudeshia and Kumar, 2017; Ladhari et al., 2011).

The research findings indicate that marketing managers within the fashion industry who are looking to implement an influencer campaign should primarily concentrate on influencers attractiveness, followed by trust, and at last on their expertise in the field. This study generally assists brand managers to develop a nuanced comprehension of the precise effects of the requirements. The result of the research indicate that the attractiveness and trustworthiness are the two most important attributes, followed by expertise of an endorser. In a broader sense, findings of McGuire, (1969) showed that expertise was the most essential component of source credibility, and Amos et al., (2008) in their study ranked attractiveness as a least important element in the source credibility model, which contrasted with the conclusions derived from the study. The result was supported by Wiedmann and Mettenheim (2020), Trivedi and Sama (2020) and Torres et al., (2019) those considered attractiveness and trustworthiness are most important elements of source credibility model.

Overall, our research contributes to the body of existing literature and provides a thorough grasp of the source credibility model in relation to influencer marketing in the fashion sector. Marketing managers can thus significantly influence brand attitude and consumers purchase intention by selecting appropriate influencer for their advertising campaign

5.1 Theoretical implications

The theoretical implications fall into two categories. First, brand attitude is significantly impacted by attractiveness, trustworthiness, and expertise of an influencer, which is consistent with previous investigations (Masuda *et al.,* 2022). Among all three, attractiveness of an influencer has the highest significant impact on brand attitude and consequently on purchase intentions which coincide with previous findings, (Torres *et al.,* 2019; Lee and Watkins, 2016), followed by the trustworthiness (Correa *et al.,* 2020) and expertise. Thus, results show that an influencer who considered by its followers as more attractive is more likely to exert an impact on brand attitude and purchase intention of consumers. Last, the result conveys that intention to purchase is significantly influenced by brand attitude which is similar to the results of the earlier studies (Chetioui *et al.,* 2019; Sokolova and Kefi, 2019; Kudeshia and Kumar, 2017). This suggests that fashion influencers merely not affect consumers' brand attitudes but also foster their intention to buy. The majority of buying behaviour research has not looked at the effects of a fashion influencer's attractiveness, trustworthiness, and expertise on brand attitude and consumers' purchase intention with regard to Indian consumers, despite the influencer's potentially significant impact on both of them and therefore, the current study provide significant theoretical implications to the literatures.

5.2 Practical implications

In recent years, fashion industry is facing frequent changes, as the trend of fast fashion is emerged (Tiwari *et al.,* 2024). The fashion influencer is playing a vital role in assisting the fashion industry to persuade consumers to switch from outdated to latest fashion (Djafarova and Bowes, 2021). The present research provides some helpful insights for fashion marketers and advertisers. First, research has shown that attractiveness of an influencer is the most important factor. Marketers and brand managers may take these things into considerations while selecting fashion influencer for promoting their brand. In the intensely competitive marketing surroundings, fashion marketers need to evaluate as well as monitor the future purchase behaviour of their customers with the aim to maximise long-term success of the organisation. In contrast to the unattainable, inaccessible celebrities, rich and famous supermodels in fashion publications, fashion influencers are attractive, genuine and authentic individuals in the followers' own worlds who practically demonstrate how to wear trendy and stylish stuff while employing themselves as models. To promote brands that fit with their lifestyles, fashion marketers need to select fashion influencers based on their area of expertise. The study's outcomes, assist fashion influencers to understand the factors behind their success and adjust their goal accordingly. The findings of the study lead us to recommend that marketers practitioners entirely aware of influencer marketing as a powerful strategy to foster positive brand attitudes and, as a result, increase consumer purchase intentions.

6. Conculsion and Future Research Directions

6.1 Limitations and future research directions

The empirical study's outcomes validated the relevance of theoretical framework's applicability to the subject under consideration. However, there were some limitations that were noted, providing a few suggestions on the potential directions for further research in the influencer marketing field. First, the data was collected from convenience sampling techniques from a single country context that is India. To avoid the criticism of the non-probability method, future researchers may apply probability sampling techniques in cross- country context to reduce the regional disparity. Second, rather than emphasising actual purchasing behaviour, this study concentrates on individuals' purchase intentions. Future studies may uncover the influence of various variables on consumer buying decisions. Last, the study's findings indicates that a fashion influencer's expertise, attractiveness, and trustworthiness will enhance purchase intention through favourable brand attitudes in the Indian fashion sector. Although the fashion industry is a suitable fit for influencer marketing activities, this research model needs to be validated in other industries as well, e.g., food, healthcare, beauty and cosmetic and travel and tourism to enhance the generalizability of findings.

6.2 Conclusion

Despite the rise in popularity of influencer marketing over the past few years (Xie and Feng, 2022), only minority studies have focused on understanding how followers' opinions about brands and, subsequently, their intention to purchase, are influenced by the credibility of fashion influencers, including their attractiveness, expertise, and trustworthiness. Study findings reveal that all of the study's variables, which were examined using EFA and SEM, had a substantial association with each other. Every dimension of source credibility influences brand attitude positively, which in turn influences purchase intention and ultimate consumer buying behaviour. Among all three, attractiveness of a fashion influencer largely impacts the attitude of consumers towards the brand and their intention to buy. Brand attitude is majorly affected by trustworthiness. Finally, expertise has a least influence on brand attitude and consumers purchase intention. The investigation's findings supported the belief that influencer marketing may assist fashion advertisers and companies to increase positive attitude towards their products and services and motivate both new and existing consumers to make transactions.

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ESG-Driven Profitability: Exploring the Financial and Market Impact of Sustainability

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Abstract

This study examines the complex relationship between sustainability performance, represented by Environmental, Social, and Governance (ESG) factors, and firms' financial outcomes. Financial performance is measured using traditional metrics like Return on Assets (ROA) and Return on Equity (ROE), providing insights into a company's profitability and efficiency. Additionally, the effect of sustainability on firm valuation is assessed through Economic Value Added (EVA) and Market Value Added (MVA). EVA represents the residual wealth generated after accounting for the cost of capital, while MVA reflects the market's view of the firm's value creation. By utilizing Structural Equation Modeling (SEM), this research offers an in-depth analysis of how ESG factors impact both financial performance and market valuation. The findings indicate a strong positive correlation between sustainability performance and improved financial and market outcomes, emphasizing the critical role of ESG integration in driving profitability, competitive advantage, and long-term value creation. Firms that incorporate ESG principles into their core strategies are better positioned to achieve stronger financial results and enhanced market standing, benefiting from greater operational efficiency and positive investor sentiment."

Keywords: *Sustainability Performance, ESG, Financial Performance, Market Value Creation.*

1. Introduction

In recent years, sustainability performance has gained significant prominence in the corporate world, driven by the increasing realization that sustainable practices are crucial not only for environmental and social well-being but also for long-term economic viability. This shift highlights the rising pressure from various groups, such as consumers, investors, and regulatory authorities, who are increasingly favouring companies that integrate sustainability into their practices. As a result, embedding Environmental, Social, and Governance (ESG) considerations into business strategies has emerged as a core component of sustainability performance (Eccles et al., 2014). ESG factors present a holistic approach to evaluating a company's impact, moving beyond conventional financial metrics to consider how its operations affect both the environment and society. These factors cover a wide array of considerations, from environmental aspects such as carbon emissions and resource efficiency to social concerns including labor practices, human rights, and community engagement, as well as governance issues like board diversity, transparency, and ethical business practices (Alsayegh et al., 2020). This holistic approach ensures that businesses not only focus on profit generation but also on their broader responsibilities toward sustainable development and societal progress.

Environmental criteria examine a company's role in managing and protecting the natural environment. This includes assessing its energy usage, waste disposal practices, pollution control, and efforts to conserve natural resources. These elements shed light on a company's broader environmental impact and demonstrate how effectively it incorporates sustainability into its policies and operations, reflecting its dedication to long-term ecological responsibility. (Hart, 1995). For example, by reducing its carbon emissions, a company not only helps combat climate change but also lowers operational costs in the long term through energy efficiency. Social criteria evaluate how a company engages with various stakeholders, such as its

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workforce, supply chain partners, clients, and the surrounding communities where it operates (Barney, 1991). These social factors can affect a company's brand image and employee morale, which in turn influence productivity and profitability. Governance criteria focus on evaluating essential elements like the quality of company leadership, the structure of executive compensation, the reliability of audits, the strength of internal controls, and the safeguarding of shareholder rights. Effective governance practices help reduce the risk of corruption and enhance decision-making, contributing to more consistent financial performance.

Research has shown that companies with robust ESG (Environmental, Social, and Governance) performance often experience better financial outcomes. These practices lead to reduced costs, better risk management, and an enhanced corporate image, all of which contribute to long-term success (Friede et al., 2015). Businesses that excel in ESG metrics often find it easier to attract and retain skilled employees, secure funding at more favorable rates, and foster greater customer loyalty. For example, companies focusing on environmental sustainability may avoid penalties and take advantage of government incentives, while those with strong social policies may see a boost in employee morale and efficiency. Furthermore, effective governance can help prevent scandals and support smoother business operations (Al-Ahdal et al., 2023). Thus, integrating ESG practices into corporate strategy is not just an ethical obligation but also a key driver for achieving financial success.

Investors are placing greater emphasis on ESG criteria when making investment decisions, driven by the understanding that sustainability performance is linked to long-term value creation (Giese et al., 2019). The increasing popularity of socially responsible investing (SRI) and impact investing reflects this change, as many investors look to align their investment portfolios with their ethical values and social objectives (Donaldson & Preston, 1995). This trend is similarly visible among institutional investors, such as pension funds and asset managers, who acknowledge that ESG factors offer important insights into a company's potential performance and risk outlook.

By incorporating ESG considerations into their analysis, investors can make more informed decisions that may enhance returns and mitigate risks. This change reflects the increasing acknowledgment that financial success and sustainability are interconnected.

This study examines the relationship between sustainability performance, specifically through the perspective of ESG, and the financial performance of firms, assessed using Return on Assets (ROA) and Return on Equity (ROE). ROA and ROE are standard financial indicators that shed light on a company's profitability and operational efficiency. ROA reveals how well a company utilizes its assets to generate profits, while ROE measures the returns generated on shareholders' equity. Through these metrics, the study evaluates whether firms with strong ESG performance also exhibit solid financial results. Additionally, the research analyzes the effect on firm value, using Economic Value Added (EVA) and Market Value Added (MVA) as benchmarks. EVA reflects a firm's financial performance by accounting for residual wealth and the cost of capital, while MVA captures the market's assessment of the company's ability to create value.

Structural Equation Modeling (SEM) is employed in this study to examine the influence of ESG factors on both financial performance and market valuation of companies. SEM, as an advanced statistical method, allows for the analysis of complex relationships between observed and latent variables. Its use is particularly appropriate in this context, as it enables the simultaneous assessment of multiple relationships, offering a comprehensive understanding of the links between ESG performance, financial outcomes, and firm value. By leveraging SEM, empirical evidence is provided on the impact of sustainability practices on both financial and market performance, contributing to the ongoing discourse on integrating ESG factors into corporate strategies.

The integration of ESG factors into business practices serves as both a strategic initiative and a response to external demands, contributing to improved financial performance and firm value. As the corporate landscape continues to evolve, understanding the complex interactions between sustainability efforts and financial outcomes becomes increasingly important for companies striving for long-term success. This study provides valuable insights into these relationships, offering practical implications for professionals and contributing to the academic discourse in sustainable finance.

2. Theoretical Background and Hypothesis Development

Sustainability performance, with a focus on Environmental, Social, and Governance (ESG) disclosure, has increasingly become a vital factor affecting corporate financial performance. In recent years, firms have increasingly recognized that ESG practices are not merely an ethical obligation but also a strategic business tool that enhances financial outcomes. Studies show that robust ESG practices lead to improved operational efficiency, reduced risks, and increased trust among stakeholders, all of which translate into better financial results (Fahad & Busru, 2020). For instance, Chen and Xie (2022) provide evidence that ESG disclosure has a positive and significant effect on corporate financial performance across non-financial listed firms, using techniques like staggered difference-in-differences to eliminate endogeneity concerns. Their findings highlight that companies with ESG investors experience a more pronounced positive effect on financial performance, reflecting the alignment of sustainable practices with shareholder interests. Similarly, Laskar and Maji (2017), in their study of Indian and South Korean firms, found a significant positive association between corporate sustainability performance and the market-to-book ratio, a common measure of firm performance, illustrating that sustainable practices enhance corporate financial outcomes regardless of regional differences.

Moreover, the integration of ESG practices tends to attract socially responsible investors, who are increasingly influential in global financial markets. This growing investor interest in sustainability can lead to higher stock prices, better credit ratings, and a lower cost of capital. Bodhanwala and Bodhanwala (2018), in their study of Indian firms, confirmed that those with strong ESG rankings consistently outperform firms with lower sustainability rankings in terms of profitability. Their results suggest that sustainability not only helps firms meet regulatory requirements but also creates value through better resource utilization, customer satisfaction, and employee engagement. Dalal and Thaker (2019) further corroborated this by showing that ESG factors positively impact profitability and firm value in Indian public companies, particularly in sectors where environmental and social considerations are of increasing concern to both regulators and the public. Taking into consideration the significant positive relationship between sustainability performance and financial performance, this alternate hypothesis has been developed:

H1: Sustainability performance has a significant positive impact on financial performance.

In addition to the positive effect of sustainability performance on financial metrics, numerous studies have shown that ESG practices enhance the overall value of firms (Hasan et al., 2022). This is primarily due to the fact that sustainable companies are perceived as less risky and more forward-thinking, thereby attracting investors who seek long-term value creation. Firms with strong ESG performance are often able to secure investments from institutional investors who prioritize sustainability and are less prone to divest during periods of market volatility. Behl et al. (2022) found that while the immediate effects of ESG practices on firm value may be negative due to initial implementation costs, the long-term benefits are overwhelmingly positive, especially in industries such as energy, where sustainable development is crucial for long-term success. These findings suggest that ESG practices not only improve the firm's reputation but also provide a competitive advantage by aligning corporate strategies with global sustainability trends.

Sharma et al. (2020) demonstrated that higher levels of ESG disclosure are linked to increased market valuations for Indian companies, as measured by Tobin's Q. Their findings highlight the significance of transparency and engaging stakeholders to build investor trust. When firms disclose ESG practices, they offer valuable information that reduces uncertainty and enhances the firm's perceived stability. Similarly, Sinha and Goel (2023) pointed out the impact of ESG disclosure on long-term financial performance, observing that companies with strong ESG ratings tend to see sustained growth in stock prices, indicating that investors place a high value on sustainability. This positive relationship between ESG practices and firm value suggests that companies with excellent ESG performance are better positioned to meet the growing expectations of investors, customers, and regulators. Based on the significant positive correlation between sustainability performance and firm value, the following alternate hypothesis has been developed:

H2: Sustainability performance has a significant positive impact on the value of the firm.

Sustainability performance, reflected through ESG disclosure, is crucial in influencing both corporate financial outcomes and firm value. Numerous studies have shown the positive effect of ESG practices on profitability and market value, highlighting the increasing significance of embedding sustainability into corporate strategies. As firms encounter rising pressure from investors, regulators, and consumers to implement sustainable practices, the role of ESG in contributing to financial success is expected to grow even further.

3. Research Methodology

This study utilizes a quantitative research approach, applying Structural Equation Modeling (SEM) to evaluate the proposed hypotheses and model the structural relationships between sustainability and its two outcome variables: financial performance and firm value. The research examines three key dimensions of “Sustainability—Environmental, Social, and Governance (ESG)”—which are treated as latent variables. Secondary data was sourced from various financial and sustainability performance reports of non-financial companies listed on the NSE in India's Power Sector. The selected companies, based on their 2023 market capitalization, include large-cap firms such *as Adani Power, NHPC, NTPC, Power Grid Corp., Tata Power, and Torrent Power; mid-cap entities like CESC, JSW Energy, NLC India, and SJVN; and small-cap firms including Jai Prakash Power Ventures, NAVA Ltd., Reliance Infrastructure, and Reliance Power*. The primary data sources for this research were the PROWESS database and the annual reports of the companies. PROWESS provided extensive financial and operational data for the sample, which was further supplemented by information from the companies' annual reports. Table 1 outlines the data sources and the study period.

Table 1: Data Sources and Study Period

Variables		Data Sources	Study Period
Independent	**Sustainability Performance**	***BLOOMBERG database***	***Financial Year 2009-10 to 2022-23***
Dependent	**Financial Performance**	***Annual Financial Statements, CMIE PROWESS database***	
Dependent	**Value of the Firm**	***Annual Financial Statements, CMIE PROWESS database***	

Source: Author

The details of the sub variables taken under the study are as following:
Sustainability Performance Variables: "Environmental, Social, Governance and overall ESG"
Financial Performance Variables: "Return on Assets (ROA) and Return on Equity (ROE)"
Value of the Firm Variables: "Economic Value Added (EVA) and Market Value Added (MVA)"

Variables	*Measures*
SUSTAINABILITY PERFORMANCE	
ENVIRONMENTAL	*Environmental Score from Bloomberg*
SOCIAL	*Social Score from Bloomberg*
GOVERNANCE	*Governance Score from Bloomberg*
ESG	*ESG Score from Bloomberg*
FINANCIAL PERFORMANCE	
Return on Assets (ROA)	"Net Profit after Tax/Total Assets "
Return on Equity (ROE)	"Net profit after Tax/Book value of Equity "
VALUE OF THE FIRM	
Economic Value Added (EVA)	*"NOPAT–(WACCxTC)* i.e. Net Operating Profit after taxes - (Weigjted Average C ost of Capital × Total Capital Invested"
Market Value Added (MVA)	"Market Value of the firm – Book Value of the firm"

4. Data Analysis

This section presents the results of the data analysis conducted using Structural Equation Modeling (SEM) to evaluate the proposed relationships. The analysis focuses on examining the direct effects between "Sustainability Performance, Financial Performance, and the Value of the firm".

4.1 **Descriptive Statistics:**

Table 2 presents a summary of the descriptive statistics, which includes the minimum, maximum, mean, and standard deviation for the selected variables. The variables covered in the table are "ESG, Return on Assets (ROA), Return on Equity (ROE), Economic Value Added (EVA), and Market Value Added (MVA)"

Table 2: Descriptive Statistics

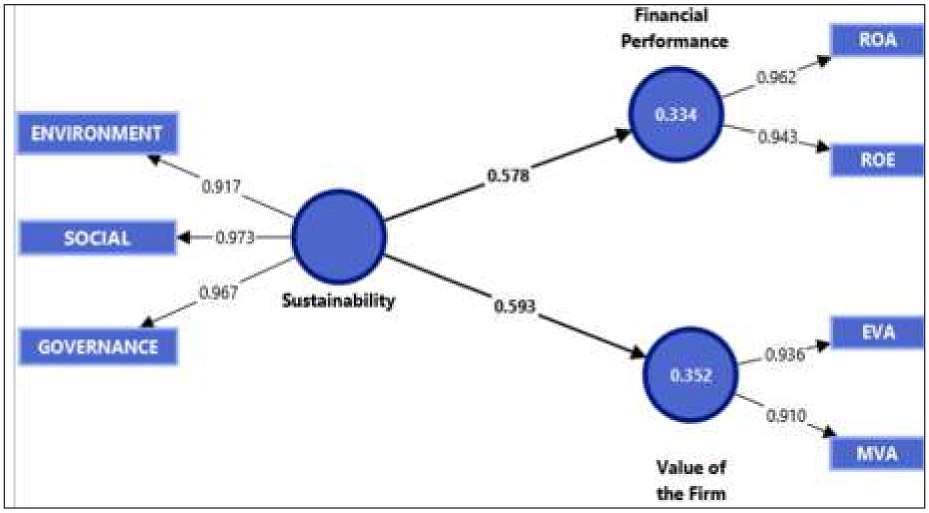
Variables	Min	Max	Mean	Std
ESG	0.21	1.00	0.47	1.167
Return on Assets	-0.29	0.293	0.940	1.296
Return on Equity	-0.23	0.391	0.364	1.304
Economic Value Added	-1816	5,19,648	32,477	0.685
Market Value Added	-2145	6,20,741	27,453	0.885

The"ESG scores range from a minimum of 0.21 to a maximum of 1.00, with a mean of 0.47, indicating a moderate level of performance in environmental, social, and governance areas. However, the high standard deviation of 1.167 suggests considerable variation in ESG scores across the dataset. For financial performance indicators, ROA ranges from -0.29 to 0.293, with an average of 0.94 and a relatively high standard deviation of 1.296, indicating substantial variability in how efficiently companies use their assets. Similarly, ROE has a minimum of -0.23 and a maximum of 0.391, with a mean of 0.364 and a standard deviation of 1.304, showing variability in shareholders' returns on equity investments. Economic Value Added (EVA) shows a wide range from -1816 to 519,648, with a mean of 32,477, reflecting significant differences in the economic value generated by firms. The standard deviation is 0.685, indicating moderate variation in EVA. Market Value Added (MVA) also displays a large range, from -2145 to 620,741, with an average value of 27,453 and a standard deviation of 0.885, suggesting variability in market value performance across the firms analyzed. Overall, these descriptive statistics reflect considerable variability across the performance measures.

4.2 Reliability and Validity Statistics

Figure 1 presents the hypothesized relationships between Sustainability, Financial Performance, and the Value of the Firm. The model demonstrates that Sustainability, influenced by environmental, social, and governance (ESG) factors, has direct positive impacts on both Financial Performance and the Value of the Firm. Financial Performance is measured using important financial indicators like "Return on Assets (ROA) and Return on Equity (ROE), while the Value of the Firm is evaluated through Economic Value Added (EVA) and Market Value Added (MVA)". This figure serves as a visual representation of the proposed theoretical framework linking sustainability practices to financial performance and firm valuation. After confirming the robustness of the model through reliability and validity assessments, the structural model was analyzed to investigate the direct effects within the conceptual framework. This analysis centered on assessing path coefficients, t-statistics, and p-values to determine the strength and significance of the hypothesized relationships.

Figure 1: Measurement Model of the study



Source: SMART PLS 4 output

The constructs in this study were assessed for reliability and validity using Cronbach's alpha, Composite Reliability (rho_a and rho_c), and Average Variance Extracted (AVE), all of which point to a strong measurement model (Hair et al., 2010). Table 3 outlines the reliability statistics for the study variables. Conducting a reliability analysis is crucial for ensuring the internal consistency of measurement scales. Cronbach's alpha, one of the most widely used reliability indicators, evaluates how well a set of items is related as a group. The Cronbach's alpha values for each construct are reported in the table, reflecting whether the items consistently measure the underlying concept. Generally, a Cronbach's alpha value above 0.70 is deemed acceptable for reliability, while values nearing 0.80 or higher indicate strong internal consistency. The table also includes additional reliability metrics, offering a more thorough evaluation by accounting for the variance explained by the items.

Table 3: Reliability Statistics

	"Cronbach's alpha"	**"Composite reliability (rho_a) "**	**"Composite reliability (rho_c)"**	**"Average variance extracted (AVE) "**
Financial Performance	0.898	0.924	0.951	0.907
Sustainability Performance	0.949	0.949	0.967	0.908
Value of the Firm	0.827	0.844	0.920	0.852

For the Financial Performance construct,"Cronbach's alpha was 0.898, demonstrating excellent internal consistency, meaning the items used to measure financial performance are highly reliable. Additionally, the Composite Reliability (rho_a) was 0.924 and rho_c was 0.951, both well above the recommended threshold of 0.70, indicating strong construct reliability (Fornell & Larcker, 1981). The AVE for financial performance was 0.907, signifying that over 90% of the variance in the indicators is explained by the latent construct, reflecting strong convergent validity. Similarly, for the Sustainability construct, Cronbach's alpha was 0.949, indicating high internal consistency. The Composite Reliability (rho_a) and rho_c were 0.949 and 0.967, respectively, which are well above the threshold, ensuring reliability. The AVE was 0.908, further confirming that the sustainability construct exhibits excellent convergent validity, with more than 90% of the variance explained by the underlying latent construct."

For the Value of the Firm construct, Cronbach's alpha was 0.827, indicating good internal consistency. The Composite Reliability (rho_a) was 0.844 and rho_c was 0.920, both above 0.70, confirming the reliability of the construct. The AVE was 0.852, which again indicates strong convergent validity, with a large proportion of variance in the indicators explained by the construct. Overall, these metrics provide strong evidence that the measurement model is both reliable and valid, ensuring that the constructs accurately capture the underlying theoretical concepts in this study (Hair et al., 2019).

Table 4 displays the Heterotrait-Monotrait Ratio (HTMT) values, which assess discriminant validity among the constructs. HTMT is considered a more advanced and rigorous criterion than the traditional Fornell and Larcker approach. It helps determine whether the constructs in the model are sufficiently distinct by examining the ratio of correlations between constructs relative to those within each construct.

Table 4: Discriminant Validity

	Financial Performance	**Sustainability Performance**	**Value of the Firm**
Financial Performance			
Sustainability Performance	0.619		
Value of the Firm	0.671	0.664	

The HTMT criterion establishes discriminant validity when the HTMT value between any two constructs is below 0.90. In Table 3, all HTMT values fall under this 0.90 threshold, demonstrating that the constructs satisfy the discriminant validity requirement. This indicates that each construct in the model is unique and does not substantially overlap with others, preserving the integrity of the measurement model. These findings reinforce the model's robustness and confirm that the constructs represent distinct elements of the underlying theoretical framework.

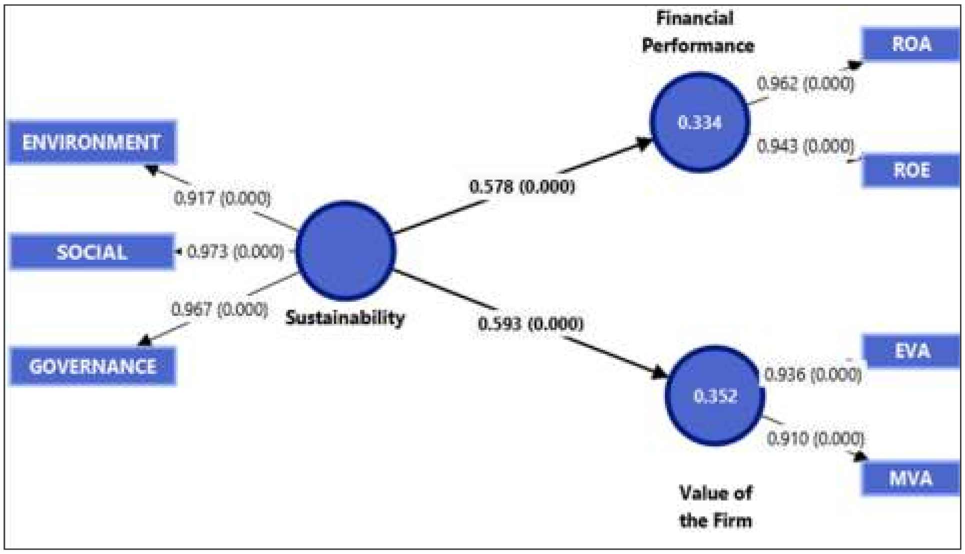
4.3 Structural Model

Figure 2 displays the path analysis, illustrating the hypothesized connections within the conceptual model. It incorporates bootstrapping results, which provide a thorough assessment of the statistical significance and strength of these relationships. Bootstrapping, as a resampling technique, enhances the precision of sample estimates by generating confidence intervals and p-values for the path coefficients.

In this figure, the path coefficients illustrate both the strength and direction of the relationships between variables, with the corresponding t-statistics and p-values reflecting the statistical significance of these relationships. Typically, significant paths are emphasized, indicating which hypothesized connections are validated by the data.

The bootstrapping results depicted in Figure 2 confirm that certain paths in the model are statistically significant, consistent with the research hypotheses. This visualization helps in understanding the direct, indirect, and mediating effects among the constructs, offering valuable insights into the overall structural model and its implications.

Figure 2: Structural Model



Source: SMART PLS 4 output

Table 5 shows the results of the structural model path analysis, providing a thorough overview of the proposed relationships among the constructs. The table includes information such as path coefficients, t-values, and p-values. Path coefficients illustrate the direction and strength of the relationships, with positive or negative values indicating the magnitude of the impact between the variables.

Table 5: Path Analysis

	Path Coefficients	Standard deviation	T statistics	P values
Sustainability Performance ->				
Financial Performance	0.578	0.036	16.009	0.000
Sustainability Performance ->				
Value of the Firm	0.593	0.039	15.309	0.000

The path coefficient for the relationship between Sustainability and Financial Performance is 0.578, signifying a strong positive connection between the two variables. With a t-statistic of 16.009, which far surpasses the critical threshold of 1.96, and a p-value of 0.000, the relationship is statistically significant at the 1% level. These findings strongly support the alternate hypothesis H1, confirming that sustainability has a significant positive impact on financial performance. This means that companies that actively implement and report on environmental, social, and governance (ESG) practices are likely to experience enhanced financial performance, such as improved return on assets (ROA) and return on equity (ROE). Therefore, sustainability initiatives not only align with broader social and environmental objectives but also contribute to a company's financial success. This evidence supports the growing consensus in the literature regarding the financial benefits of adopting sustainability practices.

The path coefficient for the connection between Sustainability and Firm Value is 0.593, reflecting a strong positive impact. With a t-statistic of 15.309, well beyond the critical threshold, and a p-value of 0.000, the relationship is highly significant statistically. These results strongly support the alternate hypothesis H2, showing that sustainability positively affects firm value. In practical terms, this means companies that actively invest in and disclose their sustainability efforts tend to enjoy higher market valuations, as demonstrated by measures like Market Value Added (MVA). Investors increasingly see sustainability as a sign of long-term stability and reduced risk, which enhances firm value.

The positive relationship suggests that firms prioritizing sustainability are more attractive to investors, improving both market performance and shareholder value. These findings are in line with previous research, confirming the significant impact of sustainability performance on both financial outcomes and firm value (Fahad & Busru, 2020; Friede et al., 2015; Hasan et al., 2022; Laskar & Maji, 2017; Maji & Lohia, 2023; Porter & van der Linde, 1995; Shaikh, 2022). This alignment emphasizes the growing role of sustainability in achieving long-term business success and gaining a competitive edge. Companies that demonstrate strong sustainability practices not only fulfill regulatory requirements but also add considerable value by improving resource efficiency, building stakeholder trust, and strengthening operational resilience.

Table 6 provides a summary of the decisions related to the hypothesized relationships based on the structural model results, offering a concise overview of which hypotheses are supported by the data and indicating significant relationships between the constructs.

Table 6: Hypotheses Decision

Hypothesized Relationships	Decision
Sustainability Performance -> Financial Performance	***H1 Supported***
Sustainability Performance -> Value of the Firm	***H2 Supported***

As illustrated in Table 5, both hypotheses (H1 and H2) are confirmed. This demonstrates that sustainability performance has a significant positive effect on financial performance and firm value, supporting the proposed relationships in the conceptual framework. The validation of these hypotheses underscores the critical role of sustainability efforts in enhancing both financial outcomes and overall company value. Thus, the results strongly back the alternate hypotheses. Sustainability not only boosts a firm's financial performance but also significantly raises its market value. These findings emphasize that sustainability initiatives are strategically important, not just from a corporate responsibility viewpoint, but also in terms of financial growth and value creation. Companies that incorporate sustainability into their core business practices are more likely to achieve better financial results and secure stronger market positions, reaping the benefits of improved operational efficiencies and favorable market perceptions.

Table 7: Model Summary

	R-square	R-square adjusted
Financial Performance	0.334	0.333
Value of the Firm	0.352	0.351

The R-squared and Adjusted R-squared values for both Financial Performance and Firm Value provide important insights into the model's explanatory capacity. For Financial Performance, an R-squared value of 0.334 indicates that 33.4% of the variation in financial performance is accounted for by the company's sustainability efforts. The Adjusted R-squared value of 0.333, being nearly identical to the R-squared, reflects the robustness of the model and suggests that sustainability is a key factor in explaining financial outcomes, even when accounting for model complexity.

In a similar way, the R-squared value for Firm Value is 0.352, showing that 35.2% of the variation in firm value is driven by sustainability initiatives. The Adjusted R-squared of 0.351 supports the model's consistency, demonstrating that sustainability has a significant effect on a company's market value. These findings indicate that sustainability plays an important role in enhancing both financial performance and firm value, reinforcing the study's hypotheses.

5. Conclusion

This study highlights a significant and positive link between sustainability practices and both financial performance and firm value. The analysis confirms that companies that integrate environmental, social, and governance (ESG) practices tend to outperform financially and are valued more highly in the market. By improving efficiency, minimizing risks, and gaining the trust of stakeholders, sustainability efforts have a direct effect on profitability and competitiveness. Companies that focus on ESG not only meet legal and societal expectations but also create shareholder value by enhancing financial strength and market credibility. This emphasizes that sustainability is not just a responsibility but a key strategic factor that drives long-term financial success. Evidence indicates that adopting sustainable practices contributes to better resource utilization, cost control, and risk management, all of which lead to stronger financial outcomes. Additionally, it allows businesses to differentiate themselves in the market, appealing to investors who prioritize ESG-conscious companies. Overall, integrating sustainability into business strategy is shown to be a crucial driver of both short-term profits and long-term value creation, underscoring the importance of sustainable practices for future growth and competitiveness in today's rapidly changing global market.

6. Policy Implications

This study offers crucial policy recommendations for businesses, regulators, and policymakers aiming to leverage sustainability as a means to enhance financial performance and firm value. With the clear link between sustainability practices and corporate success, it is essential to develop policies that incentivize companies to adopt and improve their Environmental, Social, and Governance (ESG) initiatives. Governments and regulatory bodies can introduce incentives such as tax benefits or subsidies to encourage investment in sustainable practices. Additionally, requiring mandatory ESG reporting will increase transparency and accountability, helping investors and stakeholders make more informed decisions based on a company's sustainability efforts. Policymakers should also work towards incorporating sustainability into corporate governance structures, ensuring ESG factors are integrated into strategic business decisions. This could include stricter regulations requiring firms to report their sustainability impacts and set concrete goals for reducing environmental impact. Aligning financial success with sustainability objectives would create a business environment where long-term value creation aligns with social and environmental responsibility. Overall, the study's findings point to the need for a well-defined policy framework that encourages sustainable growth, enabling businesses to contribute to broader social and environmental objectives while improving their financial and market performance.

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Anticipating Entrepreneurial Intention of STEM Students by Examining their Underlying Motivations

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**Priyanka G. Bhatt

Abstract

Prior studies examining the entrepreneurial desire of students with a science background have produced inconclusive findings due to a need for more thorough exploration and comparative analysis of the diverse factors that impact this ambition. The central focus of this research is to get a profound understanding and interpretation of what drives entrepreneurs and the many elements that play a role in this phenomenon. In an effort to fill this void, this research delves into the financial, social, psychological, and entrepreneurial aspects by employing the Theory of Planned Behaviour and associated concepts. The research surveyed STEM students residing in key cities in Gujarat and examined the process of developing an entrepreneurial mentality from five distinct perspectives. The study utilised 372 responses from STEM students with a propensity for entrepreneurship, and the findings were acquired through the variance-based Structural Equation Modelling (SEM) technique. Five independent variables like social motive, economic motive, entrepreneurial motive, need for success and psychological motive were identified after thorough literary research and weighed against the dependent variable Entrepreneurial Intention. The study and analysis through smart PLS revealed that the desire for achievement and economic incentives play a substantial intermediary function, but entrepreneurial and psychological motivations exert a moderate impact, and social motivations may have diverse effects on entrepreneurial intention.

Keywords: *Entrepreneurial Intention, economic motive, need for success, psychological motive, structural equation modelling, social motive*

Introduction

An individual's cognitive disposition and level of readiness to launch a brand-new business venture constitute entrepreneurial intention. Many personal, social, and environmental factors influence it, and it serves as an early sign of true entrepreneurial behaviour. The entrepreneurial purpose of STEM (Science, Technology, Engineering, and Math) students is influenced by a range of motives, encompassing personal, societal, and environmental aspects.

STEM students are typically equipped with the skills to recognise and address issues through scientific methodologies, rendering them highly capable of identifying and cultivating entrepreneurial prospects. According to Pandit, Joshi, and Tiwari (2018), students in STEM programmes are instructed to evaluate hypotheses and resolve problems through engagement in a diverse array of activities.

Students who excel in the STEM disciplines often become prosperous entrepreneurs due to their tenacity in navigating a company's first phases and their resourcefulness in resolving obstacles and uncertainties. The economic influence of high-tech entrepreneurship surpasses that of the overall rate of entrepreneurship in the private sector by a significant margin. Businesses that focus on cutting-edge tech hire a lot of people with science degrees and other professional credentials.

Theoretical Background and Literature Review

Our research is structured around the Theory of Planned Behaviour (TPB). According to Ajzen (1991), an individua's attitude towards the conduct, subjective norms, and perceived behavioural control influence one's propensity to immerse in one's own behaviour. Prior research by Liñán and Chen (2009) and Kautonen et al. (2015) demonstrates that the Theory of Planned Behaviour (TPB) is frequently applied to the cognisance of entrepreneurial intention. It has proven to be a valuable paradigm for comprehending how individual, social, and environmental elements impact entrepreneurial intention.

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Fayolle, Linan, and Moriano (2014) proposed that the incentives people receive when pursuing different business objectives might alter the above three elements of TPB.

Shapero and Sokol's Entrepreneurial Intention model (1982), later expanded upon by Krueger and Carsrud in 1993, focuses on analysing the entrepreneur's intention to act. As intention increases, the likelihood of the action being carried out also increases (Linán & Santos 2007). According to studies done in 2010 by Haynie et al., intrinsic motivation is one of the most significant factors in inspiring and directing entrepreneurial endeavours. In 2018, Barba-Sánchez and Atienza-Sahuquillo expanded upon the same basic idea. Therefore, initiating a firm entails logical and inspiring elements.

India, as a nation, has a collectivist culture, wherein the desires and goals of the society as a whole take precedence above the individual's needs and desires. According to this concept, an individual's social ties exert a remarkable dominance on their existence and acceptance by society and, consequently, their behaviour. The Temporal Construal Theory is a perfect FIT in case of STEM students as according to Liberman and Trope 1998, desirability is a factor that drives entrepreneurial intention in the long run whereas feasibility is the deciding criteria in the short run. As a result, STEM students' perceptions of feasibility affect their long-term ambitions, even if they lack the necessary means to start a firm, which can affect their short-term objectives.

Conceptual Background And Hypothesis Development

Social Motive

Social capital is the source of motivation, asserts Linan and Santos (2007). Spending time and energy cultivating relationships is an assured means to amass social capital (Lin, 2003). Grootaert and van Bastelaer, 2001, suggest that social capital makes knowledge more accessible, reduces transaction costs through process coordination, and makes group consensus more likely. Access to human and other types of capital is also expanded (Coleman, 1988). Like monetary wealth, social capital can rise and fall, says Svendsen (2004). In 2007, researchers Francisco Linan and Francisco Javier Santos discovered that the amount and quality of a person's or group's social ties impact social capital. To enable social capital to operate effectively, robust connections inside a community and less intimate connections between other communities are necessary (Woolcock and Narayan 2000). Hence, we develop the given hypothesis :

H1:Social motive has a positive impact on Entrepreneurial Intention

Economic Motive

According to Douglas and Shepherd, 2002, from an economic perspective, individuals opt for self-employment when they anticipate a higher overall satisfaction (including income, independence, risk management, work effort, and associated benefits) compared to their best job alternative. Entrepreneurship is motivated by the desire to achieve social and financial status, as suggested by the income-leisure choice paradigm (Begley & Tan 2001; Basu and Altinay 2002; Morris and Schindehutte 2005; Cassar 2007). The pursuit of power is a primary objective for aspiring entrepreneurs (Carter et al., 2003; Sarasvathy & Venkataraman, 2011).

The following hypothesis is therefore put forth:

H2: Economic motive has a positive impact on Entrepreneurial Intention

Entrepreneurial Motive

It is essential to cultivate the corresponding feelings and attitudes to cultivate an entrepreneurial mindset. According to Nguyen, Phan, and Vu Souitaris et al. (2007), the phrase "entrepreneurial inspiration" describes a change in attitude and drive towards starting a business that is stimulated by academic experiences or information. In 2007, Souitaris et al. posited that receiving favourable feedback regarding the pursuit of an entrepreneurial career can serve as emotional stimuli that positively influence perceptions of entrepreneurship. Entrepreneurship inspiration is a mental state that arises from exposure to entrepreneurial ideas, resulting in an entrepreneurial attitude and a fresh outlook on entrepreneurship.

Hence, we formulate the below stated hypothesis :

H3: Entrepreneurial Motive has a positive impact on Entrepreneurial Intention

Need for Success

Haynie et al. (2010) assert that the motivation to initiate a business stem from internal sources. It stimulates behaviour and provides the necessary energy to maintain and direct it towards its objective, keeping in mind the success it brings along. The rational and motivational factors behind initiating a business endeavour are examined (Sanchez & Sahuquillo 2018). The primary determinants in the initial stage are the external circumstances that either enable or restrict this behaviour (Ajzen, 1991; Bandura 1977).

This leads to the hypothesis:

H4: Need for success has a positive impact on Entrepreneurial Intention

Psychological motive

Participants in Kim Hoe Looi's study who scored high on measures of independence (also known as autonomy or freedom) were more entrepreneurially oriented (Basu and

Altinay, 2002; Morris and Schindehutte, 2005; Cassar, 2007;). According to Schwartz (2015), self-direction refers to the process of making and implementing decisions, as well as engaging in creative, experimental, and exploratory activities that align with the need for autonomy.

Henceforth, the researcher proposed the hypothesis:

H5: Psychological motive has a positive impact on Entrepreneurial Intention

Research Methodology

Pilot testing and sample design

A questionnaire was developed to verify the hypothesis. All of the model's variables were obtained from earlier research and adjusted to suit entrepreneurial intention standards. Fifty-three people participated in the pilot research, but their responses were not included. Ahmedabad, Rajkot, Vadodara, Surat, Jamnagar, Gandhidham and Anand (locations in the state of Gujarat) were the locations where the final survey was carried out. All the surveys were finished in the first half of the year 2023. Structured questionnaire responses averaged 17 minutes. Three hundred seventy-two responses inclined towards entrepreneurial intention were considered as respondents of the study. The resulting dataset is adequate for variance-based SEM analysis (Myers et al. 2011). Compared to the final structural questionnaire, this data collection has 13 times as many statements (Hair, Hollingsworth, Randolph, and Chong 2017). Data collection was carried out through personal interviews. Respondents were previously informed about the research and scale methodologies.

Demographic characteristics and measures

Demographics of the Respondents It turns out that just 46.70% (161) of respondents came from technical backgrounds, while 53.30% (184) came from non-technical ones. The age distribution of the study's participants was as follows: 168(48.70%) were under the age of 25, and 177(51.30%) were older than 25. Among those who responded to our survey, we found that 19.4 percent held an undergraduate degree, 48.1 percent a post-graduate degree, and 32.5 percent a professional degree in STEM disciplines. All responses were recorded using a seven-point Likert scale, where 1 signifies complete disagreement, 2 means moderate disagreement, 3 means disagreement, 4 means neutral (neither agree nor disagree), 5 means agreement, 6 means moderate agreement, and 7 means total agreement.

Measurement Model

In our model, CR > AVE guarantees convergent validity for internal models for all constructs that have already been discovered (Hair et al., 2016). Identifying the dissimilarities between latent constructs. Discriminant validity was used in this investigation. The HTMT (Heterotrait-Monotrait) calculation was carried out under the Discriminant validity. No HTMT values surpass the 0.85 threshold, and there are none below it, either (Hamid et al. 2017). Research establishes discriminant validity well within the defined limits when the analysis mentioned above is considered.

Testing of the hypothesis of the structural model

The structural model was run using Smart PLS 4 with 5000 bootstrapping samples. The analysis did not reveal any statistically significant changes (Ringle et al. 2015). The research findings unequivocally demonstrate that economic motivation (B = 0.19, t = 5.18, p = 0.00), entrepreneurial motivation (B = 0.26, t = 5.86, p = 0.00), the need for success (B = 0.43, t = 10.02, p = 0.00), influence an individual's decision to start a business. Nevertheless, the impact of social motivation (B = 0.078, t = 1.78, p = 0.0608) on the Entrepreneurial Intention is not found to be highly significant. Within this context, four out of the five direct linkages have positive effects, clearly indicating that four hypotheses, H2 to H5, support the existing literature. At the same time, H1 is not supported by the existing data set.

Table 1: Reliability and Sources of Measurement Model

Factor	Construct/Items	Cronbach's alpha (a)	CR	AVE	FL	Sources
SOM	SOCIAL MOTIVE	0.9029	0.9387	0.8363		Based on Linan et al. (2014)
SOM1	In my closest environment (close family, friends, and colleagues), entrepreneurial acivity is valued beter than any other acivity or career.				0.9403	
SOM2	If I decide to create a irm, people in my close environment would approve of that decision.				0.8878	

SOM3	It is commonly thought that entrepreneurs take advantage of others				0.9146	
ECM	ECONOMIC MOTIVE	0.9384	0.9529	0.8020		Based on Barba-Sánchez and Aienza -Sahuquillo (2018).
ECM1	I want to be inancially secure.				0.8927	
ECM2	I want to earn a lot of money and be independent				0.9107	
ECM3	I want to have job stability				0.8964	
ECM4	I want to be socially accepted				0.8946	
ECM5	I want to be the 'Boss'				0.8831	
ENM	ENTREPRENEUR MOTIVE	0.956	0.9660	0.8505		Based on Lingappa, Shah, and Mathew 2020
ENM1	I want to be an entrepreneur.				0.9223	
ENM2	My personal goal is entrepreneurship.				0.9250	
ENM3	I have the willingness to put in the efort to own a irm.				0.9121	
ENM4	I am seriously considering staring my irm.				0.9137	
ENM5	I will be an entrepreneur someday				0.9379	
SUC	NEED FOR SUCCESS	0.9115	0.9443	0.8498		Based on Fayolle, Linan, and Moriano 2014
SUC1	I need to reach a high level of income				0.9325	
SUC2	I want to carry out the kind of job I like				0.9282	
SUC3	I want to achieve great social recogniion				0.9046	
PSM	PSYCHOLOGICAL MOTIVE	0.9540	0.9631	0.8131		Based on Esfandier et al.2019 and Fayolle, Linan and Moriano 2014
PSM1	Being an entrepreneur implies more advantages than disadvantages to me.				0.8998	
PSM2	Being an entrepreneur would entail great saisfacion for me.				0.9027	
PSM3	I can control the creaion process of my new irm.				0.8939	
PSM4	It is easy to start your irm				0.9009	

PSM5	I can create products that can fulill customer's unmet needs				0.9102	
PSM6	I want to be on a path of posiive growth				0.9029	
ENI	ENTREPRENEURIAL INTENTION	0.9226	0.9509	0.8659		Based on Lingappa et al.(2020)
ENI1	I want to be an entrepreneur				0.9374	
ENI2	I have the willingness to put in the efort to own a irm				0.9310	
ENI3	I will be an entrepreneur someday				0.9232	

Table 2: Hypotheses

Path Efect	Beta	M	*t*-value	*p*-value (2-sided)	Hypothesis	Result
Social moive → entrepreneurial intenion	0.070	0.072	1.883	0.059	H1	NOT SUPPORTED
Economic moive → entrepreneurial intenion	0.192	0.193	5.180	0.000	H2	SUPPORTED
Entrepreneur moive → entrepreneurial intenion	0.262	0.261	5.865	0.000	H3	SUPPORTED
Need for success → entrepreneurial intenion	0.432	0.431	10.034	0.000	H4	SUPPORTED
Psychological moive → entrepreneurial intenion	0.164	0.165	4.323	0.000	H5	SUPPORTED

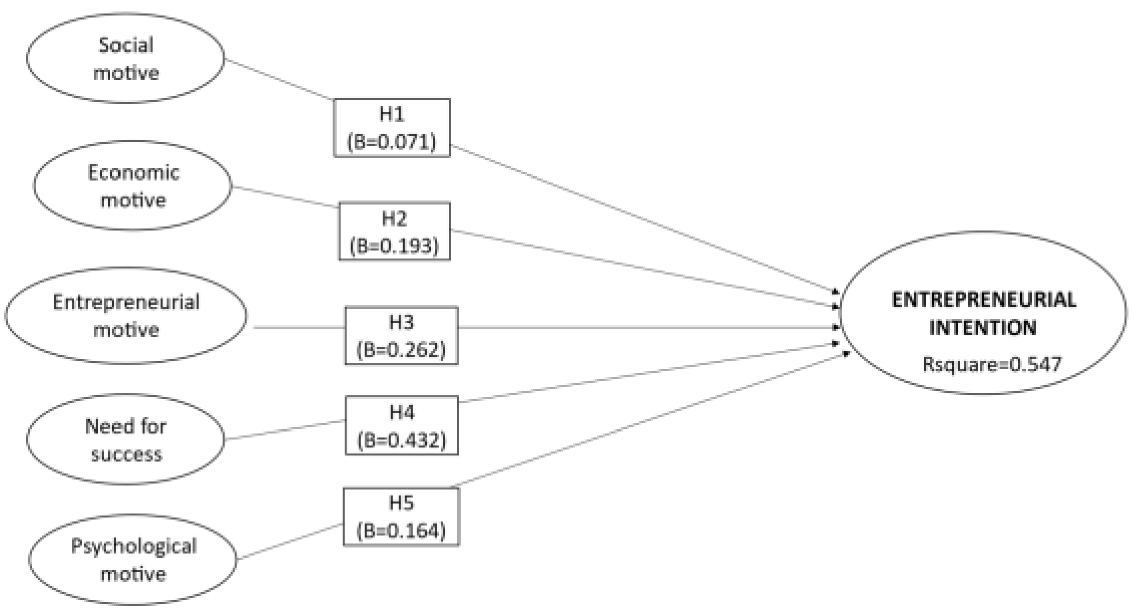

Figure 1 : STRUCTURAL MODEL, Source : Author's research

Table 3: Convergent Validity

z	Item	Factor loading	AVE	Cronbach's alpha(α)	Rho_A	CR	VIF
SOCIAL MOTIVE	SOM1	0.9403	0.3061	0.9029	0.9302	0.9387	3.2666
	SOM2	0.8878	0.3799				2.6321
	SOM3	0.9146	0.3466				2.8846
ECONOMIC MOTIVE	ECM1	0.8927	0.2917	0.9384	0.9436	0.9529	3.4277
	ECM2	0.9107	0.2767				3.6130
	ECM3	0.8964	0.2958				3.3807
	ECM4	0.8946	0.2941				3.3999
	ECM5	0.8831	0.3474				2.8784
ENTREPRENEURIAL MOTIVE	ENM1	0.9223	0.2315	0.956	0.9568	0.9660	4.3186
	ENM2	0.9250	0.2208				4.5282
	ENM3	0.9121	0.2475				4.0407
	ENM4	0.9137	0.2555				3.9141
	ENM5	0.9379	0.1882				5.3131
NEED FOR SUCCESS							
	SUC1	0.9325	0.2859	0.9115	0.9123	0.9443	3.4967
	SUC2	0.9282	0.2947				3.3926
	SUC3	0.9046	0.3732				2.6795
ENTEREPRENURIAL INTENTION							
	ENI1	0.9374	0.2664	0.9226	0.9568	0.9509	3.7532
	ENI2	0.9310	0.2809				3.5593
	ENI3	0.9232	0.3174				3.1504
PSYCHOLOGICAL MOTIVE	PSM1	0.8998					
	0.2670	0.954	0.9545	0.9631	3.7452		
	PSM2 PSM3	0.9027 0.8939	0.2587 0.2815				3.8642 3.5525
	PSM4	0.9009	0.2705				3.6964
	PSM5	0.9102	0.2431				4.1138
	PSM6	0.9029	0.2507				3.9891

Table 4 : Discriminant Validity

	ENTEREPRE NURIAL INTENTION	ENTEREPRE NURIAL INTENTION	ENTEREPRE NURIAL INTENTION	ENTEREPRE NURIAL INTENTION	ENTEREPRE NURIAL INTENTION	ENTEREPRE NURIAL INTENTION
ENTEREPRENURIAL INTENTION	**0.8659**					
PSYCHOLOGICAL MOTIVE	0.1786	**0.8131**				
NEED FOR SUCCESS	0.3594	0.0614	**0.8498**			
ENTREPRENURE MOTIVE	0.272	0.1987	0.1181	**0.8505**		
ECONOMIC MOTIVE	0.1118	0.0152	0.0222	0.0185	**0.8020**	
SOCIAL MOTIVE	0.0597	0.0232	0.0121	0.0262	0.0923	**0.8363**

Table 5: H.T.M.T Ratio

H.T.M.T Ratio						
	ENTEREPRE NURIAL INTENTION	**PSYCHO LOGICAL MOTIVE**	**NEED FOR SUCCESS**	**ENTREPRE NEUR MOTIVE**	**ECONOMIC MOTIVE**	**SOCIAL MOTIVE**
ENTEREPRENURIAL INTENTION	**0.8659**					
PSYCHOLOGICAL MOTIVE	0.1786	**0.8131**				
NEED FOR SUCCESS	0.3594	0.0614	**0.8498**			
ENTREPRENURE MOTIVE	0.272	0.1987	0.1181	**0.8505**		
ECONOMIC MOTIVE	0.1118	0.0152	0.0222	0.0185	**0.8020**	
SOCIAL MOTIVE	0.0597	0.0232	0.0121	0.0262	0.0923	**0.8363**

Table 6: Bootstrapping and effect size

Standard bootstrap results						
Relationship	**Original coefficient**	**Mean value**	**Standard error**	**t-value**	**p-value (2-sided)**	**p-value (1-sided)**
PSYCHOLOGICAL MOTIVE → ENTREPRENEURIAL INTENTION	0.164	0.165	0.0379	4.3233	0.0000	0.0000
NEED FOR SUCCESS → ENTREPRENEURIAL INTENTION	0.4323	0.4313	0.0431	10.034	0.0000	0.0000
ENTREPRENURE MOTIVE → ENTEREPRENURIAL INTENTION	0.2622	0.261	0.0447	5.8647	0.0000	0.0000
ECONOMIC MOTIVE → ENTREPRENEURIAL INTENTION	0.1927	0.1936	0.0372	5.1804	0.0000	0.0000
SOCIAL MOTIVE → ENTREPRENEURIAL INTENTION	0.0708	0.0727	0.0376	1.8831	0.0597	0.0299

Empirical Findings

The five exogenous latent dimensions exert a prominent impact on the endogenous construct of Entrepreneurial Intention. The need for success is the single most predominant predictor among all previously established independent factors. The inherent desire to accomplish a chosen target (0.432) is thereafter accompanied by the entrepreneurial motive (0.264). The economic motive has a weight of 0.193, psychological motive, 0.164, and social motive 0.071. The insights drawn above make it readily apparent that academics majoring in STEM are actively pursuing success, and this contributes to their predisposition to become entrepreneurs. Moreover, there is evidence that an economic incentive can bolster the self-assurance of STEM students and motivate them to pursue entrepreneurial endeavours with success.

Theoretical Contribution

The field of cognitive psychology is seeing advancement, and there is a growing acknowledgement of recognising the intricate nature of the entrepreneurial process. The aim of the authors in conducting this research was to foster additional intellectually stimulating and analytical research that focuses on the rising ideas of entrepreneurship. In addition, we aim to examine the connections within various antecedents that have been neglected in previous research on this topic. Multiple pioneering research has examined the correlations among motivation, achievement, and entrepreneurship. While these assumptions had a significant impact on the formulation of subsequent generally acknowledged theories, yet to be a comprehensive inquiry has been conducted in this domain.

Future Scope, Implications, Conclusion, Limitations

This research is valuable for governments, policymakers, universities, and entrepreneurship schools since it offers valuable insights for the development of educational programmes that equip aspiring entrepreneurs with the indispensable fundamental expertise for achieving success in their ventures. By fostering synergy among enterprises, academic institutions, and governmental organisations and nurturing a climate of ingenuity, one can enhance the global landscape for aspiring entrepreneurs.

This research has the potential to serve as the basis for further investigations into the subject of aspiring entrepreneurs. Based on the data, it can be inferred that economic motivation is highly linked to the aspiration of starting a firm, while social motivation has a negative correlation. Hence, STEM students are more inclined to express interest in and actively explore entrepreneurial prospects when they offer monetary advantages.

Future research endeavours could be enhanced by establishing multiple data collection mechanisms to gather information on attitudes, social norms, regulated behaviour, preferences for engaging in short-term risks, and the psychological well-being of diverse groups of students. Longitudinal data are particularly suited for examining the fundamental mechanisms that determine the urge to start an entrepreneurial venture.

The findings of this analysis illuminate the diverse factors that impact college students' choices to engage in entrepreneurial pursuits within the STEM areas. It is impossible to predict the extent to which students' entrepreneurial aspirations will develop in the coming years as they are now only assessed in the present time frame.

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Examining Intention among Millennials : An Entrepreneurial Attitude Orientation Approach

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Abstract

This study intends to investigate the relationship between various factors including attitude, subjective norms, perceived behavioural control, self-esteem, innovativeness, personal control and proactiveness and their impact on entrepreneurial intention. The research used a descriptive approach and collected data from 237 millennials in Delhi and Haryana. The data was accumulated using a questionnaire on a seven-point Likert scale and analysed using the Statistical Package for Social Science version 26. The study exhibited that entrepreneurial intention is strongly correlated with perceived behavioural control, but attitude showed poor correlation with perceived behavioural control. All independent factors, except proactiveness, had a strong correlation with the dependent variable. The findings suggest that proactiveness is insignificant variable in influencing entrepreneurial intention. The study provides valuable insights for policymakers and domain researchers, as it shows people's entrepreneurial tendencies empirically. The results indicate that dimensions of entrepreneurial orientation play a significant role in entrepreneurial intention.

Keywords: *Entrepreneurial intention, Entrepreneurial orientation, Millennials, Innovativeness, Attitude, Entrepreneurship*

Introduction

Entrepreneurship is a catalyst of societal health and wealth, promoting innovation, seizing new opportunities, enhancing productivity, creating employment, and addressing some of society's greatest challenges (GEM, 2024). Entrepreneurs play a protagonist in the growth and development of a nation by transforming viable ideas into reality. A critical aspect of entrepreneurship is entrepreneurial attitude, which reflects the extensiveness to which an individual is inclined positively or negatively towards pursuing entrepreneurship. This attitude predicts entrepreneurial intentions, which subsequently influence individual behavior. Entrepreneurial intention denotes an individual's commitment to starting their own enterprises, driven by their mindset and Entrepreneurial Attitude Orientation (EAO) attributes (Astuti & Martdianty, 2012; Prabhu et al., 2012).

Entrepreneurs possess distinct personality attributes that set them apart from others. Key traits viz; entrepreneurship, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, and proactiveness are crucial for developing entrepreneurship intentions (Prabhu et al., 2012). These characteristics are significant in igniting and nurturing the entrepreneurial spirit in individuals.

In the wake of the COVID-19 contagion, understanding the determinants of entrepreneurship & entrepreneurial intention has become crucial due to a significant rise in youth unemployment. The India Employment Report 2024 highlights that over 50% of the Indian population is under the age of 25, and 65% is under 35. It also reports that 83% of India's unemployed are young people, with their unemployment rate being six times higher than in previous years. In response, the government has launched numerous schemes to endorse entrepreneurial actions, aiming to support millennials by providing financial independence.

The overarching goal of this investigation is to access the influence of various EAO attributes on the intentions of millennials. Previous research has focused on attributes such as self-esteem, innovativeness, personal control, and

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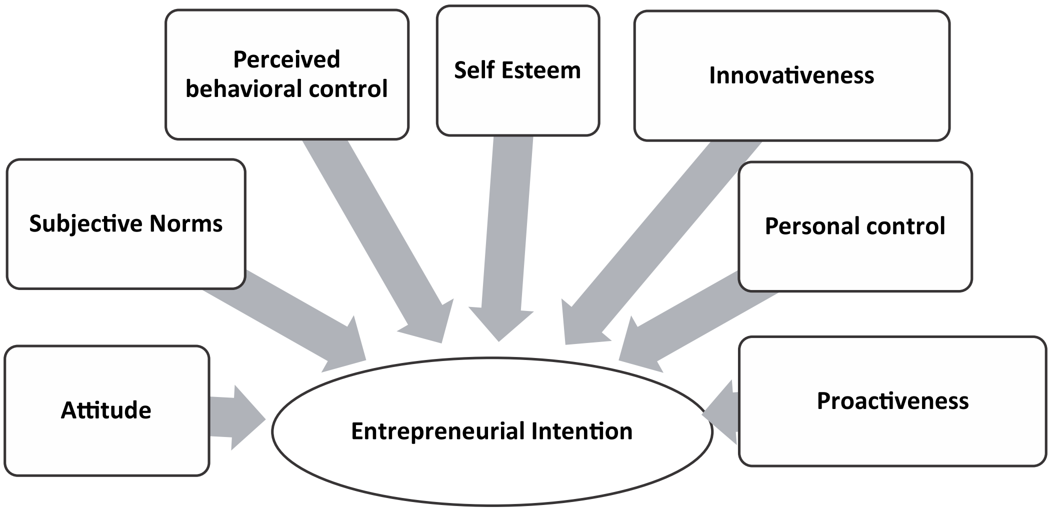
proactiveness, identifying them as key determinants of entrepreneurial intention. Researchers often use the antecedents of the Theory of Planned Behavior; TPB (attitude, subjective norms, perceived behavioral control) as mediating and moderating variables to investigate entrepreneurial intentions. However, no studies have considered these antecedents as part of the EAO attributes when examining their impact on intentions. Addressing this gap, this study proposes a conceptual model to investigate millennials' intentions regarding company ownership (Fig. 1).



(Fig1: conceptual framework of the study)
Source: The authors'

Review of Literature

Entrepreneurship is both a social and economic phenomenon characterized by rapid expansion, scalability, and significant job creation, profoundly influenced by attitudes and perceptions (GEM, 2024). It serves as a cornerstone for societal advancement through economic development, job creation, and investment (Soomro et al., 2021). At its core, entrepreneurship empowers individuals with the distinctiveness and flexibility to pursue their personal goals, aspirations, and dreams, making it essential for every economy to foster an entrepreneurial mindset (Soomro et al., 2021). Entrepreneurial attitude, which measures the realm of an individual's engagement in entrepreneurial actions to capture market opportunities is a crucial element (Mohd et al., 2020). This mindset, marked by initiative, risk-taking, and creativity can be cultivated through EAO model variables such as innovation, proactiveness, self-esteem, and personal control (Lele, (2018); Robinson et al., 1991). Despite the growing recognition of distinct entrepreneurial orientation (EO) noted by Bolton and Lane (2012), there has been a scarcity of empirical research exploring EO as a determinative element within the TPB. EO includes the progressions, practices, and authoritative styles that direct to new market entries and encompasses psychological qualities, beliefs, attributes, and attitudes associated with entrepreneurial drive (Mueller & Thomas, 2000). This study intends to ascertain the factors that nurture an entrepreneurial mindset, highlighting how attitude is shaped by personal control, innovation, goal accomplishment, self-esteem and proactiveness.

Psychological qualities are the best predictors of entrepreneurial intention, as highlighted by Krauss & Frese (2005). Psychological literature links personal traits to personalizing theory, aiding individuals in recognizing their uniqueness and desires. Factors such as attitude, achievement, and self-confidence significantly boost entrepreneurial intent (Ferreira et al., 2012). Attributes like attitude, subjective norms, perceived behavioral control, accomplishment, self-esteem and personal control, all influence entrepreneurial intentions. Moreover, need for achievement, proactiveness, and innovativeness perform a prominent role in enhancing the development of intentions towards entrepreneurship (Soomro, 2015). Entrepreneurial attitudes are shaped by the desire for accomplishment, personal control, innovativeness, and self-esteem (Robinson et al., 1991). This interconnected understanding underscores the importance of these psychological attributes in fostering a strong entrepreneurial mindset.

Entrepreneurial Intention

Individuals with higher entrepreneurial intentions tend to take intended risks, accumulate the resources, and initiate their businesses, thereby driving entrepreneurial behaviour. These intentions reflect a commitment to starting a firm and achieving self-sufficiency. Extensive research from various countries has sought to validate a correlation between entrepreneurial intentions and personality traits, demonstrating that entrepreneurial objectives reflect an individual's approach to pursuing an entrepreneurial career. This body of literature underscores that having a clear entrepreneurial goal is a significant indicator of one's readiness to pertain in entrepreneurial actions and underscores the importance of personality traits in shaping these intentions.

Attitude

Entrepreneurial attitude can predict future entrepreneurial behavior and is considered more effective than personality or demographic factors in studying business tendencies (Robinson et al., 1991). This attitude reflects a person's assessment or appraisal of entrepreneurial activities, measuring their preference for self-employment over organizational work. Studies indicate that the more entrepreneurial a person is, the more expectedly they are to pursue self-employment (Biswas & Verma, 2021). According to TPB by Ajzen (2002), an entrepreneurial attitude is a necessary precursor to entrepreneurial intentions, which signify an inclination to start a business, hope for financial returns, and readiness to seize lucrative opportunities (Linan & Chen, 2009; Shook & Bratianu, 2010). Souitaris et al. (2007) exhibited that students' entrepreneurial inclinations are firmly affected by their entrepreneurial mindset. Entrepreneurial intention studies reliably show that an attitude of individual towards entrepreneurial behavior plays a pivotal role in shaping entrepreneurial intention (Jamlee et al., 2021). Ultimately, a person's mindset is the most critical factor in determining whether they will engage in entrepreneurial activities, highlighting the importance of fostering a positive entrepreneurial attitude.

Subjective Norms

Subjective norms assess the realm to which individuals feel societal pressure to engage in or avoid entrepreneurial activities. This concept directly applies to whether one's "reference persons" would support their decision to become an entrepreneur (Ajzen, 2011). Subjective norms involve social expectations about appropriate behavior, and compliance with these norms can be influenced by the anticipated support from influential figures, such as parents (Lortie & Castogiovanni, 2015). Anwar et al. (2020) and Roy et al. (2017) indicates that an individual's likelihood of starting their own business is positively correlated with the supportive opinions of family, friends, and peers. Multiple studies highlight the critical role of subjective norms in entrepreneurial decisions (Al-Mamary et al., 2020; Kolvereid, 1997; Yang, 2013; Zhang et al., 2015). Subjective norms are shaped by perceptions of significant others, including family, companionships, and peers, about the appropriateness of entrepreneurial activities (Ajzen, 1991). Overall, research demonstrates that subjective norms exert a strong and positive influence on the inclination to commence a business.

Perceived Behavioral Control

Perceived Behavioral Control (PBC) denotes to an individual's estimation of how ease or difficult it will be to commence their own business, including the perceived viability of such an endeavor. This psychological concept describes a person's inclination to act and the perceived ease of performing a particular action. According to Krueger (1993), PBC is a being's assessment of their situational abilities, or self-efficacy, in a given milieu. The complexity or simplicity of a task is linked to the degree of perceived control over it, suggesting that an individual's likelihood of successfully completing an activity is directly proportional to their level of self-confidence (Bandura, 1986). Research by Bandura, (1986), Hassan et al. (2020), and Roy et al. (2017) depicts that one's insight of their behavioral control is a critical factor in determining their career path. PBC encompasses both the ability to execute an activity and the credence in one's aptitude to control their behavior. According to Gundry and Welsch (2001), PBC reflects being's credence in their aptitude to start a business, illustrating how one perceives the difficulty of a task. Literature consistently indicates that PBC is the most significant variable when examining entrepreneurial intentions.

Self Esteem

In the philosophy of social studies, self-respect is perceived as a crucial perception of what a person deserves (Bandura, 1977). Self-esteem, which states to person's opinion of their own value, is a fundamental psychological characteristic associated with self-evaluation, enabling self-judgment (Morris Rosenberg & Carmi Schooler, 1995). Self-esteem influences human behavior and impacts personal development and progress. Research has shown significant differences in motivation, cognitive & emotional processes, and behavior between ones with high and low self-esteem. Individual possessing low self-esteem are less assured than higher ones with their self-worth and more susceptible to environmental influences that alter their self-perception. Moreover, self-esteem is a prerequisite for success, fostering risk-taking, the pursuit of novel solutions, persistence, and endurance. Individuals with stronger self-esteem perceive greater value in their endeavours and are more willing to exert the necessary effort, allowing them to be confident in their potential for success. These studies indicate that self-esteem significantly affects an individual's entrepreneurial intention.

Innovativeness

Innovativeness is a mindset that recognizes and pursues creative opportunities, enabling entrepreneurs to think creatively and identify possibilities that others might miss. Literature suggests that innovation significantly influences business performance and entrepreneurial intent (Hisrich et al., 2008). Innovativeness is a defining behavior of entrepreneurs and entrepreneurial orientation, as noted by Entrerizo et al. (2000), with entrepreneurs continually seeking new opportunities (Zacharakis, 1997). Research by Stewart et al. (2003) and others highlighted that entrepreneurs and managers can be distinguished by their intrinsic innovative spirit. Utsch and Rauch (2000) revealed a significant correlation amid innovativeness and venture success. Similarly, Thomas and Mueller (2000) identified innovativeness as a crucial trait in describing the entrepreneurial profile, emphasizing that entrepreneurs are more likely to be innovators than managers (Gürol & Atsan, 2006). Studies show a positive correlation between students' innovativeness and their ambition to start their own businesses, underscoring the robust connection between an entrepreneurial mindset and an inventive one.

Personal Control

Personal control indicates a person's credence in their potential to influence positive outcomes and prevent negative ones. This concept emphasizes that having control over one's choices significantly impacts one's life (Diaz & Rodriguez, 2003; Hisrich et al., 2008). Maintaining personal control is crucial for staying motivated, especially when governing a challenging business. It also enhances learning and adaptability (Diaz & Rodriguez, 2003; Mueller & Thomas, 2000). Personal control manifests in determination and hard work, a skepticism of luck and fate, confidence in one's abilities, and the conviction to succeed (Kristiansen & Indarti, 2004). Extensive research indicates a strong correlation between the belief in one's agency and entrepreneurial behavior (Roberts & Robinson, 2010). Studies suggest that individuals who exercise personal control tend to be more adaptable and effective learners (Diaz & Rodriguez, 2003; Mueller & Thomas, 2000). This underscores the importance of personal control in fostering entrepreneurial intentions and behaviors of an individual.

Proactiveness

Proactiveness is a quality that enables individuals to handle unforeseen situations effectively (Hu et al., 2018). It is linked to professional success and is characterized by a consistent tendency to take the initiative in various contexts and activities (Seibert & Kraimer, 2001). Proactiveness involves efficiently and effectively taking action in a changing environment and includes a propensity to influence one's surroundings (Batemans & Crant, 1993). It helps prevent problems by anticipating and addressing them before they escalate (Khan et al., 2019). Proactive individuals are more likely to capitalize on external opportunities (Kushev et al., 2019), and entrepreneurs often exhibit this trait (Prabhu et al., 2012). Proactiveness means taking action to initiate change (Bateman & Crant, 1993) and handling unexpected events by monitoring the external world and being more vigilant than others. An individual's proactive behavior can be assessed by their ongoing search for new mechanisms to ameliorate their life, their capacity to recognize opportunities, their competency to become opportunistic, and their tenacity to overcome obstacles (Bateman & Crant, 1993). Studies consistently link proactiveness to entrepreneurial intention, highlighting its importance in fostering an entrepreneurial mindset.

Researchers have identified that risk-taking inclination, need for accomplishment, innovativeness, and locus of control are among the most influential personality attributes affecting entrepreneurial intention (Akanbi, 2013). However, the majority of research inspecting the impact of personality factors such as self-esteem, innovation, proactiveness, self-efficacy, personal control, locus of control, and risk-taking inclination on entrepreneurship has produced conflicting results. Most studies have endeavored to link distinct individualities with entrepreneurial motivation across various industries. Subjective norms and PBC, which are antecedents of TPB, are often viewed as mediating or moderating elements in gauging entrepreneurial intention (Anwar et al., 2020; Biswas & Verma, 2021; Gupta & Bhawe, 2007; Lee-Ross, 2017; Lee et al., 2011; Prabhu et al., 2012; Robinson et al., 1991; Soomro, 2015; Soomro et al., 2021; Wathanakom et al., 2020; Zhang et al., 2015). Many studies have focused on either personality characteristics or psychological features when characterizing entrepreneurial intention and attitude. Psychological qualities viz; the need for accomplishmnet, risk-taking, uncertainty lenience, and self-efficacy are particularly important (Aggarwal, 2023). After a rigorous assessment of the literature, the authors acknowledged seven key dimensions of personality traits: attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, and proactiveness (fig 1).

Research Objectives

1. To assess the prevalence of EAO dimensions (attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, and proactiveness) among millennials.
2. To investigate the interrelationships among various entrepreneurial orientation dimensions.
3. To predict the level of entrepreneurial intention based on entrepreneurial orientation dimensions.

Research Methodology

This research utilizes a survey questionnaire to inspect the entrepreneurial intentions of participants. The survey questions were adapted from prominent entrepreneurship researchers, including Robinson et al. (1991), Jackson (1994), and Linan & Chen (2009). The questionnaire was distributed online, garnering responses from 237 participants. Participants were selected using a purposive sampling technique. A cover letter accompanying the questionnaire detailed the study's objectives, assured participants of the confidentiality and privacy of their information, and emphasized the voluntary nature of their participation. The respondents, all millennials, were surveyed using a structured questionnaire administered via email, personal contacts, and the snowball technique. The survey targeted millennials from Delhi and Haryana, collecting data on demographic variables (gender, age, qualification) and

Entrepreneurial Attitude Orientation (EAO) attributes (attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, and proactiveness), along with their entrepreneurial intentions.

Measurement scale

The survey instrument was meticulously designed to align with the specific information required for this study. We adapted entrepreneurial question types from established instruments previously developed by field researchers, ensuring they were both relevant and robust for our investigation. The structured questionnaire used in this study encompasses eight key constructs: attitude (Linan & Chen, 2009), subjective norms (Trivedi, 2016), perceived behavioral control (Linan & Chen, 2009), self-esteem (Dona & Sud, 2002), innovativeness (Jackson, 1994), personal control (Robinson et al., 1991), proactiveness (Bateman & Crant, 1993), and entrepreneurial intention (Linan & Chen, 2009).

The questionnaire is categorized into two distinct parts. The initial part captures the demographic profiles of the respondents, although the subsequent part aims to assess their perceptions through 49 items designed to elucidate how millennials view their distinctive personalities and the impact of these traits on their entrepreneurship intentions. Each item was judged by using a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). To enhance the accuracy of the responses, some items on the scale were reverse-scored to mitigate potential response bias.

Data Analysis & Results

Researchers employed descriptive statistics and correlation analysis for the quantitative analysis. Descriptive statistics were generated to provide fundamental information, and the reliability of variables was assessed by using Cronbach's alpha. Correlation & regression analysis were employed to examine the relationships between the constructs.

Demographic Details

Table1. Demographic profile of respondents (N=237)

Demographic variable	Category	Frequency	Percentage
Age	19-21	16	6.8
	21-23	41	17.3
	23-25	76	32.1
	25 or above	104	43.8
Gender	Male	93	39.2
	Female	144	68.8
Qualification	Bachelor degree	88	37.1
	Master degree	144	60.8
	Others	5	2.1

Source: primary data

The demographic factors explored included age, gender, and qualification. Among the participants, 39.2% were male and 68.8% were female. The majority of respondents were 25 years or older (43.8%), followed by those aged 23-25 years (32.1%), 21-23 years (17.3%), and 19-21 years (6.7%). Regarding educational level, 60.8% of respondents held a master's degree, 37.1% had a bachelor's degree, and 2.1% had other qualifications (Table 1).

Descriptive statistics and reliability assessment

Table2. Descriptive statistics (N=237)

Variables	Mean	Standard deviation	Alpha
Entrepreneurial Intention	5.5097	1.32516	.845
Attitude	5.8952	1.31875	.874
Subjective norms	5.4367	1.28848	.843
Perceived Behavioral control	5.0373	1.36634	.851
Self esteem	5.4266	.88298	.856
Innovativeness	5.0278	.65773	.864
Personal Control	5.3528	.77946	.855
Proactiveness	5.5853	.92182	.853

Source: primary data

Descriptive statistics was applied on the complete sample. The mean ranges from 5.0278 (innovativeness) to 5.8952 (attitude) and standard deviation ranged from 0.65773 (innovativeness) to 1.36634 (perceived behavioral control) on a 7-point Likert scale of strongly disagree (1) to strongly agree (7). The internal consistency among the items confirmed by Cronbach α. The reliability of individual variable was ranged from 0.843 to 0.874 and that was satisfactory (Table 2).

Correlation

Table3. Correlation Matrix (N=237)

	Entrepreneurial Intention	Attitude	Subjective Norms	Perceived behavioral control	Self Esteem	Innovativeness	Personal Control	Proactiveness
Entrepreneurial Intention	1	.402**	.622**	.762**	.416**	.479**	.536**	.431**
Attitude		1	.433**	.325**	.434**	.389**	.388**	.341**
Subjective Norms			1	.670**	.487**	.409**	.501**	.583**
Perceived Behavioral Control				1	.354**	.335**	.439**	.518**
Self Esteem					1	.612**	.616**	.631**
Innovativeness						1	.632**	.446**
Personal Control							1	.591**
Proactiveness								1

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

To accomplish the objectives of the study, investigators identified correlations among the variables under investigation i.e., to scrutinize the relationship between the variables, after checking the validity of the survey questions. Pearson's correlation analysis showed a substantial link between variables at p=0.01 level (Table 3). These correlations range from 0.325 to 0.762 and all are significant at 0.01 level. In this study, dependent variable i.e., entrepreneurial intention was found to be substantial relationship with the sovereign variables viz attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control & proactiveness at $p<0.01$. The highest correlation of 0.762 has been reported between perceived behavioral control & entrepreneurial intention and lowest correlation of 0.325 exist between attitude and perceived behavioral control. However, no relationship was found to be greater than 0.762. In regards to analysing the correlation amongst attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, proactiveness and entrepreneurial intention, it is interpreted from table 3 that variables are positively interrelated with each other altogether. A one's attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, and proactiveness are all positively connected with their inclination to engross in entrepreneurial activity at $p<0.01$ with r=.402, r=.622, r=.762, r=.416, r=.479, r=.536, r=.431 respectively. Attitude is significantly correlated with subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control & proactiveness at $p<0.01$ with r=.433, r=.325, r=.434, r=.389, r=.388, r=.341 respectively. Subjective norms is positively allied with PBC, self-esteem, innovativeness, personal control, proactiveness at $p<.01$ with r=.670, r=.487, r=.409, r=.501, r=.583 respectively. Perceived behavioral control is positively correlated with self-esteem, innovativeness, personal control, proactiveness at $p<0.01$ with r=.354, r=.335, r=.439, r=.518 respectively. Self-esteem is positively correlated with innovativeness, personal control, proactiveness at $p<0.01$ with r=.612, r=.616, r=.631 respectively. Innovativeness is positively correlated with personal control, proactiveness at $p<.01$ with r=.632, r=.446 respectively. Personal control is positively correlated with proactiveness at $p<.01$ with r=.591 respectively.

Regression analysis

Table 4. Regression analysis (N=237)

S. No.	Predictors	Regression coefficient (b)	Standard error	t value
	Constant	-.504	.426	-1.183
X1	Attitude	.076	.045	1.708
X2	Subjective norms	.119	.059	**2.071**
X3	Perceived behavioural control	.609	.051	**11.517**
X4	Self esteem	.009	.087	.153
X5	Innovativeness	.154	.107	**2.895**
X6	Personal control	.167	.096	**2.938**
X7	Proactiveness	-.152	.081	-2.703
Dependent measure				
Multiple R= 66.63 R^2 = .670				
F= 16.624 DF= 7 and 229				

Note: The values in bold are used for justifying the parameters of entrepreneurial intention

Regression analysis is used to see how much dependent variable (entrepreneurial intention) is explicated by independent variable (entrepreneurship orientation attributes). The values of the regression coefficients are shown in Table 4 for quick examination of the findings. The following is a general equation for multiple regressions with seven predictors and one dependent measure (Y):

$$Y= a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7$$

The regression equation then appears as follows when the values of all predictors' regression coefficients are substituted:

$$Y= -0.504 + (0.076X_1) + (0.119X_2) + (0.609X_3) + (0.009X_4) + (0.154X_5) + (0.167X_6) + (-0.152X_7)$$

According to the result, perceived behavioral control has significant effect (b= .609; $p<0.01$), personal control (b= .167; $p<0.01$), innovativeness (b= .154; $p<0.01$), subjective norms (b= .119; $p<0.01$), attitude (b= .076; $p<0.01$) and self-esteem (b=.009; $p<0.01$) to the entrepreneurial intention. Among all dimensions of entrepreneurial orientation, perceived behavioral control is strong predictor i.e., for every unit increase in PBC; entrepreneurial intention increases by 0.609 units. However, personal control, innovativeness, subjective norms, attitude and self-esteem are also strong predictors of entrepreneurial intention i.e., for every unit increase in personal control, innovativeness, subjective norms and attitude entrepreneurial intention increases by 0.167, 0.154, 0.119, 0.076 & 0.009 units respectively. Table 5 illustrates that the multiple regressions amid the predictors and dependent variable are 0.670. The obtained F for the significance of multiple R=66.630. The degree of freedom being 7 and 229, the F is significant at 0.05 probability level. The square of multiple R, coefficient of multiple determination (R^2) was of the order 0.670 thereby recommends that all the predictors conjointly explain 67 percent of the total variations in entrepreneurial intention.

Discussions & Conclusion

This study enhances the understanding of entrepreneurial intention by detecting seven fundamental personality attributes that influence millennials: attitude, subjective norms, perceived behavioral control, self-esteem, innovativeness, personal control, and proactiveness. The intention to promote entrepreneurship among millennials was assessed using robust empirical techniques on a sample of 237 participants from Delhi and Haryana. Each personality trait's significance was thoroughly examined, contributing to a deeper understanding of entrepreneurial psychology through the EAO model.

PBC emerged as the utmost significant trait influencing entrepreneurial intention, indicating that millennials are inclined to tackle challenging chores and set strongest performance matches in their ventures. Personal control was identified as the second most influential trait, highlighting that millennials believe accomplishments and failure depend on their competences and their drives rather than luck. This finding aligns with the interpretations of Diaz & Rodriguez, (2003); Mueller & Thomas, (2000)

Innovativeness followed as an important trait, with entrepreneurial millennials displaying a higher level of creativity in identifying and seizing opportunities. This is supported by the research of Souitaris et al. (2007) & Ahmed et al. (2010). Subjective norms also play a substantial role, indicating the effect of social pressures and expectations on entrepreneurial intention. Additionally, attitude and self-esteem were observed significantly impact entrepreneurial intention.

Interestingly, the study revealed that proactiveness does not predict entrepreneurial intention among millennials, supporting Osiri et al., (2019), who argued that proactiveness is more predictive of social entrepreneurial intention than psychological aspects.

Overall, the findings demonstrated that all the identified variables, except proactiveness, had a constructive and significant impact on the desire to trail entrepreneurship. This is persistent with previous research by Kolvereid (1996b), Autio et al. (2001), Gird and Bagraim (2008), and Soomro (2020). In the context of a evolving nation, this research validates the EAO model, showing how these traits can foster entrepreneurial intention.

The study aligns with earlier research by Robinson et al. (1991), Soomro and Shah (2015, 2020), and Ferreira et al. (2012), which found significant links between these traits and entrepreneurial intentions. Ultimately, the study confirms a positive and substantial correlation between EAO and the ambition to become an entrepreneur, consistent with Ajzen, (1991, 2001); Souitaris et al., (2007); Fini et al., (2009); Robinson et al., (1991); Kennedy et al. (2003); Soomro, (2015, 2021). Our findings indicate substantial associations between attitude, self-esteem, personal control, perceived behavioral control, innovativeness, and subjective norms with entrepreneurial intention, but not with proactiveness.

Research Implications

In emerging countries, overpopulation, technological innovation, and saturation of government jobs drive the need for an entrepreneurial mindset and behavior among the youth. This research is crucial for young people in developing nations to understand and foster entrepreneurialism. Consequently, the study has substantial effects for prospective entrepreneurs and policymakers. It delivers a more profound comprehending the distinct attributes that forthwith impact entrepreneurial intentions and how these traits can be leveraged in order to succeed entrepreneurial ventures. Additionally, the research underscores the perquisite of policy oriented initiatives to enhance the chances for advancement or progress for entrepreneurs, thereby supporting the growth and development of future entrepreneurs.

Limitations & Future Scope

Despite the promising findings, this research possesses some limitations that must be addressed in forthcoming researches. Conducted in Delhi and Haryana with a sample size of 237 millennials, the study did not include responses from other states in India. Future research should expand the sample to include a comprehensive range of millennials from various states to augment the extraneous validity of the findings. Another limitation is that the study focused solely on psychological attributes, which may not precisely predict an individual's entrepreneurial intention.

Future research should attempt to incorporate social and cultural factors, along with additional traits such as self-assurance, loyalty, reliability, risk-taking propensity, capability, need for achievement, and resilience, to analyze their impact on entrepreneurial intentions. Comparative empirical investigations could also be employed to examine the realm of these personality traits in both males and females. Furthermore, longitudinal research could evaluate the effect of these distinct personalities on entrepreneurial feat at different phases of an individual's entrepreneurial journey.

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A Suggestive Framework for Examining the Influence of Workplace Ostracism and Task Independence on Employee Turnover: A Case of Women Employees in the IT Sector in India

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Abstract

The current study aims to analyze the impact of workplace ostracism and task independence on employee turnover under the influence of self-efficacy as a moderating variable and gender ratio as well as management approach in the institution as a mediating variable. The study fills a gap in existing research by focusing on female employees in the Indian IT sector, where workplace ostracism and lack of task independence are prevalent challenges. Employee turnover intention has been demonstrated to be significantly influenced by task independence and workplace ostracism. The role of both moderating and mediating variables is also established leading to the inference that attempts should be made for more inclusivity, growth of self-efficacy, and improvement in gender ratio in the organization to reduce the level of employee turnover.

Keywords: *Workplace Ostracism, Task Independence, Employee Turnover, Gender ratio, Self – efficacy etc.*

Introduction

Employee turnover intentions refer to the willingness of employees to leave working with the firm due to the occurrence of certain events and specific socio-cultural or economic factors like compensation structure, during a particular time. Here, it should be also noted that such variables can impact employees over a long time frame or be a result of sudden activities (Chiat & Patnaik, 2019). Female employees have often been reported to have discrimination regarding certain aspects such as promotion and getting access to different projects which can impact their turnover intentions and will be discussed in the current study. A major aspect of such rise is workplace ostracism which according to Henle et al. (2022) is willful exclusion from both formal and informal groups in the corporate society due to them being of a particular gender, race, and caste which can impact their daily performance of duties and also completion of different job responsibilities. Workplace ostracism has often been connected with instances of anxiety and depression among individuals as well and hence needs to be taken into account by the management. While several strategies have been suggested to reduce workplace ostracism in the organization, several factors such as gender ratio and management strategy in the organization have not been considered which will be done in the current study. Therefore as noted in the analysis of prior studies, the current study will attempt to analyze the different factors that affect turnover intentions of the employee, subsequently impact of task independence and workplace ostracism on employee turnover, and then try to evaluate the relationship between workplace ostracism and turnover intention among female employees in Indian IT sector.

Literature Review

Workplace Ostracism

Workplace ostracism is defined as a corporate exclusion in which employees due to specific gender, race, or other discriminatory factors are excluded from participation in different projects, getting access to training and development programs, and consideration for promotion despite having the same level of experience and educational qualification than their counterparts (Howard et al. 2020). Workplace ostracism as analyzed by Sharma & Dhar (2022) has significant negative impacts on the organization both in terms of personal as well as professional relationships an employee may enjoy with the organization. Similarly, an organization which have seen the presence of workplace ostracism often find it harder to compete with their counterparts who have a higher sense of belonging

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with the organization, which ultimately impacts the profitability and survival of the organization over a longer timeframe, thus making it important for management intervention. As noted by Fatima et al. (2023), workplace ostracism can be witnessed in the organization in different forms such as biased treatment towards some employees, exclusion from informal groups, exclusion from knowledge sharing, and lack of social and emotional support which is expected in conducting the work. Here, it should be noted that each organization may not see each aspect but these are common forms of workplace ostracism which shall be focused upon by management. Bedi (2021) further analyzed the impacts of workplace ostracism and suggested it has a negative influence both on employee willingness to work as well as the health of employees. The presence of workplace ostracism has been connected with growth in anxiety and stress among them which often has a negative health impact. Hence, the management of the organization has to focus on reducing the presence of workplace ostracism among different levels of employees in the organization.

Task independence

Task independence as defined by Endri (2020) is authority and responsibility which is delegated by management to employees in the organization to perform a task without being interrupted in the performance of the task. Here, it should be noted that independence to perform a task is not beyond the objectives of the organization. Therefore, an employee must perform different duties in the organization in such a manner that it does not impact different functions that are being simultaneously performed and aids in the achievement of organization objectives. Hence, Task independence will not supersede le the organization structure which has been established. As further noted by Agrawal et al. (2021), the concept of task independence has also significantly grown with the adoption of different technological tools which has empowered employees to work independently and focus on different aspects of the work simultaneously. However, this study has only focused join the technological perspective, whereas task independence is also dependent upon several social factors such as the willingness of management to provide employees independence, the willingness of employees to actually do a task independently, and the availability of different resources in the organization. These factors also need to be analyzed with respect to the level of workplace ostracism. A study conducted by Bhankaraully et al. (2022) has suggested task independence is closely connected with the level of ostracism faced by employees. If employees face ostracism, they either do not get the opportunity to work independently or even if they get, several challenges and obstacles may exist which can impact them from performing their duties. However, ostracism only impacts one group of employees but it may promote task independence for another group that does not face sigh challenges. Therefore, though workplace ostracism is not desirable, it impacts several employees both positively and negatively and the solution lies in comprehensive inclusion and not selective exclusion.

Turnover Intentions

The willingness of employees to quit a company within a given period for a variety of reasons, which can be both financial and social, has been termed by Park & Min (2020) as turnover intentions. Here, it should be noted that the actual turnover rate and turnover intentions may be different. Turnover Intention will only transform into actual turnover if aspects such as better jobs which can address the economic and social challenges of employees are met. Job turnover intentions are a result of a lack of satisfaction as well as the willingness to conduct the job in the current work environment which has been affirmed in the study conducted by Skelton et al. (2020). This relationship hence can be different across different institutions and even among firms in the same industry, as such attributes have a different level of influence, and hence must be evaluated in each case to develop strategies to retain employees. The connection between job turnover intentions and the level of job satisfaction is well established in the study conducted by Alam & Asim (2019). Therefore any factor which can impact job satisfaction is also suggested to have an impact on job turnover intentions, though the strength of influence may be different due to the presence of other variables. Accordingly, if employees feel excluded which is a major impact of workplace ostracism, they may not enjoy a higher level of satisfaction which then reflects in an increased willingness to switch to a better job. The logical model establishing the relationship has been covered in the study conducted by Anasori et al. (2021) in which workplace ostracism has been suggested to have a negative influence over the level of work engagement among employees, which is considered to directly influence the level of willingness to work in Industry, and hence the employee turnover intentions are directly connected to the level of workplace ostracism.

Factors moderating/mediating the negative impact of workplace ostracism on turnover intentions

The feeling of self-efficacy among employees as noted by Afzal et al. (2019) is belief in the individual that they will be able to complete a task efficiently under a given timeframe, which hence impacts their engagement with the job, and also their willingness to stay in the organization, and hence turnover intentions. Such feelings can be impacted by the presence of workplace ostracism as it reduces their total capacity to work in an office and subsequently perform their duties efficiently. In the current study, the link will be examined by taking selfefficacy into account as a moderating factor that affects the impact of workplace exclusion on turnover intentions. Similarly, as stated in the study by Nourani et al. (2022), the gender ratio can affect the degree of work engagement and turnover intentions because employees of a particular gender, particularly female employees, may experience limited representation and consequently be unwilling to work in such an organization. However, it should be noted that gender ratio challenges may not be felt at each organization even if the ratio remains similar at different firms. As a result, the proportion of men to women will be used in the current study as a mediating variable to explore its impact on the association between workplace exclusion, task independence, and turnover intentions. Different management facets, as examined by academics Dwesini (2019), significantly influence employees' willingness to leave their jobs. The management can guarantee a higher inclusion rate, encourage employee involvement, and foster a positive workplace culture. Management aspect has both direct and indirect impact but its role on workplace ostracism remains harder to measure since the latter variable is impacted by both formal and informal relationships, in which informal relationship is not directly influenced by management attributes, whose impact will be studied as a mediating variable in the current study.

Research Gap:

The results of previous research, as well as studies by Vui-Yee & Yen-Hwa (2020) and Dash et al. (2023), have suggested a direct link between workplace exclusion and intentions to leave, but the effects of various mediating factors, such as the gender ratio in the organization and management style, have not been covered. There is a significant vacuum in the research about the significance of self-efficacy, which will be investigated in the current study. Along with determining the influence of the previously described factors, the present study will also attempt to determine the link between task independence and turnover intentions.

Objectives of the study:

To accomplish the aforementioned purpose, the study will focus on addressing the following objectives:

- To understand the factors affecting the turnover intentions of the employees.
- To analyze the impact of task dependence and workplace ostracism on turnover intentions.
- To evaluate the nexus between workplace ostracism and turnover intentions.

Conceptual Framework

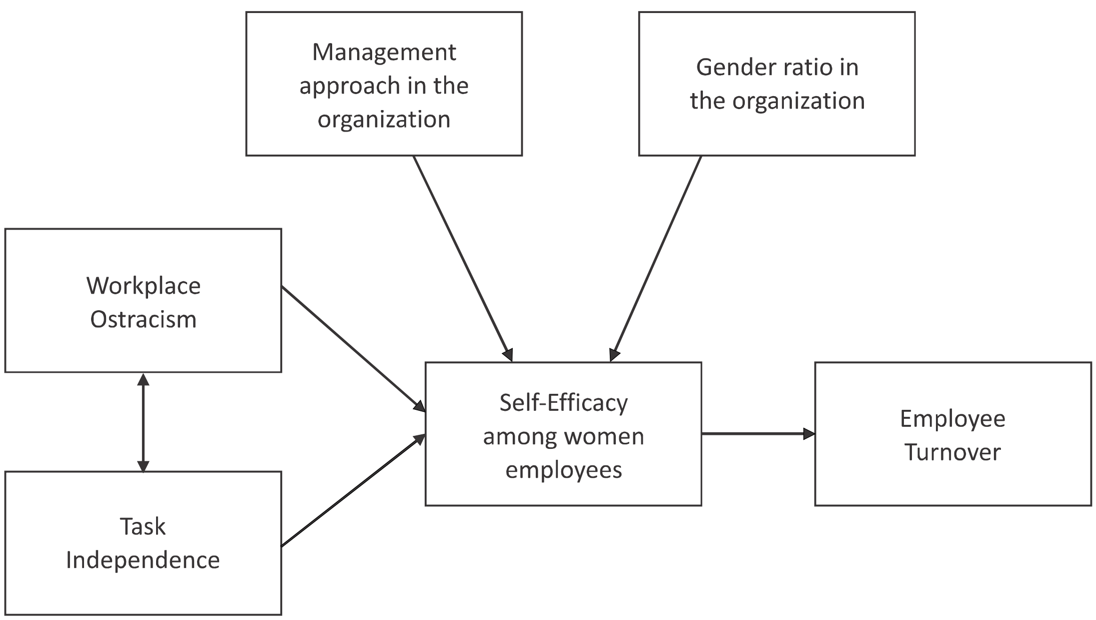

Figure . Conceptual Framework
Source: Author

Methods and Materials

A positivist paradigm and quantitative research approach as suggested by Bloomfield & Fisher (2019) have been adopted for conducting Statistical analysis. The data will be collected from 384 female employees who have been selected from the total population of female employees in the IT sector using a random sampling technique as noted in the study by Berndt (2020) as it allows randomness. The data will be collected from survey-based quantitative questionnaires which have been developed based on prior studies which have been analyzed below.

Different ethical considerations established by institutions have been followed to ensure anonymity and confidentiality.

Data Analysis Tools

Different statistical tools have been adopted for the study, like the Cronbach alpha test which according to Amirrudin et al. (2021) aids in analyzing the reliability of the questionnaire instrument. Two distinct models have also been adopted in the current study such as Hayes process model 5 and Hayes process model 7, which aids in conducting regression analysis by taking into account the role of different mediators and moderators in the relationship which has been established in the study. The adoption of such models will allow effective analysis of the relationship between different variables.

Results and Discussion

Analysis of the relationship between Workplace Ostracism, Self-efficacy, Gender Ratio, Management Approach on the organization, and Employee Turnover

Hayes Model 5

Table 1. Hayes Model 5 Summary

OUTCOME VARIABLE:						
Employee						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
1.0000	1.0000	.0000	7.804E+024	5.0000	378.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	3.0116	.0000	3.936E+011	.0000	3.0116	3.0116
Workplace	.2500	.0000	1.098E+011	.0000	.2500	.2500
Gender	.1667	.0000	2.327E+011	.0000	.1667	.1667
Manage	.0000	.0000	-.3696	.7119	.0000	.0000
Self	.5833	.0000	1.351E+012	.0000	.5833	.5833
Int_1	.0000	.0000	.0502	.9600	.0000	.0000
Product terms key:						
Int_1 : Workplace x Self						

Source: Author

The analysis of results has suggested a direct influence of workplace ostracism on employee turnover which is in agreement with studies conducted on other sectors by Li & Zhang (2019) and Turkoglu & Dalgic (2019). This relationship has been based on a model that ostracism impacts the willingness to work hence influencing the level of turnover which has also been validated in the current study. However, the current study establishes this for female employees in the IT sector which has been missing in a prior study, hence also aiding in ensuring the universalization of the relationship by exploring it in different employee sections.

Another major observation is gender ratio in an organization has a significant impact on employee turnover which is in contrast with the study by Hassan & Shafiq (2019), but here it should be noted that the gender of only the CEO was considered in the prior study whole current study has attempted to analyze gender ratio for entire organization employee base. The study by Jenkins & Sherman (2020) however established gender as a factor affecting employee turnover when it is analyzed throughout the organization. Therefore it can be inferred that the gender of a singular position may not matter but as an attribute considered throughout the organization, gender level impacts the turnover.

In the analysis of results, it has also been noted that the Management approach being adopted by the institution has no impact on the level of employee turnover in the organization, but it is contradicted by the studies conducted by Lyons & Bandura (2020) and Hassan et al. (2019) who suggested managers can impact turnover with their policies. This leads to a unique and novel observation that the management approach adopted by IT organization in India has negligible impact on employee turnover intentions of female employees which suggest female employees have significantly no concerns with current management practices and would consider them effective.

Self-efficacy has been suggested to have a significant impact on employee turnover in the analysis of the current model, which is also extensively covered by Selamat & Irsan (2019), but it also included the aspect of work incivility, which makes the current study unique in that it thoroughly examined the connection between Self-efficacy together with employee turnover without considering the effect of additional factors. In the study done by Ibrahim et al. (2019), which establishes the originality of the present method in which self-efficacy is inferred to have a direct influence on employee turnover intentions concerning female employees in the It sector of India, the same link was seen.

Hayes Model 7

Table 2. Hayes Model 7 Summary

Model: 7						
Y : Employee						
X : Workplace						
M1 : Gender						
M2 : Manage						
W : Self						
Sample						
Size: 384						
**						
OUTCOME VARIABLE:						
Gender						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.9827	.9657	.0305	3562.3258	3.0000	380.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
Constant	3.5108	.0108	325.9819	.0000	3.4897	3.5320
Workplace	1.3685	.0215	63.7647	.0000	1.3263	1.4107
Self	-.3665	.0245	-14.9486	.0000	-.4147	-.3183
Int_1	-.0045	.0108	-.4166	.6772	-.0257	.0167
Product terms key:						
Int_1 : Workplace x Self						

Source: Author

The gender ratio of the organization (total number of female: male employees in form) has a considerable influence on workplace ostracism in the organization. A similar study on entire Indian IT sector employees has been covered by Kamboj & Garg (2022), while the current study focused on female employees, leading to the conclusion that both male and female employees feel the impact of gender ratio on workplace ostracism in IT sector. The study also finds support in the study conducted by Chang et al. (2021) who however focused on the subordinate-superior relationship as well, which was not considered in the present analysis under the assumption gender ratio has a significant impact across all levels in the organization which stands validated.

Analysis of results has also led to the inference that gender ratio in the organization has an impact on beliefs of self-efficacy in the organization, which is also affirmed in the study by Eibl et al. (2020) but it took into account the role of leadership style as well, while the current study has established the impact without the influence of such factors suggesting a stronger relationship. The result also validates the theorem by Caprara et al. (2020) which affirmed the relation in the broader sense in which professional aspects were taken into consideration for the current study.

The finding that workplace ostracism is impacted by the management approach in the institution is significant, as prior studies such as one conducted by Kanwal et al. (2019) focused on leadership style and then derived a broader conclusion but it has been empirically tested in this study, which lends more reliability and credibility to the current study. Zhu et al. (2019) also affirmed the current result but it has taken into account different external factors as well, which were omitted in the current study to better analyze the impact of different management practices on the level of workplace ostracism among female employees in the Indian IT sector.

Self-efficacy among employees has been suggested to have no impact on the management approach adopted in the organization which is similar to the study conducted by Liu & Gumah (2020), as the Management approach adopted in the institution impacts the level of self-efficacy but no such evidence is found of self-efficacy on the management approach. As further noted by Ullah et al. (2021), Self-efficacy mediates the link between leadership and organizational citizenship conduct, according to the current study, but it has little direct influence on how management approaches are developed inside organizations.

Employee turnover in an organization is significantly impacted by workplace ostracism, as was also noted in the study conducted by Li & Zhang (2019). However, the prior study only looked at one organization, whereas the current study expanded its scope to look at the entire IT sector in India. In a study by Soliman et al. (2022), the same aspect was also observed in the tourism sector. This finding suggests that the relationship between workplace ostracism and employee turnover intention in an organization can be extended to include other industries as well.

In contrast to Bilan et al. (2020), who considered compensation and other practices, the current study has attempted to concentrate on the overall impact of gender practices in the organization. The gender ratio that was prevalent in the organization has been suggested to impact employee turnover levels in the organization. The same results have been published in the research by Jolly et al. (2022) but this study took into account, the role of supervisors, whereas the current study has focused on the employee base across the organization in order to ensure different roles, are carefully considered for better analysis.

Another major inference drawn from the result is that the Management approach in the organization has no impact on the level of employee turnover for female employees in the Indian IT industry, which is in contradiction with research by Magbity et al. (2020), leading to the suggestion that managers in IT sector have played a cooperative and collaborative role taking active steps to reduce the level of employee turnover among female employees. The research by Yücel (2021) that considered the mediating function of employee performance to build the link should also be examined in this situation. This suggests that managers in the Indian IT sector have not performed much thought in terms of how it affects turnover.

Table 3. Analysis of the mediating impact of Gender

**************** DIRECT AND INDIRECT EFFECTS OF X ON Y ***************					
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
1.3654	.1568	8.7087	.0000	1.0571	1.6736
Conditional indirect effects of X on Y:					
INDIRECT EFFECT:					
Workplace -> Gender -> Employee					
Self	Effect	BootSE	BootLLCI	BootULCI	
-.7732	-.6635	.5506	-1.5000	.0563	
.0000	-.6618	.5510	-1.5000	.0560	
.7732	-.6602	.5515	-1.5000	.0556	
Index of moderated mediation:					
	Index	BootSE	BootLLCI	BootULCI	
Self	.0022	.0012	-.0005	.0034	

Source: Author

According to a study by Zhang et al. (2019), the gender ratio in the workplace is thought to have a moderating effect on the link between employee turnover and workplace bullying. While the previous study concentrated on several demographic factors at once, the most recent study has proven the influence of gender as a distinct component. On a technical level, the study also differs from that done by Wang et al. (2021) since that study showed gender was a moderating variable, whereas this study examined gender as a mediating variable.

Table 4. Analysis of the mediating impact of Management Approach

INDIRECT EFFECT:				
Workplace -> Manage -> Employee				
Self	Effect	BootSE	BootLLCI	BootULCI
-.7732	.0463	.0313	.0000	.0938
.0000	.0464	.0315	.0000	.0942
.7732	.0465	.0316	.0000	.0944
Index of moderated mediation:				
	Index	BootSE	BootLLCI	BootULCI
Self	.0001	.0002	.0000	.0006

Source: Author

An elaboration of the findings reported by Singh & Srivastava (2021) shows that the management style used in the business also has a mediating effect on the association between workplace exclusion and employee turnover. Prior authors took several aspects of management attributes as individual variables and concluded some variables have to mediate while some have a moderating role. A similar relationship has been witnessed in the study which has been conducted by Karim et al. (2021), leading to the inference that Management approach strategy has a mediating influence on the relationship however each attribute under it may have a different level of significance.

Analysis of the relationship between Task Independence, Self-efficacy, Gender Ratio, Management Approach on the organization, and Employee Turnover

Hayes Model 5

Table 5. Hayes Model 5 Summary

OUTCOME VARIABLE:						
Employee						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
1.0000	1.0000	.0000	2.449E+024	5.0000	378.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	.0000	.0000	-.2032	.8391	.0000	.0000
Task	.5000	.0000	6.113E+010	.0000	.5000	.5000
Gender	-.1667	.0000	-2.74E+010	.0000	-.1667	-.1667
Manage	.0000	.0000	.1485	.8820	.0000	.0000
Self	.6667	.0000	4.531E+011	.0000	.6667	.6667
Int_1	.0000	.0000	-.2600	.7950	.0000	0000
Product terms key:						
Int_1 : Task x Self						

Source: Author

The study by Ugoani (2020), who developed a logical model that suggests a higher level of task independence leads to a better rate of employee engagement, which leads to reduced employee turnover, found that task independence has a significant impact on employee turnover intentions. This has been established empirically in the current study by suggesting when managers allocate task independence to employees, it leads to a reduced rate of employee turnover and a better rate of job satisfaction.

The results obtained by Samuelson et al. (2019) are expanded by the finding that the gender ratio in the company has an effect on employee turnover intentions. A prior study had only focused on employees at different job role in the organization, but expanding it to include different roles suggest that the presence of gender challenges is felt throughout the organization. This also leads to a major inference that both lower female - more male and more female - low male ratio leads to turnover which needs to be negated.

An argument forwarded in the current study is a Management approach in the organization has no impact on the rate of employee turnover which is in contradiction with Basnyat & Clarence (2020). Two major inferences should be noted, primarily the current study has focused on the entire Management approach which negates the effect of only HRM considered earlier. Secondly, the Indian IT sector may be a unique industry where different Management attributes do not impact the willingness to quit jobs by female members of society which leads to this conclusion.

A substantial expansion of the findings reported by Soelton et al. (2020), who only took into account the idea of employee burnout as an attribute influencing the influence of self-efficacy on employee turnover, shows that self-efficacy has a considerable impact on employee turnover. To increase the influence of self-efficacy, this study also considers additional factors like ostracism. This will make it easier to generalize the effect of self-efficacy on female members' intentions to quit their employment.

Hayes Model 7

Table 6. Hayes Model 7 Summary

Model : 7						
Y : Employee						
X : Task						
M1 : Gender						
M2 : Manage						
W : Self						
Sample						
Size: 384						
**						
OUTCOME VARIABLE:						
Gender						
Model Summary						
R R-sq MSE F df1 df2 p						
.9979 .9958 .0037 30297.6537 3.0000 380.0000 .0000						
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	3.5089	.0037	942.8685	.0000	3.5016	3.5162
Task	.9874	.0053	185.8721	.0000	.9770	.9979
Self	.0151	.0068	2.2300	.0263	.0018	.0284
Int_1	-.0010	.0038	-.2646	.7915	-.0084	.0064

Source: Author

It has been hypothesized that the organization's gender ratio affects how dependent on their jobs women in the IT industry are, which is similar to the study conducted by Rumman & Alzeyadat (2019), who however focused on Arab pharmaceutical manufacturing sector, which leads to the conclusion that gender ratio is having a significant impact on the aspect of providing female members with independence to conduct their job. Therefore, both studies when covered lead to the generalization of the impact of gender ratio on job independence.

The present gender ratio is also recognized to have an effect on the self-efficacy of female workers, which is in contrast to results reported by Santos & Liguori (2020), who noticed a minor influence; however, the results were based on entrepreneurs and CEOs. The current study on employees at a different level suggesting the relative strength may be different across different job positions, in which some positions may not see a similar impact due to higher strength of other attributes determining their self-efficacy.

Management approach which is adopted by the organization impacts both task independence as well as self-efficacy among female employees which is in affirmation with Choi et al. (2021). Both results are based on the argument that the management approach has a significant impact on each aspect of the organization. Since both pieces of research have adopted different sample and demographic aspects, the impact of the Management approach on self-efficacy and job Independence can be generalized for different employee groups.

The level of job independence provided by the organization, as noted in the current study impacts the employee turnover intention, which also finds similarity with results published from analysis of specific organizations by Hutomo & Nawangsari (2021). The current study establishes statistical validity without taking into account the impact of employee engagement in order to measure accurately the impact of job independence on employee turnover intentions, in contrast to prior studies that frequently concentrated on developing a logical model that justifies the relationship based on the level of employee engagement.

Employee turnover intention in the organization has been suggested to be impacted by the level of gender ratio in the current study based on female employees while Lee et al. (2022) derived the same conclusion based on male employees. This suggests the presence of the impact of gender ratio in the organization across different employee groups with respect to their intentions to leave the firm. Hence, an important inference which can be derived from the study is each employee in the organization, irrespective of gender is impacted by the gender ratio.

Employee turnover intention is also reported to be impacted by the management approach which is adopted by the organization and such has been similar to the results published by Oruh et al. (2020) as the management approach impacts different aspects from the time employee joins the organization to the final decision behind leaving the organization. Hence, a significant logical assumption is management approach impacts the level of employee turnover which has been statistically validated in the current study.

Table 7. Analysis of the mediating impact of Gender

Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-3.0440	.1126	-27.0248	.0000	-3.2655	-2.8226
Conditional indirect effects of X on Y:					
INDIRECT EFFECT:					
Task -> Gender -> Employee					
Self	Effect	BootSE	BootLLCI	BootULCI	
-.7732	2.2302	.2037	1.8059	2.4787	
.0000	2.2284	.2036	1.8029	2.4763	
.7732	2.2267	.2035	1.7986	2.4743	
Index of moderated mediation:					
	Index	BootSE	BootLLCI	BootULCI	
Self	-.0022	.0023	-.0099	-.0010	

Source: Author

A special role for gender ratio has been developed in the current study as a result of previous research by Pretirose & Muafi (2021) that identified demographic characteristics as the mediator in the association between employee turnover and job independence. The presence of gender ratio as a unique variable leads to the major inference that management when targeting attempts to improve gender ratio can lead to a reduction in employee turnover and also accord more job independence attributes to employees in different positions around the organization.

Table 8. Analysis of the mediating impact of Management Approach

INDIRECT EFFECT:				
Task -> Manage -> Employee				
Self	Effect	BootSE	BootLLCI	BootULCI
-.7732	1.1896	.1509	.9070	1.4363
.0000	1.1952	.1484	.9177	1.4422
.7732	1.2008	.1459	.9280	1.4486
Index of moderated mediation:				
	Index	BootSE	BootLLCI	BootULCI
Self	.0073	.0044	.0016	.0175

Source: Author

In a manner similar to that of Naz et al. (2020), the Management approach has also been demonstrated to mediate the association between employee turnover intentions and task independence. Here, some attributes of the management approach were taken as mediators in order to establish the impact while the current study focuses on the entire management approach to not only broaden the results published by prior studies but also ensure that it fits into a real corporate scenario where different variables operate together.

Conclusion and Recommendations

The study has concluded that workplace ostracism and task independence have significant impacts on employee turnover among female employees in the Indian IT sector. Moreover, it has also been observed that the management approach in the organization and the present gender ratio in the organization have a significant mediating impact on the relationship. According to the present study, efforts must be taken to lessen workplace ostracism while simultaneously ensuring that female employees are given more job autonomy. Attempts are to be made to improve the gender ratio in the organization as well as ensure female employees can access the management of the organization for several concerns. Such attempts can be in the form of the development of a specific department that addresses the needs of female employees, conducting regular training and development sessions, and changes in the management structure by introducing more female employees and focusing on the needs of such employees.

Managerial Implications

The current study will have significant theoretical and managerial Implications. The study has filled a major knowledge gap about how task independence and workplace exclusion affect female employee turnover. The study's findings will help managers create policies that can lessen the harmful effects of workplace exclusion, which will help increase the number of total female workers working in various parts of the IT business and benefit the overall Indian economy. The quantitative questionnaire developed during the study can be adopted by different scholars to analyze the relationship of women in different industries across different countries.

Limitation of the Study and Any Future Research Direction

Limitations are attributes that can impact the validity and reliability of the study. The major limitation only focuses on women in the IT sector and the utilization of statistical tools. Results might show a difference if women work in other sectors and a qualitative study approach is adopted in the study. Moreover, the current study has assigned equal weightage to female employees working under different positions in the organization, hence result might differ if women employees from the same job position were only included. Future scholars shall focus on adopting different variables such as relationships with colleagues and perception of male members as well to further broaden the scope. Moreover, women employees from different industries should also be included to evaluate the relationship in different industries. Finally, the impact of different strategies developed by an organization to reduce workplace ostracism and its impact on employee turnover should be evaluated over a longer timeframe.

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Strategies for Stakeholder Integration in the Indian Architectural Practice

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Abstract

Technological advancements, environmental concerns and changing needs and requirements of users and clients have required a shift in the methods, approaches and strategies being used in Architectural Practice. In India, with projects becoming more complex and large scale, stakeholders from diverse disciplines with different expertise are performing different roles and integrating at different points in the value chain. The influence of the stakeholders – both traditional as well as recent – has also evolved, in turn influencing the roles of the architect. The current study aims to deconstruct the evolving architectural practice formats and approaches in India in connection with technological transformations, via the lens of stakeholder integration for business success. A variety of research techniques are employed, with particular attention paid to qualitative and quantitative data collection, analysis and synthesis, comparison and contrast. This paper's findings will help in recognising and contextualising varied approaches to stakeholder integration in the Indian context, while giving a road map for its improved implementation.

Keywords: *Stakeholder Integration, Architectural Practice, Design and Project Management, Conduct of Projects, Technological Transformations.*

Introduction

Architectural practice in India has come of age, and it has, over the last few years, been continuously upgrading itself. APAC (Asia-Pacific) countries have been dominating the global architectural service market, with a share of more than 33.57% in 2018, because of India and China that are highly economically influential (IndustryArc 2024). The Global Architectural Services market size, estimated to be USD 370.51 billion in 2025, is forecast to reach USD 480.80 billion by 2030 at a CAGR (Compound Annual Growth Rate) of 5.35% (Mordor Intelligence 2024). With India's real estate industry, worth USD 330 billion in 2024, being projected to reach USD 1004 billion by 2029 (growing at a CAGR of 25.6%), new global and local Architecture firms are coming into the fray (Mordor Intelligence 2024). Efficient strategies are required to achieve/ sustain this growth projection, and also, the profession's legitimacy and recognition need to undergo scrutiny from an informed perspective.

The “State of the Profession” debate at the State of Architecture Exhibition (Hoskote, Bhattacharjee and Chakraborty 2016), followed by the recent Architectures of Transition symposium (Mehrotra, Shah and Thole 2024), have explored the contemporary Indian architectural practice, its strategies, methods, and its patronage, along with the role of the architect. Further, examining the patronage and the stakeholders’ role in construction in post-independence India, Melsens and Bertels (2015) discussed the position of the Architect as being one of ‘non-equipotent’ nature, as against other stakeholders within projects. On the one hand, this lack of agency led to incongruous designs, poor spatial qualities, decontextualised solutions from the end-user perspectives, while on the other, it brought into question the role and domain of the architect. Today, large portions of the building industry and its processes are handled by other professionals, and the discipline of Architecture has become fragmented (Madan and Mathur, 2025).

In the global scenario, Cuff (1991), Gutman (1988) and others (Fisher 2000) (Burr and Jones 2010) (Winch 1993) have critically and systematically examined the Architectural Practice. Some key areas of concern, from the stakeholder perspective, have emerged as the following:

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(i) Integrated approach

- Good buildings are a result of cooperation between stakeholders, including users, clients, consultants, architects, builders, etc. (Cuff 1991) (Bergström 2014).

(ii) Client-centric approach

- Successful architectural practices might focus on client satisfaction and resolution of needs rather than on creating aesthetically original designs (Winch and Schneider, The strategic management of architectural practice 1993a).

(iii) User participation approach

- Traditional end-user intervention strategies have focussed on the product or outcome, such as design for incremental growth, flexibility, etc., and haven't much impacted the process of the project (Madan 2002) (Reich, et al. 1996).
- Participatory approach in Architectural Practice, on the other hand, allows for better acceptance in the community (Luck 2018) focussing on need identification, empowerment, and sustainability (Toker 2007).

(iv) Organisational approach

- Architectural practice follows the format of a Knowledge-Based Organisation (KBO), where the deployed asset is the knowledge 'holder' or the staff/ employee, leading to a uniquely different framework for stakeholder managements (Winch and Schneider 1993b).

(v) Technology-driven approach

- Advanced technological tools such as Building Information Modelling (BIM) have not only allowed for increased efficiency in project delivery, but also enhanced stakeholder involvement, sometimes across borders (Jin, et al. 2018)

Overall, the evolving forms of practice, the conduct of the project, availability of advanced tools and the role of the architect and other different – sometimes competing – stakeholders involved are resulting in a 'redefinition' of the domains of architecture (Gutman 1988) (Burr and Jones 2010).

The purpose of this paper is to identify the stakeholders and the strategies applied in architecture in India, to integrate them into the process of the project. It aims to build a new narrative to identify what is possible for better business in connection with technological transformations. Understanding these dynamics is key to overcoming barriers and maximizing the potential benefits of both existing and emerging technologies.

2. Research Questions and Hypotheses

2.1 Theoretical underpinning

Who is a stakeholder? What is the value creation model of a business?

R. Edward Freeman (1984) defined stakeholders to be those individuals or groups who can impact projects or get impacted by them. Within the tenets of Freeman's Stakeholder Theory, it is understood that the success of any business is determined by the value it creates for all its stakeholders, and not just financial value for its shareholders (Clarkson 1995)! It is further understood that the value creation hinges on the definition of the moral, ethical and philosophical guiding principles in the operation of the business (Donaldson and Preston 1995), and that collaboration is at the core of stakeholder management. In the Architectural Practice, the range of stakeholders and their value-expectations have not really been explored. To dive deeper into this, we ask the following questions:

- *Which stakeholder do we want to create value for in the Architectural Practice?*
- *How is value being created for different stakeholders – clients, communities, consultants, employees, collaborators?*
- *What is the value creation model of the Architectural Practice?*
- *What are the key factors of stakeholder integration in Architectural Practice?*

What are the roles of different stakeholders?

Mitchell, Agle and Wood (1997) further developed what has come to be known as the MAW-1997 model, which identified power (to impose their will over others), legitimacy (of actions within socially constructed norms, beliefs and values), and urgency (with which any stakeholder's claims call for expeditious action) as the key attributes for stakeholder identification. Diving into the conduct of Architectural Projects, we try to identify the roles and influences of various stakeholders in order to understand the following:

- *Which stakeholder counts?*
- *What are the gaps of stakeholder integration in architectural projects in India?*

2.2 The context of change

The study of technology adaptation in architectural practice, particularly in complex projects like those in India, is important for several reasons:

(i) Changing Dynamics of Stakeholder Expectations: The adoption of new technologies requires stakeholders to be aligned and integrated in terms of understanding, expectations, and communication. However, the integration and alignment might not happen automatically, and thus understanding how technology influences stakeholder interactions is critical. One significant aspect of technological transformation is the rapid evolution of tools and platforms that facilitate design and collaboration. For instance, the availability of numerous design applications has revolutionized the design process, allowing users to easily create layouts and visualize their ideas. This reflects a broader trend where technology not only enhances productivity but also democratizes access to complex tools, enabling individuals and organizations to make informed decisions more effectively.

(ii) Infrastructural and Regulatory Challenges: In countries like India, where infrastructure and regulatory environments can vary significantly, technology adoption in green practices or design/production can encounter barriers such as lack of awareness, policy constraints, or resource limitations. Understanding these barriers and how they affect integration among stakeholders is crucial for smoother project execution.

(iii) Efficiency and Performance Enhancement: While technologies for resource management, health, and safety have been found to foster better stakeholder alignment, other technologies like design tools and green technologies may have indirect or delayed effects. Studying why these technologies may not immediately impact integration helps identify gaps and opportunities to refine their application for better stakeholder coordination.

(iv) Sustainability and Resilience: Green technologies are increasingly considered essential for sustainable architecture and urban development. Even though they may not directly impact stakeholder integration, their successful adoption hinges on aligning diverse stakeholders (e.g., government, contractors, clients, etc.). Understanding how to bridge this gap in stakeholder cooperation is key to ensuring the sustainability goals are achieved.

(v) Technology's Role in Overcoming Cultural and Structural Barriers: In the Indian context, stakeholders often have varied backgrounds, priorities, and levels of familiarity with new technologies. Investigating how technology can either hinder or facilitate smoother integration across these diverse groups helps in addressing cultural and structural challenges in architecture projects.

(vi) The integration of foundational technologies such as Digital Twins, the Metaverse, and augmented reality is reshaping how we interact with digital environments and physical spaces. As noted, these technologies are not merely incremental improvements; they represent a shift in how people engage with their surroundings and consume products.

2.3 Hypothesis development

This paper focusses on the concern of value creation, identified by Freeman (2015) (1984) and others (Mitchell, Agle and Wood 1997), within the Architectural Practice. In a large project, as the number of stakeholders increases, the decision-making process becomes more complex. Stakeholders may have varying priorities, such as cost control, sustainability, aesthetics, or technical performance. This could lead to delays or compromises in the integration of novel technologies, as stakeholders with differing interests negotiate how new technologies align with project goals. Again, the involvement of multiple stakeholders with varying levels of knowledge and willingness to embrace innovation could either accelerate or slow down the adoption of novel technologies. For example, while some stakeholders (progressive architects or tech-savvy clients) may advocate for cutting-edge solutions, others (traditional contractors or conservative investors) may resist due to perceived risks or costs. The interdependence among stakeholders (architects, contractors, clients, suppliers, regulatory bodies) suggests that any change or innovation in one part of the project could affect the others. For instance, adopting new technology may require new skills from the workforce, changes to the supply chain, or updates to regulatory frameworks. The involvement of multiple stakeholders and their interdependencies may impact project timelines and budgets. Integrating novel technologies could initially increase costs or delay progress due to the learning curve, training requirements, or procurement of specialized materials and equipment. For the Architectural Practice, as for other business models, communication/negotiation and collaboration amongst stakeholders, across disciplinary boundaries and roles, are key to the creation of value, and may result in an accelerated adoption of technology (CBRE 2023). This is further accentuated as the discipline is based on visual communication of key concepts and spatial ideas for the construction and production of buildings.

Given the above complex dynamics of technological transformations in multi-stakeholder projects, we wish to test its impact on stakeholder integration, and propose the following hypotheses:

- **Complexity and dynamics**

Hypothesis 1 (H1): Increasing numbers of stakeholders (H1a) with decision-making power, along with their interdependencies (H1b), influence the incorporation of novel technologies in architectural projects in India (Figure 1).

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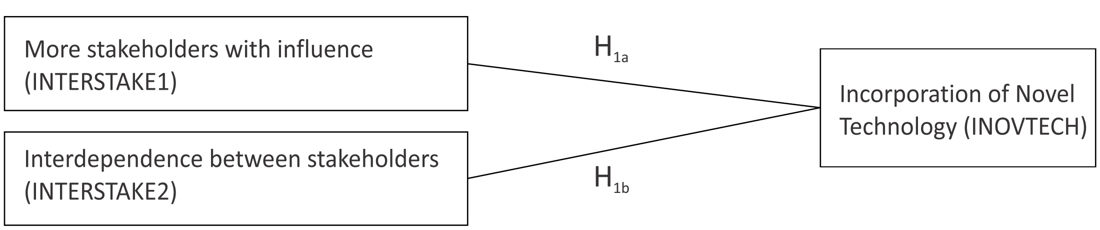

Figure 1: Conceptual Model - Hypothesis 1

- **Effective integration and alignment of stakeholder interests**

Hypothesis 2 (H2): The implementation of appropriate advanced technologies lead to more effective integration and alignment of stakeholder interests in complex projects ( ).

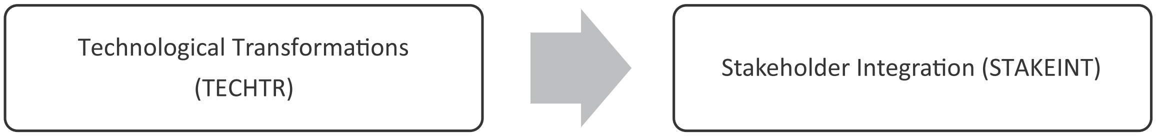

Figure 2 : Conceptual Model - Hypothesis 2

Further, the various attributes of technological advancements are defined as per Figure 3.

Hypothesis 2a (H_{2a}): The implementation of digitisation and digital communication positively influences integration and alignment of stakeholders in complex projects.

Hypothesis 2b (H_{2b}): The implementation of technology for design and production positively influences integration and alignment of stakeholders in complex projects.

Hypothesis 2c (H_{2c}): The implementation of technology for resource management positively influences integration and alignment of stakeholders in complex projects.

Hypothesis 2d (H_{2d}): The adaptation of green technologies positively influences integration and alignment of stakeholders in complex projects.

Hypothesis 2e (H_{2e}): The implementation of technology for health and safety positively influences integration and alignment of stakeholders in complex projects.

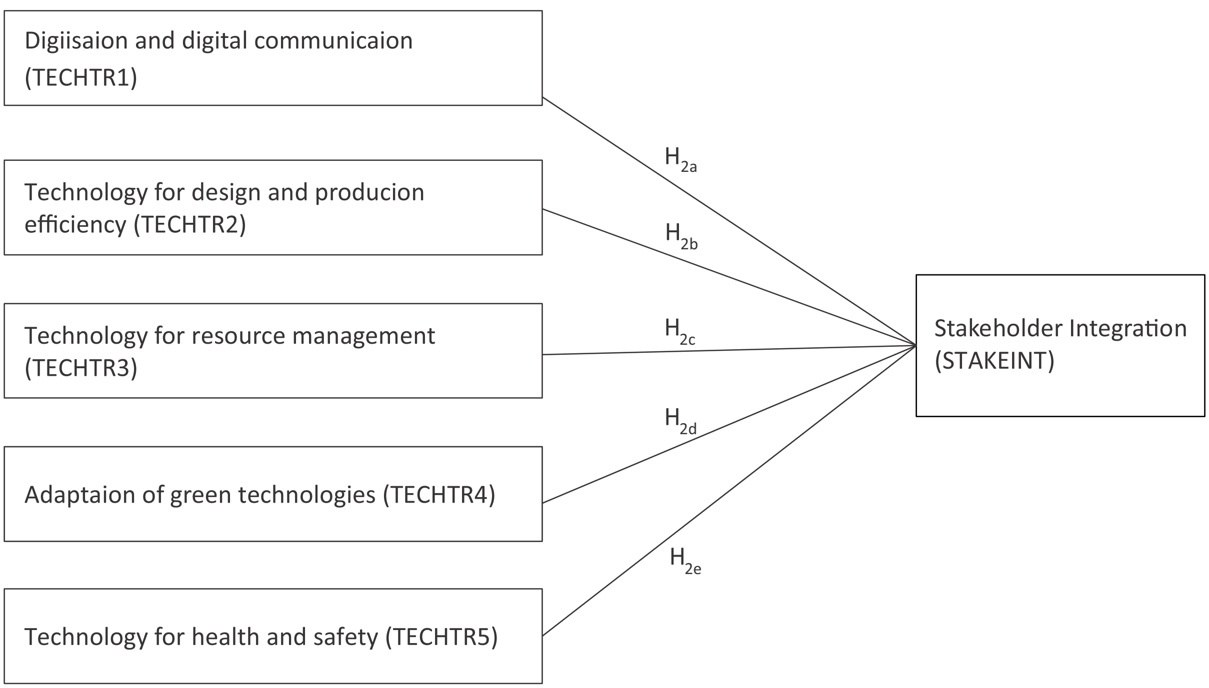

Figure 3: Detailed Conceptual Model - Hypotheses H_{2a}, H_{2b}, H_{2c}, H_{2d}, H_{2e}

3. Research Methodology

This paper follows a well-crafted mixed-methods approach to achieve the objectives of understanding the various aspects of stakeholder integration in Architectural Practice in India, impacted by technological transformations (Figure 4).

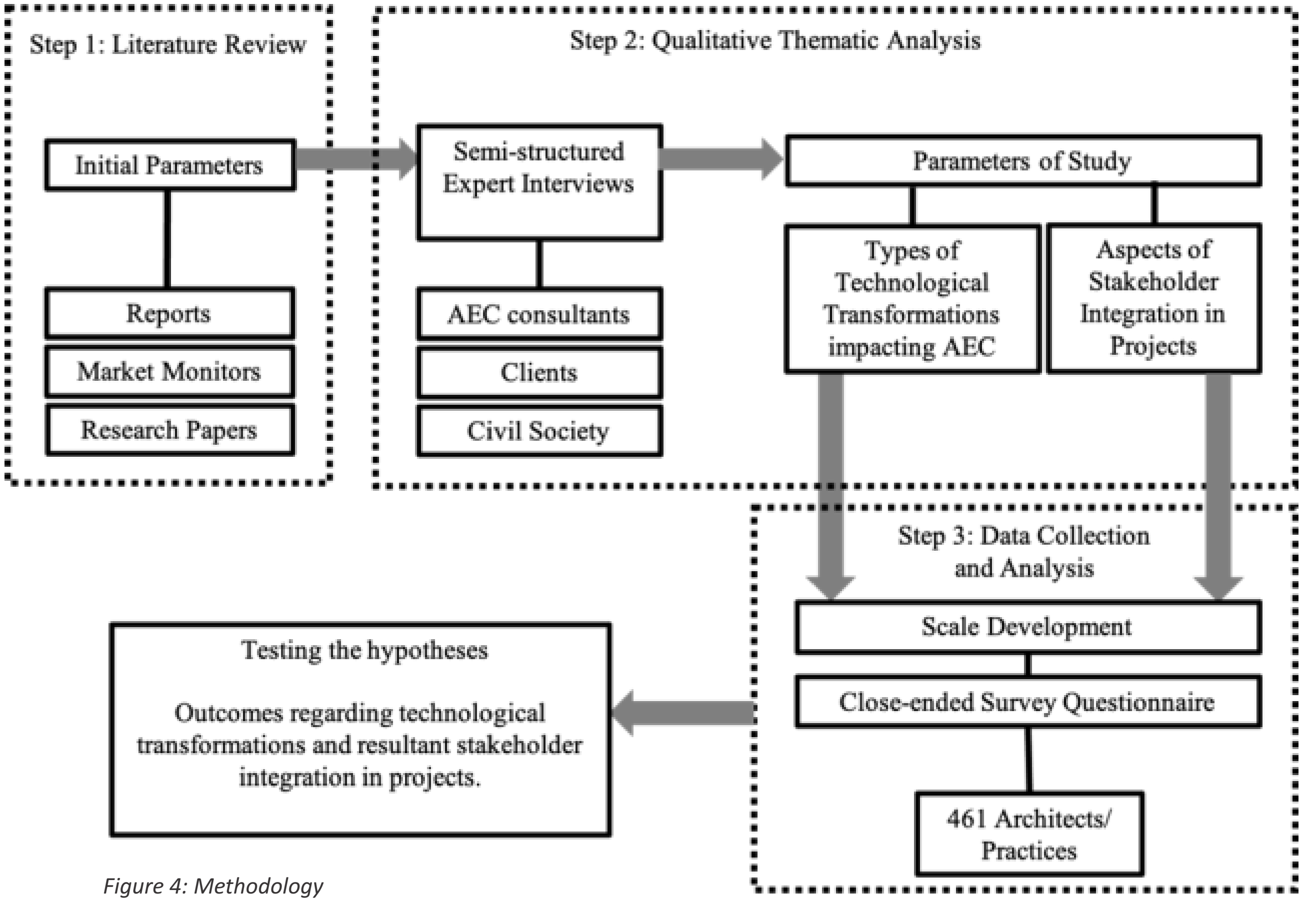

Figure 4: Methodology

The following steps were followed:

Step 1: Literature Review

A literature review was conducted to identify the key concerns and gaps in the areas of stakeholder integration, the Architecture, Engineering and Construction (AEC) industry's approach to stakeholders, and the evolutions in the AEC industry through Market Monitors and journal articles.

Step 2: Qualitative Thematic Analysis

Since the work is the first of its kind on the current context of change, a qualitative thematic analysis of semi-structured interviews of various AEC experts/ stakeholders was used to identify the technological transformations influencing the AEC industry today, the role of stakeholders and then the role of technology in determining stakeholder integration within projects. 15 experts were identified based on expert typology as per Table 1 and Table 2. These were then used to develop the parameters for further analysis.

Expert Typology	
General	**AEC industry**
Clients	Developers/ Contractors
Civil Society (Built Environment)	Product Manufacturers
Govt Agencies employing Architects	Agencies employing Architects
Pvt Agencies employing Architects	IPC / Corporate Commercial Real Estate

Table 1: Expert typology

Interviews Conducted						
Role/ Type	Engaged with IPCs	Developers/ Contractors	Clients	Non-Practicing Architects	End-Users	Allied Areas
Civil Society	1	1	2		1	2 (Building Automation)
Trained Architects	6	1		1		

Table 2: Expert Interviewees

Step 3: Data Collection and Statistical Analysis

Scale development: The qualitative thematic analyses in step 2 was used as the basis for the survey questionnaire.

A close-ended online survey questionnaire was circulated to several Practicing Architects across the country. Responses were collected from March 2024 to July 2024. To ensure the objectivity of the responses, the respondents were asked two qualifying questions. The first one was to ensure that they are practicing architects, and the second one was the location of their practice, to ensure that the data collected is for India.

Step 3a. To assess the clarity and comprehensibility of the questionnaire, *a pilot study* was conducted with 24 respondents, and the questionnaire was revised accordingly.

Step 3b. A total of 466 responses to the final questionnaire were received, out of which 461 responses were deemed valid for further study. Architects graduating during 1972-2022 were initially considered in the survey – 1972 marks the year in which the Architect's Act 1972 was passed in the parliament, leading to the establishment of the Council of Architecture (CoA) as the regulating authority of Architecture in the country (Council of Architecture, India 2016), whereas, in 2022, the Manual for Architectural Practice (MAP) was launched by the CoA to set benchmarks for the Indian Architectural Practice with respect to the global best practices (Council of Architecture 2022). However, the graduates from before 1972 and after 2022 were not eliminated, in case they met the condition of the qualifying questions. The complete demographics are shown in Table 3.

Variables	Categories	N	(%)
Graduation Year	Before 1972	3	0.7
	1972-1981	9	2.0
	1982-1991	33	7.2
	1992-2001	72	15.6
	2002-2011	68	14.8
	2012-2022	155	33.6
	2022-	121	26.2
	Total	461	100.00
Place of Practice	Assam	1	0.2
	Bihar	3	0.7
	Chandigarh	7	1.5
	Chhattisgarh	9	2.0
	Delhi NCR	105	22.8
	Goa	1	0.2
	Gujarat	53	11.5
	Haryana	56	12.1
	Himachal Pradesh	12	2.6
	Jharkhand	1	0.2
	Karnataka	19	4.1
	Kerala	16	3.5
	Maharashtra	63	13.7
	Madhya Pradesh	4	0.9

Odisha	2	0.4
Pondicherry	4	0.9
Punjab	29	6.3
Rajasthan	10	2.2
Sikkim	1	0.2
Tamil Nadu	5	1.1
Telangana	5	1.1
Uttarakhand	18	3.9
Uttar Pradesh	35	7.6
West Bengal	2	0.4
Total	461	100.0

Table 3: Demographics of responders

Following our qualitative and quantitative research protocols in these steps, the hypotheses were tested to yield insights regarding technological transformation and resultant stakeholder integration in complex architectural projects in India.

4. Thematic Analysis of Expert Interviews – Scale Development

4.1 Technological adaptation as the basis for stakeholder integration

The thematic analysis of 15 expert interviews conducted in Step 2 of the methodology generated a few important takeaways regarding the state of the AEC industry today, within which the Architectural Practice operates. Key points regarding stakeholder integration brought out the aspect of technological developments and their impact on value generation. Post-pandemic increase in digitisation levels in most enterprises has influenced project conduct in many ways. The urgency has led to significant changes in workplace dynamics, emphasizing the crucial role of technology in facilitating remote work and enhancing organizational functionality.

4.2 Technological transformations identified via the thematic analysis

Transforming technology is reshaping architecture and the building industry by introducing innovative tools and methods that enhance design, construction, and management processes, allowing for detailed digital representations of structures, improving planning and reducing errors. Advanced materials and smart technologies contribute to safer and more efficient buildings, while automation and robotics streamline construction tasks and minimize human risk. Additionally, the integration of data analytics enables better decision-making throughout the project lifecycle, optimizing resource use and enhancing sustainability. As the industry adapts to these technological advancements, there is a growing emphasis on collaboration and continuous education to fully leverage the benefits of these innovations.

The key technological transformations that are currently impacting the AEC industry are discussed below.

4.2.1 Digitisation and digital communication

The interviews revealed a significant impact of technology architecture, construction and design. Many interviewees noted that technology has enhanced communication and collaboration, especially during the pandemic, as tools such as Zoom and Microsoft Teams became essential for remote work (Bagchi 2023) (Raina 2023). There is a recognition that while technology facilitates processes like design and data analysis, it also requires individuals to adapt quickly to new tools (Ghosh 2023) (Kapoor 2024).

Additionally, advancements in areas such as BIM and generative AI are transforming project execution, allowing for quicker modifications and design processes (Bagchi 2023) (Kapoor 2024). Overall, the integration of technology is seen as crucial for innovation and efficiency, but it also necessitates a shift in communication and collaboration practices within teams (Maddipati 2023) (Chandrayan and Kapoor 2024)

Indicators for transformations in digital tools and communications in architectural projects, particularly with respect to stakeholder integration, can be identified through several key themes reflected via the interviews:

(i) Enhanced Communication Channels: Modern technology has significantly improved communication among stakeholders, making it easier for architects, clients, and other parties to collaborate in real-time. High-speed internet and digital tools have allowed for seamless interactions, which are critical for stakeholder engagement (Ghosh 2023) (Mitra 2023).
(ii) Collaborative Digital Platforms: The use of collaborative tools such as BIM and cloud-based systems enables all stakeholders to access and contribute to project data. This integration allows for real-time updates and feedback, fostering a more inclusive project environment (Bagchi 2023).

(iii) Feedback Loops: Effective stakeholder integration requires open channels for feedback. The need for a two-way communication process where architects and clients can provide input and receive responses is emphasized, indicating that feedback is vital for successful project outcomes (Raina 2023) (Maddipati 2023).

(iv) Training and Knowledge Sharing: With the introduction of advanced digital tools, there is a clear need for training and knowledge sharing among stakeholders. Awareness of tools like BIM and other digital solutions is crucial, as many stakeholders may not fully understand their benefits or applications (Bagchi 2023).

(v) Involvement of Diverse Stakeholders: The recognition of different stakeholders, including government entities and clients, in the digital transformation process is important. Engaging these parties ensures that their concerns and requirements are addressed, leading to more holistic project development (Maddipati 2023) (Kapoor 2024).

(vi) Automation and AI Integration: The integration of automation and AI tools into the design process allows stakeholders to visualize designs and modifications quickly. This capability facilitates better collaborative decision-making, as changes can be presented and discussed with all relevant parties in a timely manner (Kapoor 2024).

(vii) Market Awareness and Adaptability: Stakeholders are becoming more aware of the technological advancements available and are adapting their strategies to stay competitive. This awareness leads to a greater willingness to collaborate and innovate in response to market demands (Chandrayan and Kapoor 2024).

These indicators reflect a shift towards more integrated and collaborative approaches among stakeholders in architectural projects, driven by advancements in digital tools and communication technologies.

4.2.2 Technology for design and production efficiency

The interviews indicated a strong emphasis on the integration of technology in construction and design sectors, highlighting its role in enhancing efficiency and speeding up project delivery (Boton, et al. 2020). Interviewees noted that advancements in tools and methods, such as modularization, AI, and BIM, are crucial for meeting client demands for faster turnaround times and improved project outcomes (Bagchi 2023) (Kapoor 2024). The importance of a long-term view on asset lifecycle and sustainability was also emphasized, with a focus on reducing carbon footprints across various asset classes (Narang 2023) (Kapoor 2024).

Technology is helping in the enhancement of design and production efficiency in architectural projects, particularly with respect to stakeholder integration, through several key mechanisms:

(i) Improved Visualization and Simulation: Technologies like virtual reality (VR) and advanced modelling software allow stakeholders to visualize projects before construction begins. This capability enables clients, architects, and contractors to engage in meaningful discussions about design elements, thereby aligning their expectations and facilitating better decision-making (Bagchi 2023).

(ii) Enhanced Communication Tools: Modern communication platforms and project management tools enable real-time collaboration among stakeholders, regardless of their physical locations. This connectivity ensures that all parties can share updates, feedback, and designs instantly, fostering a more integrated approach to project management (Raina 2023).

(iii) Automation and Efficiency: Automation technologies streamline various processes in design and construction, reducing the time needed for manual tasks. For example, the use of software that can automatically generate construction parameters allows architects to focus on creative aspects while ensuring compliance with regulations (Rana 2024) (Dewan 2024).

(iv) Standardization and Modular Construction: The adoption of standardized components and modular construction techniques helps in expediting the building process. By utilizing pre-fabricated elements, stakeholders can reduce construction time and costs while ensuring consistent quality across projects (Kapoor 2024) (Malik 2024).

(v) Data-Driven Decision Making: The integration of big data analytics in design and construction processes allows stakeholders to make informed decisions based on real-time data. This capability enhances transparency and accountability, leading to more efficient project execution (Ghosh 2023).

(vi) Increased Client Involvement: There is a growing trend for clients to be more involved in the design process, with expectations for contractors to contribute their expertise on how designs can be executed more efficiently. This collaboration leads to innovative solutions that meet both functional and aesthetic needs (Bagchi 2023).

(vii) Sustainability and Environmental Considerations: Technology enables stakeholders to integrate sustainable practices right from the design phase. For instance, tools that assess the environmental impact of materials and construction methods are becoming essential, allowing projects to align with sustainability goals while satisfying stakeholder demands for responsible practices (Kapoor 2024).

These technological advancements collectively foster a more integrated and collaborative environment among stakeholders, enhancing overall design and production efficiency in architectural projects.

4.2.3 Technology for resource management

Technology plays a crucial role in enhancing resource management across various industries. It aids in the monitoring and management of materials and resources through advanced tools and methods. For instance, in construction, technologies such as real-time monitoring systems provide instant feedback and statistics, a significant improvement compared to traditional methods (Burato 2023). Moreover, generative AI is revolutionizing design processes by enabling rapid modifications and analysis, which streamlines project execution (Kapoor 2024). There is a shift towards computational modelling and testing, replacing older trial-and-error methods, resulting in more efficient resource usage (Ghosh 2023). The integration of data analytics allows for better decision-making, ensuring that projects are managed based on accurate, timely information rather than guesswork (Chandrayan and Kapoor 2024).

Advancing technology in architectural projects is significantly improving resource management with respect to stakeholder integration through several ways:

(i) Real-Time Monitoring and Data Collection: Technologies such as IoT (Internet of Things) devices enable real-time monitoring of resources, including materials, labour, and equipment. This data allows stakeholders to track resource usage accurately and make informed decisions, reducing waste and optimizing resource allocation (Burato 2023).

(ii) Enhanced Collaboration through Digital Platforms: Digital collaboration tools facilitate communication among all stakeholders, ensuring that everyone has access to the same information regarding resource availability and requirements. This enhances coordination and helps prevent resource-related conflicts (Raina 2023).

(iii) Predictive Analytics for Resource Planning: Advanced analytics and AI are used to predict resource needs based on project timelines, enabling better planning. Stakeholders can anticipate shortages and adjust procurement strategies accordingly, ensuring that the right resources are available when needed (Chandrayan and Kapoor 2024).

(iv) Modular and Prefabricated Construction: The shift towards modular construction techniques allows for better management of materials and resources. By using prefabricated components, stakeholders can reduce onsite waste and improve efficiency, as these elements are manufactured in controlled environments (Kapoor 2024).

(v) Automated Reporting and Resource Allocation: Automation tools can generate reports on resource consumption and availability, allowing stakeholders to quickly assess the status of resources and make timely adjustments. This reduces delays and improves overall project timelines via enhanced decision-making (Rana 2024).

(vi) Integrated Project Delivery (IPD): Advancements in technology support IPD approaches, where all stakeholders—from architects to contractors to clients—work collaboratively from the early design phase. This integration ensures that resource management strategies are aligned with the collective goals of the project, leading to more efficient use of resources (Chandrayan and Kapoor 2024).

(vii) Post-Occupancy Evaluation: The use of analytics in post-occupancy evaluations allows architects to assess how well a building performs in real-world scenarios. This feedback is invaluable for future projects, helping designers to refine their approaches based on actual user experiences (Chandrayan and Kapoor 2024) (Burato 2023).

By leveraging these technological advancements, architectural projects can achieve improved resource management that is closely integrated with stakeholder collaboration, ultimately leading to more efficient and sustainable outcomes.

4.2.4 Adaptation of green technologies

The adaptation of green technology is increasingly recognized as essential for promoting sustainability and addressing environmental challenges. Innovations in materials and processes are leading to more energy-efficient and environmentally friendly practices across various sectors, particularly in construction and manufacturing. For example, companies are actively focusing on technologies that conserve energy and reduce consumption of resources such as water (Raina 2023). The shift towards sustainability is fuelled by both environmental consciousness and economic incentives, as organizations aim to optimize their operations while contributing positively to the environment (Raina 2023). Furthermore, there is a growing acknowledgment of the need for collaboration and open protocols within industries to effectively implement green technologies (Chandrayan and Kapoor 2024). This collaborative approach facilitates the integration of innovative solutions from smaller enterprises into larger corporate frameworks, thereby accelerating the adaptation of green technologies (Ghosh 2023).

The impact of adaptation of green technologies on architectural projects, enhancing sustainability and environmental performance. Here are the key aspects of this transformation:

(i) Sustainability Tracking: Technology enables the tracking of sustainability metrics, such as energy usage and material efficiency. Stakeholders can use this information to make decisions that not only improve resource management but also align with sustainability goals, enhancing the project's value (Kapoor 2024) (Ojha 2024).

(ii) Implementation of Energy-Efficient Systems: The integration of energy-efficient technologies, such as solar panels, high-performance HVAC systems, and smart lighting, demonstrates a shift towards greener practices. Stakeholders work together to evaluate and implement these technologies to enhance energy efficiency in buildings (Kapoor 2024) (Raina 2023) (Chandrayan and Kapoor 2024) (Narang 2023).

(iii) Building Performance Monitoring: The deployment of smart building technologies that monitor energy consumption and environmental impact in real time is indicative of adaptation to green technologies. Stakeholders can analyse this data to make informed decisions about operational efficiencies and improvements (Narang 2023) (Chandrayan and Kapoor 2024) (Kapoor 2024).

(iv) Regulatory Compliance and Certification: Compliance with green building certifications (such as LEED or BREEAM) is a strong indicator of green technology adaptation. Stakeholders work together to ensure that projects meet these standards, which often require collaboration between designers, builders, and clients (Chandrayan and Kapoor 2024) (Kapoor 2024) (Nagpal 2024).

(v) Focus on Indoor Environmental Quality: The incorporation of technologies that improve indoor air quality, such as advanced ventilation systems and non-toxic materials, is a crucial indicator. Stakeholders prioritize occupant health and comfort, leading to a more integrated approach to building design and operation (Chandrayan and Kapoor 2024) (Raina 2023).

(vi) Lifecycle Assessment Tools: The use of digital tools for lifecycle assessment (LCA) enables architects to evaluate the environmental impact of materials and designs over their entire lifespan. This data-driven approach supports informed decisions about sustainable practices and materials selection (Chandrayan and Kapoor 2024).

(vii) Community and Ecosystem Considerations: Green technologies encourage architects to consider the broader ecological context of their projects. This includes utilizing landscape design that promotes biodiversity, integrating green roofs, and preserving natural habitats, which enhances the overall environmental quality of the surrounding area (Kapoor 2024) (Chandrayan and Kapoor 2024).

The integration of green technologies often involves collaboration with various stakeholders, including community members, environmental groups, and regulatory agencies. This engagement fosters a sense of ownership and responsibility toward sustainability goals and can enhance community relations.

4.2.5 Technology for health and safety

Technological transformations in architecture significantly enhance health and safety through the use of innovative tools like BIM, which helps to identify potential hazards before construction begins (Kapoor 2024). Advanced materials and smart technologies improve structural integrity and safety during building operations (Narang 2023). Additionally, automation and drones reduce human exposure to risks on construction sites (Bagchi 2023). The focus on health and wellness in design leads to healthier indoor environments, with features like better air quality and natural lighting (Ghosh 2023). However, these advancements require ongoing training for professionals to effectively implement and manage new technologies safely (Maddipati 2023). Overall, while technology presents opportunities for improved safety and well-being in architecture, it also poses challenges in adaptation and education.

Technologically driven health and safety concerns in architectural projects have significant impacts that enhance the overall well-being of occupants and construction workers. Here are key aspects of this transformation:

(i) Improved Safety Protocols: Technological advancements have led to the development of more robust health and safety protocols. Digital tools and software can facilitate the creation and dissemination of safety guidelines, ensuring that all stakeholders are aware of and adhere to safety measures during construction (Chandrayan and Kapoor 2024) (Ojha 2024).

(ii) Real-Time Monitoring: The integration of IoT (Internet of Things) devices allows for real-time monitoring of environmental conditions, such as air quality, temperature, and humidity within buildings. This data helps ensure that indoor environments remain healthy and safe for occupants, addressing issues such as ventilation and pollution (Chandrayan and Kapoor 2024).

(iii) Data-Driven Risk Assessment: The use of data analytics enables architects and project managers to conduct thorough risk assessments based on historical data and predictive modelling. This helps in identifying potential hazards early in the project lifecycle and allows for the implementation of appropriate mitigation strategies (Nagpal 2024).

(iv) Design for Safety: Technological tools can aid architects in designing buildings with safety in mind. For example, simulations can be used to evaluate emergency egress routes and ensure that they are effective and accessible during an emergency (Chandrayan and Kapoor 2024) (Nagpal 2024).

(v) Post-Occupancy Evaluations: Technologies that monitor building performance post-occupancy can provide valuable insights into health and safety issues. Feedback from occupants regarding air quality, noise levels, and accessibility can inform future design improvements and enhance occupant comfort and safety (Chandrayan and Kapoor 2024).

(vi) Sustainability and Health: The focus on health and safety is increasingly intertwined with sustainability initiatives in architectural projects. Technologies that promote energy efficiency and reduce environmental impact contribute to healthier living and working environments for occupants (Raina 2023) (Chandrayan and Kapoor 2024) (Ghosh 2023) (Ojha 2024).

(vii) Compliance with Health Standards: Advanced software solutions help ensure that architectural projects comply with health and safety regulations. These tools can track compliance with building codes and safety standards, reducing the risk of legal issues and ensuring the well-being of occupants (Chandrayan and Kapoor 2024) (Raina 2023). To summarize, the technological transformation of health and safety in architectural projects leads to improved safety protocols, real-time monitoring, enhanced training, data-driven risk assessments, and design considerations that prioritize occupant well-being. These advancements not only protect workers during construction but also create healthier and safer environments for building occupants.

The penetration of technology within projects is reported to be ongoing, with different stakeholders aligning to different degrees, and a broader collaborative network is yet to evolve. However, challenges such as the digital divide and the need for training in new technologies were also highlighted. The scale items are developed accordingly for the 5 primary technological transformations identified.

4.3. Key Stakeholders

Through the interviews, several stakeholder categories with differing influence on the conduct of projects are identified. Our findings (Table 4) take the categorisation of key stakeholders done by Lee, Han and de Vries (2021) forward.

Key Stakeholders			Definition of role	Nature of Coordination / Coordination with	Phase
Public entities		Government / Regulatory Bodies	- setting policies and guidelines that impact construction practices, including environmental regulations and building codes	Statutory bodies	Preparatory
Public entities		Public Clients	- defining project requirements, expectations, and budget constraints, providing feedback, guiding the overall vision. - may be end users as well - might have multiple departments, agencies, officials involved	Contractors in Engineering, Procurement, And Construction (EPC) mode projects	Preparatory, Planning, Design and Execution
Private entities/ individuals	Clients	Private Clients	- defining project requirements, expectations, and budget constraints, providing feedback, guiding the overall vision. - may be end users as well - might assign larger teams in house to manage large-scale projects	Architects / Project Management Consultants (PMC) / Design Manager/ Construction Managers depending on the project processes	Planning, Design and Execution
Private entities/ individuals	Clients	End Users	- The individuals or groups or communities who will occupy or use the buildings - might be the clients as well, especially in small scale-projects	Not much coordination or participation in complex projects	Operation
Public/ Private		Contractors/ Builders	- involved in the actual construction of buildings, deploy site / construction teams resource on sites and may face challenges such as labour shortages and compliance with regulations. - In EPC projects, awarded projects from the Government directly, dictate cost and quality control, and hire Architects - might be clients as developers	Clients, Architects, PMC, Construction Teams	EPC: Planning, Design and Execution Other projects: Execution

Strategic Advisors	Real estate consultants or Investment Property Consultants (IPCs)	- provide market insights, feasibility analyses, and strategic advice to clients regarding property investments and developments - facilitate negotiations, help navigating regulatory requirements, aligning with market trends - specifically involved in case of international clients	Clients - private and public, architects, in specific cases	Preparatory and Planning
Designers	Architects	- design, aesthetics, and the use of technology - limited influence on design and decision-making in EPC projects	- For private projects, direct engagement with client or PMC/ IPC (large-scale projects) - For public or EPC mode projects, work under Contractors - Engineering consultants (ECs), PMC / Construction Managers/ Site Teams for all project types	Design or Design and Execution
	ECs	- ensuring the functionality of technological aspects and services of buildings	Architects mostly	Design
Technical Advisors	Energy Consultants	- provide specialised inputs regarding the reducing of carbon footprint and passive design strategies - advocate energy efficiency, run simulations for better design outcomes	Architects mostly	Design
	Technology Providers	- provide technological solutions and innovations for building automation and sustainability contributing to the efficiency and effectiveness of building operations	Architects, PMC	Design, Execution, Operation
	Other experts	- give inputs regarding specialised technical aspects of the project, and include hospitality consultants, hospital managers, etc. - can have varied degrees of influence on the project, depending on its nature.	Clients, Architects, PMC	Planning, Design
Managerial Teams	PMC	- oversee communication and collaboration across stakeholders - oversee timely execution, resource allocation, budget management, risk mitigation - integrate technology solutions to enhance efficiency in execution - might have in-house engineers to manage work of ECs	Client/ Architects / Design Managers/ Construction Managers/ Product Vendors	Execution
	Design Managers	- help coordinate and translate client needs into specific project requirements - run quality checks on the designs such that the client's vision is achieved - might double as PMC	Clients, Architects, Contractors	Planning, Design and Execution
	Construction Managers	- appointed by the contractors to supervise site and construction	PMC, Architects	Execution

Others	- might include liaison officers, sanction and statutory compliance officers, who come in at specific points of the process.	Architects, PMC, Clients	Planning

Table 4: Key stakeholders and their roles

The number of stakeholders, their interdependence, their influence on decision-making, coordination strategies, management of complex projects were identified as key components impacting stakeholder integration in architectural projects, and the scale items are developed accordingly.

6. Results and Discussions

Scale developed

Given the original nature of the work, the qualitative thematic analyses done above in Step 2, and the case study analyses (details given in (Madan 2025)), were used as the basis for the questionnaire, which was refined using a pilot study. The questionnaire had three sections. The screening questions (Graduation year and Place of practice) were in the first part. Technological Transformation (TECHTR) was assessed by 5 items, Stakeholder Integration (STAKEINT) was assessed by 5 items, and Incorporation of Novel Technology (INOVTECH) was assessed by 3 items, respectively (Table 5). A 5-point Likert Scale was used to measure all the 13 items.

Constructs	Scale Items	Description
Technological Transformation TECHTR	TECHTR1	Technological transformation of Digitisation and Digital Communication is currently impacting Architectural Practice
	TECHTR2	Transformation of technology for design and production efficiency is currently impacting Architectural Practice
	TECHTR3	Transformation of technology for resource management is currently impacting Architectural Practice
	TECHTR4	Technological transformation of adaptation of green technologies is currently impacting Architectural Practice
	TECHTR5	Transformation of technology for health and safety is currently impacting Architectural Practice
Stakeholder Integration STAKEINT	STAKEINT1	Technological transformations have resulted in better stakeholder integration
	STAKEINT2	Technological transformations have resulted in better coordination between stakeholders
	STAKEINT3	Technological transformations have resulted in better management of complex projects
	STAKEINT4	Technological transformations have resulted in lesser number of people involved at each stage
	STAKEINT5	Technological transformations have resulted in altered decision-making strategies
Incorporation of Novel Technology INOVTECH	INOVTECH1	In your projects, please rate the Novelty of the technology
	INTERSTAKE1	In your projects, please rate the number of stakeholders with influence on the project
	INTERSTAKE2	In your projects, please rate the Interdependence between firms involved in the project

Table 5: Study constructs, scale items, their description

We first tested the assumptions of multivariate analysis. These included normality, linearity and multi-collinearity. Skewness and kurtosis were calculated to ascertain the normality of the data. Table 6 shows that the skewness and kurtosis values lie in the prescribed range (-2 < skewness < +2 and -2 < kurtosis < +2) recommended by (Khatun 2021). Hence, normality of data exists.

	Mean	Standard Deviation	Sk	Sk Standard error	Ku	Ku Standard Error
TECHTR	19.9154	3.52867	-0.996	0.114	2.082	0.227
STAKEINT	19.013	3.40649	-0.571	0.114	1.466	0.227
INOVTECH	9.2646	2.59837	-0.182	0.114	-0.067	0.22

Notes: Sk = Skewness; Ku = Kurtosis; TECHTR = Technological Transformation; STAKEINT = Stakeholder Integration; INOVTECH = Incorporation of Novel Technology

Table 6: Descriptive statistics

Further, an examination of the multivariate collinearity with variance inflation factor (VIF) and tolerance showed that the values of VIF and tolerance (Table 10 and Table 13) are within the acceptable limit (i.e. VIF < 3.0 and tolerance > 0.10), shows that multicollinearity does not exist among all independent variables (Hair, et al. 2010).

Measurement model, reliability, validity and fitness

Our sample size of 461 deems fit for multivariate analysis with a 95% confidence level and 5% error margin. The value for Cronbach's Alpha (α) for the survey was 0.831. The TECHTR subscale consisted of 5 items (α = .843), the STAKEINT subscale consisted of 5 items (α = .795), and INOVTECH subscale consisted of 3 items (α = .707). The model showed high reliability for all the constructs as the Cronbach's alpha values shown in Table 7 were above 0.7 (Hair, et al. 2010).

	α	No of Items
TECHTR	0.843	5
STAKEINT	0.795	5
INOVTECH	0.707	3

Notes: α= Cronbach's alpha; TECHTR = Technological Transformation; STAKEINT = Stakeholder Integration; INOVTECH = Incorporation of Novel Technology

Table 7: Cronbach's alpha for the study constructs

Table 8 shows the loading factors for technological transformations on stakeholder integration. The Kaiser-Meyer-Olkin (KMO) value was 0.82, which is considered acceptable. All the Bartlett's tests showed significant values of p < 0.001, indicating adequacy of the data. All of the items had high communalities values (> 0.3), which indicated that the items fit well with the other items in their factor.

Items	Statements	Factors			Communalities
		1	2	3	
TECHTR3	Technology for resource management	0.798			0.53
TECHTR2	Technology for design and production efficiency	0.788			0.655
TECHTR4	Adaptation of green technologies	0.774			0.692
TECHTR5	Technology for health and safety	0.736			0.621
TECHTR1	Digitisation and digital communication	0.687			0.584
STAKEINT2	Better coordination between Stakeholders	0.293	0.761		0.635
STAKEINT1	Better stakeholder Integration	0.296	0.737		0.674
STAKEINT5	Altered decision-making strategies		0.731		0.592
STAKEINT3	Better management of complex projects	0.363	0.663		0.433
STAKEINT4	Lesser number of people involved at each stage		0.657		0.547
INTERSTAKE2	Interdependence between firms involved in the project			0.827	0.545
INTERSTAKE1	Number of stakeholders with influence on projects			0.812	0.664
INOVTECH1	Novelty of the technology			0.709	0.692

Notes: Factor Analysis; Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; KMO was 0.784; Bartlett's test of sphericity was significant (p < 0.001); total variance explained was 60.49%.

Table 8: Loading factors for technological transformations on stakeholder integration

Hypothesis testing

Hypothesis 1 (H_1): To analyse the results, multiple linear regression analysis of 95% confidence interval was employed. The analysis showed a good model fit: F(2, 458) = 64.415, p <.001, Adj. R^2 = .216, R^2 = .220. Results are given in Table 9.

Hypothesis	Regression Weights	Beta Coefficients	R²	F	p-value	Hypothesis supported
H1	INOVTECH1 – INTERSTAKE	0.469	0.220	64.415	<0.001	Yes

Table 9: Results for Hypothesis 1

The results of value inflation factors (VIF) show no evidence of multicollinearity in the datasets as given in Table 9.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
	B	Std. Error	Beta				
(Constant)	1.610	0.143	-	11.279	<.001	-	-
INTERSTAKE1	0.227	0.46	0.239	4.959	<.001	0.732	1.367
INTERSTAKE1	0.275	0.45	0.297	6.164	<.001	0.732	1.367
Notes: Dependent Variable: INOVTECH = Incorporation of Novel Technology							

Table 10: Collinearity Statistics for Hypothesis 1a and 1b

The analysis shows that number of stakeholders with decision-making powers has a positive effect on the incorporation of novel technologies in architectural projects in India (b = 0.239, t = 4.959, p<0.001). Hence, **Hypothesis 1a** is accepted. The analysis shows that interdependence between stakeholders has a positive effect on the incorporation of novel technologies in architectural projects in India (b = 0.297, t = 6.164, p <0.001). Hence, **Hypothesis 1b** is accepted. Results are given in Table 11.

Hypothesis	Regression Weights	Beta Coefficients	t	p-value	Hypothesis supported
H1	INTERSTAKE1	0.239	4.959	<0.001	Yes
	INTERSTAKE2	0.297	6.164	<0.001	Yes

Table 11: Results for Hypothesis 1a and 1b

Hypothesis 2: Again, multiple linear regression analysis of 95% confidence interval was employed. The analysis showed a good model fit: F(1, 459) = 155.2, p <.001, Adj. R^2 = .252, R^2 = .260. Results are given in Table 12.

Hypothesis	Regression Weights	Beta Coefficients	R2	F	p-value	Hypothesis supported
H2	TECHTR - STAKEINT	0.503	0.252	155.2	<0.001	Yes

Table 12: Results for Hypothesis 2

The results of value inflation factors (VIF) show no evidence of multicollinearity in the datasets as given in Table 13.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
	B	Std. Error	Beta				
(Constant)	9.277	0.809	-	11.46	<.001	-	-
TECHTR1	0.681	0.218	0.171	3.122	0.002	0.541	1.85
TECHTR2	0.294	0.259	0.069	1.136	0.257	0.441	2.27
TECHTR3	0.736	0.23	0.187	3.199	0.001	0.476	2.1
TECHTR4	0.131	0.2	0.038	0.655	0.513	0.491	2.04
TECHTR5	0.614	0.202	0.178	3.044	0.002	0.478	2.09
Notes: a. Dependent Variable: STAKEINT = Stakeholder Integration							

Table 13: Collinearity Statistics for Hypothesis 2

The analysis shows that digitisation and digital communication has a positive effect on integration and alignment of stakeholders in complex projects (b = 0.17, t = 3.12, p <0.05). Hence, **Hypothesis 2a** is accepted.

The analysis shows that technology for resource management has a positive effect on integration and alignment of stakeholders in complex projects (b = 0.18, t = 3.19, p <0.001). Hence, **Hypothesis 2c** is accepted.

Also, the analysis shows a positive influence of technology for health and safety on integration and alignment of stakeholders in complex projects (b = 0.17, t = 3.04, p <0.05), and hence **Hypothesis 2e** is accepted.

However, there is no evidence of effects of technology for design and production efficiency (b = 0.69, t = 1.13, p = 0.257) and adaptation of green technologies (b = 0.03, t = 0.65, p = 0.513) on integration and alignment of stakeholders in complex projects. Hence **Hypotheses 2b** and **2d** are *not* supported.
The results are given in Table 14.

Hypothesis	Regression Weights	Beta Coefficients	t	p-value	Hypothesis supported
H2a	TECHTR1 - STAKEINT	0.17	3.122	0.002	Yes
H2b	TECHTR2 - STAKEINT	0.06	1.136	0.257	No
H2c	TECHTR3 - STAKEINT	0.18	3.199	0.001	Yes
H2d	TECHTR4 - STAKEINT	0.03	0.655	0.513	No
H2e	TECHTR5 - STAKEINT	0.17	3.044	0.002	Yes

Table 14: Results for Hypothesis 2a, 2b, 2c, 2d and 2e

H1: Our results show that increased stakeholders with decision-making powers and their interdependencies have a positive impact on the incorporation of novel technologies. Increased number of stakeholders and their interdependencies affect the pace, success, and scope of technological innovation in India's architectural sector. While this complexity introduces both challenges and opportunities, it ultimately requires careful management, collaboration, and a long-term vision for integrating technology in a way that meets the diverse goals and needs of all stakeholders involved. In practice, fostering open dialogue, aligning interests, and addressing potential barriers to adoption will be key to successfully incorporating novel technologies into architectural projects.

H2: Our results show that (i) Digitisation and digital communication, (ii) Technology for resource management, and (iii) Technology for health and safety have a positive effect on integrating and aligning stakeholders in complex projects in the Indian architectural practice. On the other hand, (i) Technology for design and production, and (ii) Adaptation of green technologies do not show such a direct effect on stakeholder integration and alignment.

It is clear that technological transformations are significantly improving project design and management in several key ways:

(i) Enhanced Communication and Coordination through collaborative tools and platforms.

(ii) Real-Time Data Access for mare effective Project Management and resource allocation.

(iii) Automation of Routine Tasks, such as scheduling and reporting, increasing overall efficiency and productivity.

(iv) Improved Risk Management via advanced analytics and predictive modelling.

(v) Resource Optimization, and efficient monitoring of utilization.

(vi) Agility and Flexibility for teams to adapt quickly to changes in project scope or timelines.

(vii) Enhanced Reporting and Analytics providing insights into project performance.

(viii) Sustainability Tracking allowing for monitoring and reporting on sustainability metrics.

(ix) Predictive Simulation and Design Development using advanced technological tools

As discussed in Section 2, Freeman's Stakeholder Theory (1984) emphasizes the importance of identifying, understanding, and managing the interests of all parties who can affect or are affected by the project, to ensure the long-term success and sustainability of the project. In the context of architectural practices in India, our study corroborates the following links:

(i) Digitization, especially in the form of digital communication tools, facilitates transparency, real-time updates, and streamlined interaction among stakeholders. This enables stakeholders, particularly clients, architects, contractors, and consultants, to have better alignment and understanding of the project's progress, reducing the likelihood of misunderstandings, delays, or conflicts. This aligns with Freeman's emphasis on the need to facilitate communication and cooperation among stakeholders to manage their interests and expectations.

(ii) Freeman's Stakeholder Theory argues for the importance of managing resources in a way that maximizes value for all involved parties. Technologies like project management software, resource allocation tools, and supply chain management systems help streamline logistics, track resources (materials, workforce, etc.), and optimize costs. This is particularly beneficial in projects where multiple stakeholders need to coordinate and manage resources efficiently.

(iii) Ensuring the health and safety of workers, residents, and the surrounding community is paramount. Technologies like health monitoring systems, safety protocols, and construction wearables can align contractors, consultants, workers, and government agencies on safety requirements, reducing risk, promoting well-being, and ensuring the generation of value. Ethical consideration of the Stakeholder theory stresses on the importance of safeguarding the welfare of stakeholders, and in this case, health and safety technologies help prevent accidents and ensure that the project's implementation does not harm any stakeholder.

(iv) Technology for Design and Production typically involves tools like BIM, CAD, and other design technologies. While these tools help improve the design process and reduce errors, they may not necessarily foster direct integration between stakeholders if the issues at hand are more about coordination, logistics, or communication. The client, for instance, may not engage directly with the design technology, and contractors may have a limited role in the early design phases. The technology might also create a more fragmented environment where designers focus on their own work while other stakeholders engage with different aspects of the project. These technologies have not fully penetrated all aspects of the AEC industry, and a 360 degree integration is needed for effective outcomes.

Freeman's framework does not argue against the importance of design, but emphasizes that stakeholder engagement should be holistic. Tools that focus solely on design may not involve the full range of stakeholders or address the operational needs of construction and resource management.

(v) The adoption of sustainable or green technologies, such as energy-efficient systems, renewable energy sources, and eco-friendly building materials, may not have a direct impact on stakeholder integration because these technologies often require specialized knowledge and can be seen as secondary to immediate project concerns like cost or timelines. In most cases, a real adaptation of green technologies has not really happened, and the focus is on basic passive strategies rather than technological advances.

Freeman highlights the importance of ethical considerations and long-term value creation, which includes sustainability. However, green technologies may not always align with the immediate financial interests or technical needs of all stakeholders. In some cases, the long-term benefits may not be fully recognized by stakeholders focused on short-term project goals.

7. Conclusions and Future Directions

Architectural practice has struggled to find its place as a profitable, entrepreneurial entity that leverages the knowledge and skills of its members and provides a service, within a professional scenario.

The growing number of stakeholders and their interdependencies could contribute to a more dynamic innovation ecosystem within India's architectural sector. With more stakeholders involved, a broader range of technologies and solutions might be proposed, tested, and incorporated into projects, leading to more diverse and innovative outcomes. Developers, architects, and engineers could collaborate with technology providers, researchers, and innovators to explore new possibilities and foster a culture of experimentation and learning within the architectural profession.

For the first time in India, our research reveals the strategies to be applied to integrate the stakeholders into the process of the architectural projects, with an eye on existing and emerging technologies – overcoming barriers and maximizing the potential benefits. Digitization, digital communication, and resource management technologies align stakeholder interests, facilitate communication, and optimize resource allocation, leading to smoother integration and collaboration. Health and safety technologies promote the well-being of workers and residents, contributing to the overall ethical management of stakeholders. On the other hand, technologies like design tools and green technologies may not have a significant direct impact on stakeholder integration, as their influence is more sector-specific or long-term, which may not always align with the immediate priorities of all project participants. The findings of our study align well with Freeman's Stakeholder Theory, which underscores the importance of understanding and addressing the needs of diverse stakeholders to ensure project success. Freeman's vision for responsible business has indeed moved from theory to reality.

Our results may trigger future micro-research in the following directions, which could contribute to a deeper understanding of how technology and management practices intersect to shape stakeholder dynamics in the Indian architectural practice.

Impact of Cultural and Organizational Factors on Stakeholder Integration

While technology plays a significant role, cultural and organizational practices within Indian architecture firms may also influence how stakeholders are integrated and aligned. Exploring how hierarchical structures, cultural perceptions, and leadership styles impact the stakeholder engagement process could add valuable insights.

Exploring Stakeholder Integration in Public vs. Private Sector Projects

With the EPC approach becoming standardised in government projects, the stakeholder dynamics in public-sector versus private-sector architectural projects could differ significantly due to varying project goals, funding structures, and stakeholder expectations. Understanding these differences could provide insights into how stakeholder alignment is achieved in different contexts.

Integration of Green Technologies with Stakeholder Alignment

Although green technologies did not show a direct effect on stakeholder alignment in our study, future research could explore how specific environmental or sustainability concerns influence stakeholder collaboration in the Indian context, particularly in public-sector projects or in regions where environmental awareness is growing, with a specific focus on the regulatory and policy environment in India.

Social and Ethical Implications of Technological Tools in Stakeholder Engagement

As technology becomes more central in stakeholder management, ethical and social considerations regarding data privacy, equity, and transparency become increasingly relevant. Research could explore how to ensure ethical stakeholder integration while using digital tools in architectural practices, and identifying best practices for ensuring inclusivity and transparency.

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Exploring the Nexus of Governance and Economic Development: A Bibliometric Analysis

*Neha

Abstract

The study aims to provide valuable insight into the scope and intellectual structure of the academic literature on governance and economic development (GED) and identify emerging themes. The study analyzed 295 articles published from 1992 to 2024 in Web of Science and Scopus databases. Various performance analysis and scientific mapping techniques were applied using the Biblioshiny software of R-studio's Bibliometrix package. During the analysis, the highest publication was found in 2021. Chong A. was the most influential author, and Journal of the Knowledge Economy was the most influential journal. The USA led in publications and citations count and was a primary collaborator. The three main clusters were: Economic Growth, Institutions, and Governance. Economic freedom unfolded as an emerging theme. The results will be helpful for scholars, governments, and various developmental institutions. No such bibliometric analysis has been conducted to study the GED relationship, especially by using the databases Scopus and Web of Science together in a study.

Keywords: *Governance, Economic Development, Bibliometric, Performance Analysis, Biblioshiny*

JEL classification: *O10, H11*

1. Introduction

One of the SDG goals of the UN 2030 Agenda is peace, justice, and strong institutions, which are the main foundation for achieving inclusive growth and eradicating many socioeconomic issues like inequality and poverty from the economy (Dhaoui, 2019). This process is also known as good governance. There have been many studies on the issue of poor governance in different sectors and contexts that have pointed to varying impacts on the performance of these sectors due to poor governance. Economic growth is driven by good institutional quality or good governance, which improves government performance, reduces transaction costs, improves economic efficiency, and facilitates digital progress (Bon, 2021).Although the concept of good governance gained importance way back in the 1990s, the main focus of the institutions and policymakers was on checking the governance status in the economies that required financial aid. Sooner, it was realized that good governance helps improve the economy at a macro level and institutions at a micro level. Hence, studying governance and various factors that influence economic development becomes crucial at the macroeconomic and micro levels, such as in private companies, governed states, or families. It can also be related to any activity, such as public governance, land governance, blockchain governance, health governance, and many more. This highlights the significance of studying the relationship between governance and economic development. Not only this, it will always be vital to the academic community due to the dynamic nature of the economies and their ties, even if scholars have studied the concept in great detail relating it to various contexts such as different geographical regions or different organizations such as public or private. Nevertheless, to the best of the scholar's knowledge, no such study has been conducted that not only analyses the current status of the research in the context of governance and economic development (GED) but also talks about its future directions in the context of the relationship. In such a scenario, a bibliometric analysis might provide fruitful results. There are many advantages of such analysis. It can help academicians to know where their work stands in the extant literature, identify knowledge gaps, gain insights on research trends, and also get new research ideas with the help of various tools such as identification of emerging themes through thematic analysis (Donthu et al., 2021). Also,

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the outcomes of such a study are vital for formulating plans and policies that align with the dynamics of the economic growth of a country/organization. Bibliometric analysis, which is gaining relevance in today's research arena (Ohlan & Ohlan, 2022), is a modern method of review where the scholar can perform a quantitative analysis of a large set of publications in one go. This can be performed using two types of analysis, i.e., performance analysis, in which we can evaluate the productivity and impact of research and contributions by authors, institutions, and countries in the field, and science mapping, through which the key themes and topics along with the noteworthy trends and research gaps in the field can be identified (Lim & Kumar, 2024).

This study aims to assess the link between governance and economic development through bibliometric analysis, highlighting the dynamics of scientific literature through a scientific mapping of existing knowledge. To evaluate the publishing trajectory of this field of study, scholarly articles were retrieved for the years 1992–2024 from the Web of Science and Scopus databases. The selection of the articles for the study used a systematic approach to measure the influence of the papers and journals released in that time frame. The study also utilized some descriptive data to determine which journals, authors, nations, and institutions within the sample are the most influential. Finally, an analysis was carried out to find linkages and clusters among the terms that authors from the same study corpus used, using Biblioshiny software from R-studio. The review examines the following research questions to outline the relationship's past performance and current state in the literature. It identifies potential future directions of the field that will be useful for academic and scientific research for framing policies for organizations of all kinds.

RQ1. What is the trend in the volume of the GED research corpus?

RQ2. Which Journals, Authors, and Countries are the most influential ones in the field of research?

RQ3. What are the key research areas and emerging themes in the GED nexus?

RQ4. What is the co-authorship network between the countries?

The rest of the paper is organized as follows. Section 2 presents a review of the literature. Section 3 describes the methodology used for conducting the bibliometric analysis. Section 4 presents results and discussion, elaborates on the development and recent trends of the investigated research field, and detailed content analysis in cluster and thematic analysis. Finally, Section 5 concludes the article.

2. Literature Review:

An overview of previous research was conducted even before initiating the present study's assessment, which uses bibliometric analysis to design the scientific construct and investigate the relationship between governance and economic development. A thorough review of the literature on research focused on bibliometric analysis or other similar ideas in the area of governance was conducted during this procedure.

A review of the past studies found that several studies have studied governance in terms of public governance and other related forms. In addition, various scholars have reviewed such studies. For instance, (Naomi et al., 2020) used the Scopus database to conduct a bibliometric analysis of good governance of both public and private institutions. The author discovered that, on the one hand, public institutions concentrated on socio-economic issues such as poverty, economic growth, etc., while private organizations focused on more significant economic expansion. Furthermore, he also found that most studies were from high-income nations, focusing on the environmental aspects, while low-income nations concentrated on post-colonialism. The author found that during his study period from 1990-2018, there was an exponential trend in the good governance publication only after 2000. His suggestion for future research on indices was taken into account by (Saisse et al., 2023),after performing a mix of bibliometric and textual analysis of World Governance indicators using a dataset from Scopus for2013-2022. Again, it was found that there was an increasing trend in the publications, with a maximum number of occurrences of the keyword "governance", followed by global governance indicators, economic growth, corruption, institutional, and institutional quality. They also found a co-occurrence of governance with economic growth, suggesting future studies on this and using databases other than Scopus. The present study is based on the above-identified gap. Another study conducted on good governance studies utilizing the dataset from the Scopus database for the period 1984-2020 found a growing trend since 2011 in the publication (Fauzan & Jahja, 2021). They have used Microsoft Excel, Harzing's Publish or Perish, and Vosviewer for the bibliometric analysis and visualization. They used the search string good governance in the title, which they suggested to expand for future studies. Their study also revealed that most published works were in English and belonged to the subject of social science. Most of the studies were from the US, the International Review of Administrative Sciences, and the University of Toronto from their respective group under study. In addition, they conducted citation analysis using Harzing's Publish or Perish software and visual representation of countries and authors' collaboration networks using VOSviewer. (Lyrio et al., 2018) found an increasing trend in the publications from 1984 to 2013 in the governance context, focusing on transparency, accountability, and corruption in the public sector. They classified the articles based on the research topic, research environment, theoretical framework, research method, and data analysis.

Research Gap: As mentioned in the previous literature, there is a shortage of studies in the research field that are conducted either by utilizing databases other than Scopus or by combining them with others. Also, as suggested, emphasis on the use of keywords related to good governance, along with narrowing the scope by relating it with other variables,is done in the paper, taking into consideration studies on only GED (Fauzan & Jahja, 2021). No such study, as far as the author knows, has conducted an in-depth bibliometric analysis of the GED relation. The growing importance of studying the link is also highlighted in the literature (Saisse et al., 2023). Finally, the present study focuses on performance analysis and science mapping as science mapping is equally important to understanding future trends in any research area, and the past literature emphasizes performance mapping more.

3. Methodology:

Bibliometric analysis is conducted to analyze the contribution of authors, journals, and countries in the domain. Not just this, it also talks about the collaborations and future trends that young researchers can use for their future endeavors. For such in-depth analysis, both objective and subjective methods are required. The first one is known as performance analysis, while the second one is known by the name of science mapping (Donthu et al., 2021). This study has utilized the combination of performance analysis and science mapping, which can provide meaningful insights into the area of research.

Data collection:

The paper retrieved the data from two big databases, Scopus and Clarivate's Web of Science, to conduct the bibliometric analysis. Utilizing both databases ensures the quality of the study corpus in terms of peer-reviewed publications and allows for broader coverage. (Echchakoui, 2020; Meho & Yang, 2007; Okolie & Ogundeji, 2022). The keywords utilized for the search are given in Table 1. Afterward, the inclusion and exclusion criterion is mentioned in Table 2, which aligns with the search strategy of (Okolie & Ogundeji, 2022; Shaffril et al., 2018).

Table 1. Search string used for bibliometric analysis Database Used Keywords

Database	Used Keywords
Scopus	Article title, Abstract and Keywords ("government governance" OR "public governance" OR "good governance" OR "governance quality" OR "institutional quality") AND ("economic growth" OR "social development outcomes" OR "economic development" OR "economic performance")
Web of Science	Topic ("government governance" OR "public governance" OR "good governance" OR "governance quality" OR "institutional quality") AND ("economic growth" OR "social development outcomes" OR "economic development" OR "economic performance")

Table 2 Inclusion and Exclusion criterion

Criterion	Included
Scopus	
Document type	Article
Subject Area	Economics, Econometrics and Finance, Social Sciences and Business, Management and Accounting
Language	English
Publication stage	Final
Web of Science	
Document types	Article
Web of science categories	Economics, Development Studies, Business Finance, Business, Political Science, Management, International Relations, Social Sciences Interdisciplinary, Public Administration and Law
Language	English
Publication stage and document types	Excluded Early Access and Proceedings paper

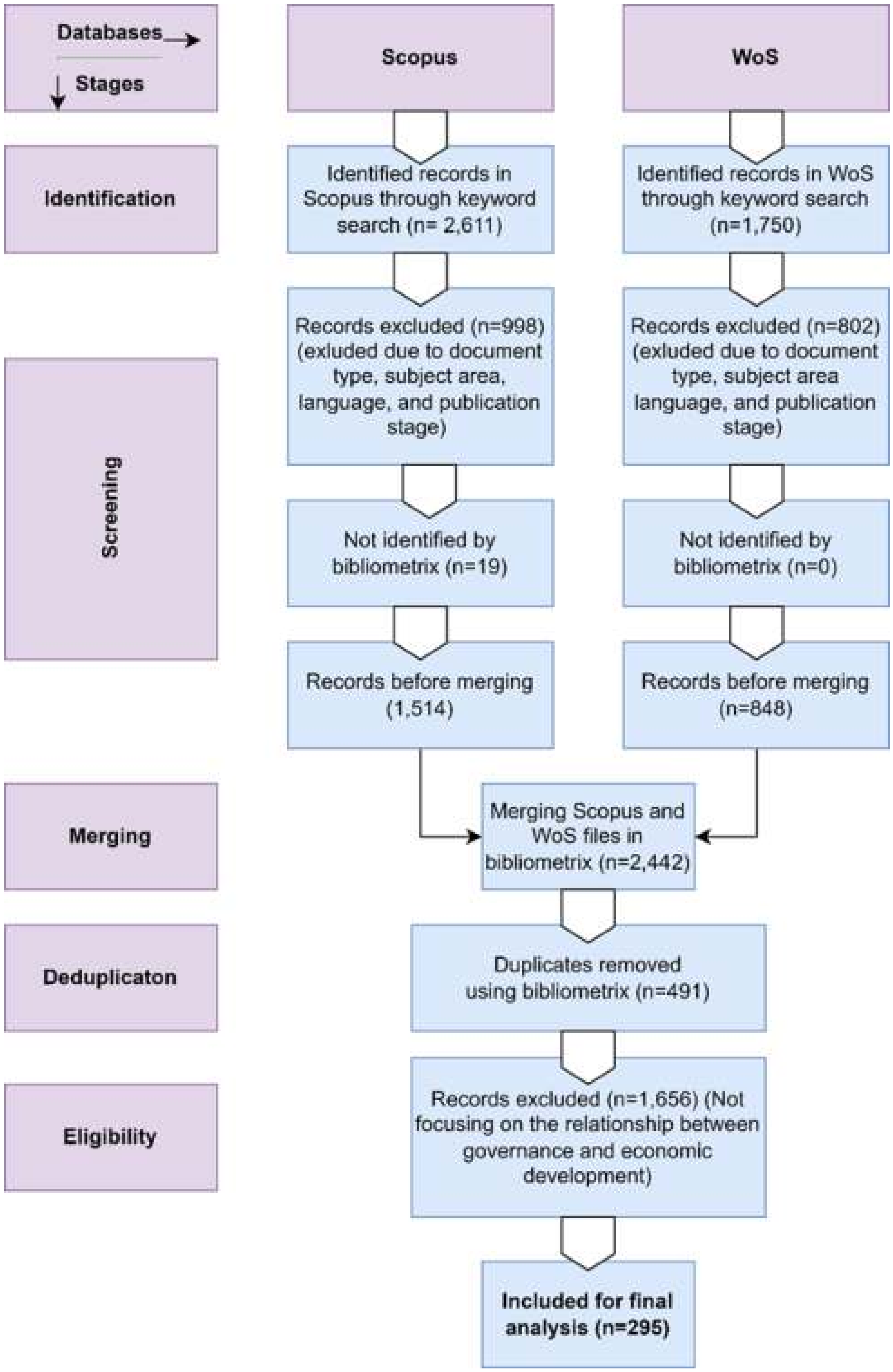

Figure 1 Flow diagram of research methodology (modified from (Okolie & Ogundeji, 2022)

The research was conducted on published papers from Scopus and Web of Science (WoS) databases. Initially, a list of 2,611 and 1,750documents were identified from the Scopus and WoS respectively using the keyword string as mentioned in Table 1, which were further scrutinized per different inclusion and exclusion criteria in Table 2. The data from Scopus were extracted in "BibTex" format and from WoS in "plaintext", which were further converted into "bibtex" in the bibliomerix package of R-studio version 4.4.0. The techniques for conversion, merging and deduplication was similar to – . A total of 19 files were not read by the software, after which 1516 records from Scopus and 848WoS records were merged along with the removal of 491 duplicates in the same software, and then merged files with no duplicates were further converted in .xlsx format. The Excel file was further scrutinized, and for the removal of all those records that did not analyze the relationship between governance and economic development, a manual study of abstracts of 1,951 records was conducted, leading to a removal of 1,656 records. A final corpus of 295 was thoroughly analyzed using various bibliometric techniques. The visual representation of the bibliometric study was done in both Microsoft Excel and the Biblioshiny software of R-studio.

4. Results & Discussion

4.1. Performance Analysis

One of the best ways to address the subjectivity in the review papers is to do a quantitative analysis of the research conducted in the area of interest. The bibliometric analysis is one such analysis that helps highlight the significant development and future research agendas. This type of analysis can never be substituted for other review types, such as narrative or systematic literature review, but rather complements them. There are, in general, two types of analysis to fulfill this goal: performance analysis and science mapping.

Performance analysis is best to know the current status of the research, such as the major authors, institutions, countries, or even journals, how have their status been in terms of citation count and publication count . In this article, we discuss the basic statistical characteristics of publications, such as their productivity and impact, based on recognized bibliometric indicators such as the number of publications, citations, and average citations . The data obtained from such analysis helps various parties involved, such as publishers, potential researchers, fund providers, and even the government. Not just this, when combined with science mapping, it can provide valuable insights.

4.1.1. Descriptive statistics of publications

The information about the publications showing GED nexus is based on the data retrieved from the two databases, namely, Scopus and Web of Science, and is presented in Figure 2. There are 295 articles published at an annual growth rate of 8.07% and cited on an average of 27.62 citations per document from 1992 to 2024. Out of these articles, 74 were published by single author, which means that the rest of the 221 articles were co-authored by either two or more than two authors. In addition, overall, 610 authors contributed to the published documents since 1992. These documents belong to 197 sources, showing many publication bodies. These studies employ a sum of 537 author's keywords.

Figure 2 Main information about the research corpus

Source: Author's own, using Biblioshiny

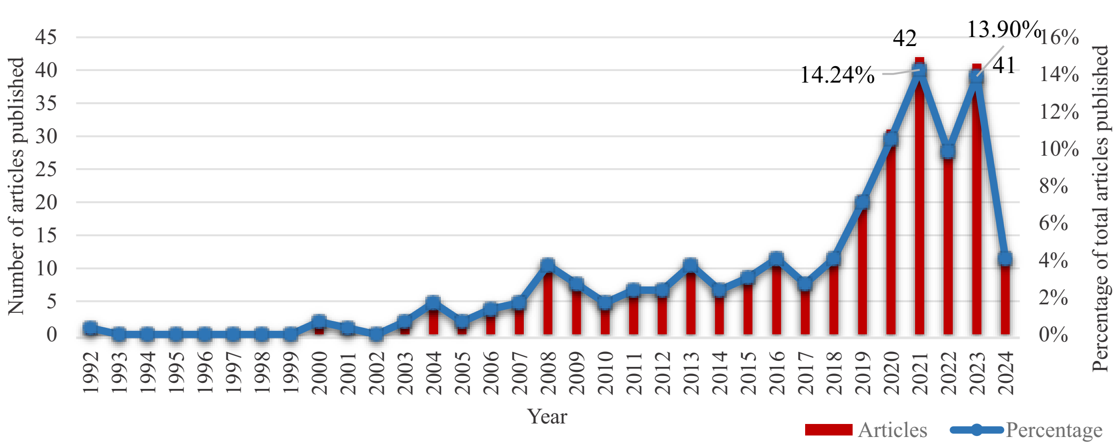

Figure 3 Yearly Publication and its proportion to total research corpus

Source: Author's own

Figure 3 shows the yearly publication and percentage of articles published each year in proportion to overall records of295, from 1992 to 2024. The trend in the publications of GED nexus started in 1992. It continues to rise from 2017 and peaks in 2021 with a yearly publication of 42 articles, which is 14.24 %of total publications, after which it again increases in 2023 by 41.4% from the preceding year. The growing publication trends indicate the rising importance of studying the nexus.

4.1.2. Influential Authors as per their citation structure

The most influential authors in Table 3 are ranked as per the decreasing order of the h-index. The h-index of x here is based on GED publications and shows that x publications have been cited at least x times, measuring an author's productivity and citation impact. The table also lists the important characteristics of the top 10 authors, such as g-index, m-index, institution, country, total citations, number of publications, average citation per publication, year of first publication, and number of publications as a first author. As per the h-index value, Chong A from Georgia State University, USA, holds the first rank. Moreover, he is also leading in g-index (4), has the highest number of publications (4), and has an average citation of 94.5 per publication. He has a total citation count of 378, just after the most cited author from the University of Gothenburg, Sweden, with the highest total citation (837) and the highest average citation count (418.5) in the list. The author with the first rank has one of the earliest publications in 2000, leading him to a low m-index score. He is also the first author of all of his four publications. The results show that 9 authors on the list have more than 50 citations. In addition to this, the results also reveal that the authors had a varied country of origin. As is seen in the table, the topper in the list is an author from a developed country; still, it was led by authors from developing countries like Malaysia and Pakistan.

Table 3 Top 10 most influential authors based on the h-index.

Rank	Author	h	g	m	Institution	Country	TC	TP	TC/TP	PY	FA
1	Chong A	**4**	**4**	0.16	Georgia State University	USA	378	**4**	94.5	2000	**4**
2	Law S	3	3	0.18	University Putra Malaysia	Malaysia	98	3	32.7	2008	2
3	Azam M	3	3	0.27	Abdul Wali Khan University Mardan	Pakistan	77	3	25.7	2014	3
4	Alexiou C	3	3	0.21	Cranfield University	United Kingdom	73	3	24.3	2011	2
5	Aixalá J	3	3	0.18	University of Zaragoza	Spain	73	3	24.3	2008	1
6	Fabro G	3	3	0.18	University of Zaragoza	Spain	73	3	24.3	2008	2
7	Bokpin G	3	3	0.43	University of Ghana	Ghana	65	3	21.7	2018	0
8	Pelizzo R	3	3	**0.75**	Nazarbayev University	Kazakhstan	15	3	5	2021	0
9	Rothstein B	2	2	0.12	University of Gothenburg	Sweden	**837**	2	**418.5**	2008	1
10	Calderón C	2	2	0.08	University of Rochester	USA	362	2	181	2000	0

Note: h: h-index, g: g-index, m: m-index, TC: Total Citation, TP: Total Publication, TC/TP: Average citation per publication, PY: First year of publication, FA: Number of publications as first author

Source: Author's own

4.1.3. Most influential countries

As indicated in Table 4, the most cited articles originated from the following countries: the USA, Sweden, China, Malaysia, India, the United Kingdom, Tunisia, Romania, Ghana, and Italy. The USA has accumulated 1063 total citations, the highest among all the countries, followed by Sweden and China with 894 and 467 total citations, respectively. The most prolific countries listed in the table are the USA, China, the United Kingdom, India, Malaysia, Pakistan, Turkey, Spain, Nigeria, and Ghana. All of these countries have at least ten publications in GED nexus. In addition, it is also visible that countries like the USA, China, Malaysia, and India hold the top spot in the list of the top five producers and the top five highly cited countries list. With the USA leading both lists, it excels in quantity and quality. More interestingly, despite producing fewer publications than many other countries, Sweden has received 894 total citations, securing the second position in citation rankings and underscoring its significant impact in the GED domain.

Table 4 Top 20 most influential countries based on number of citations and publications

Country	TC	Country	TP
USA	1063	USA	40
SWEDEN	894	CHINA	24
CHINA	467	United Kingdom	19
MALAYSIA	293	INDIA	15
INDIA	171	MALAYSIA	13
UNITED KINGDOM	155	PAKISTAN	13
TUNISIA	147	TURKEY	13
ROMANIA	128	SPAIN	12
GHANA	123	NIGERIA	11
ITALY	117	GHANA	10
PAKISTAN	100	AUSTRALIA	9
BOSNIA	90	TUNISIA	9
AUSTRALIA	87	ITALY	8
NETHERLANDS	75	CAMEROON	7
TURKEY	63	PORTUGAL	7
NEW ZEALAND	58	SWEDEN	7
NIGERIA	56	BRAZIL	6
GREECE	52	KAZAKHSTAN	6
PORTUGAL	51	SAUDI ARABIA	6
BRAZIL	44	GREECE	5

Source: Author's own

Collaboration among countries

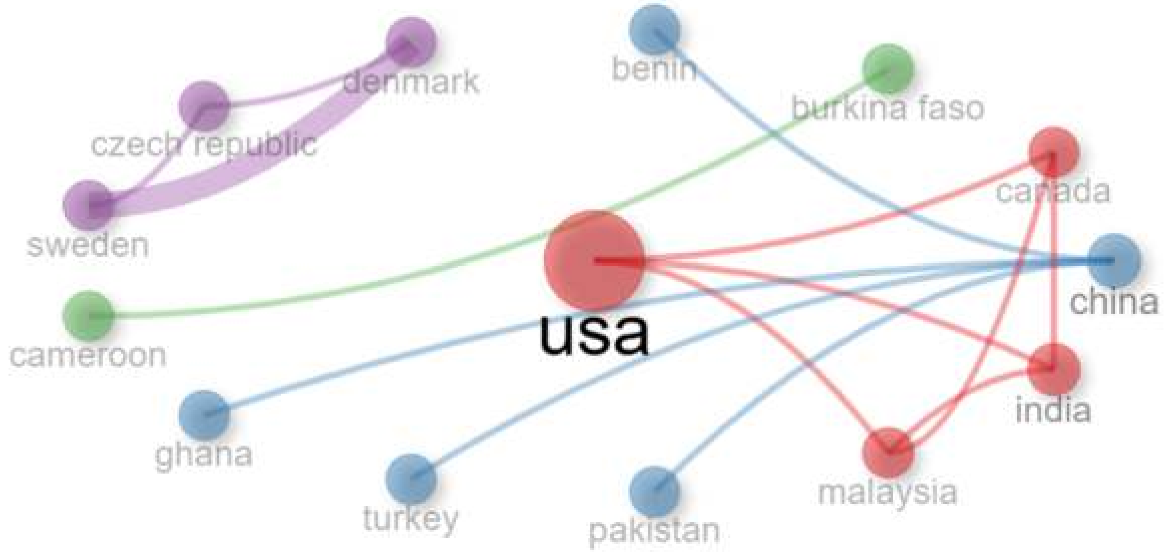

Figure 4 Countries collaboration
Source: Author's own, using Biblioshiny

The network graph examines the significant collaborations among top countries that have taken place in the research domain. The collaboration network in Figure 4 consists of nodes or circles and connecting lines. The node's size reflects the country's publication frequency, and the thickness of the lines connecting the two nodes indicates the frequency of collaboration. A total of four clusters are discovered after examining the collaboration network. The first cluster is of the USA, with Canada, Malaysia, and India. The USA also is the largest node in the network, showing the highest number of collaborations. The notable fact in the network is that a high-income country like China is collaborating with poor economies such as Ghana, Turkey, Pakistan, and Benin, showing the sharing of technical and theoretical know-how with low-income economies. Not only this, the network also consists of countries from different continents showing the varied nature of the research in the domain and its importance in the nukes and corners of the globe. Despite the wide range of alliances, there still needs to be a noticeable improvement in the number of international partnerships, particularly in collaborations between rich and poor economies.

4.1.4. The most influential journals

Bradford's Law

Bradford's law determines the core journals in the research area, which divides the journals into three zones (Arar & Yurdakul, 2023). As per this law, if each zone comprises an almost equal number of articles, with decreasing order of article publications, then the number of journals in the three zones will increase proportionately or in geometric series towards the next zone (Neelamma & Gavisiddappa, 2016). In Figure 5, the first zone (core zone) consists of almost one-third of the publications published in only 26 journals, including Journal of the Knowledge Economy, Pakistan Development Review, Cogent Economics and Finance, Journal of Economic Issues, and Social Indicators Research. These are the most productive journals in the research corpus. Besides this, the second and third zones contain almost the same number of publications, with 74 and 97 journals, respectively. However, the increase in journals towards the second and third zones is unequal, violating Bradford's law.

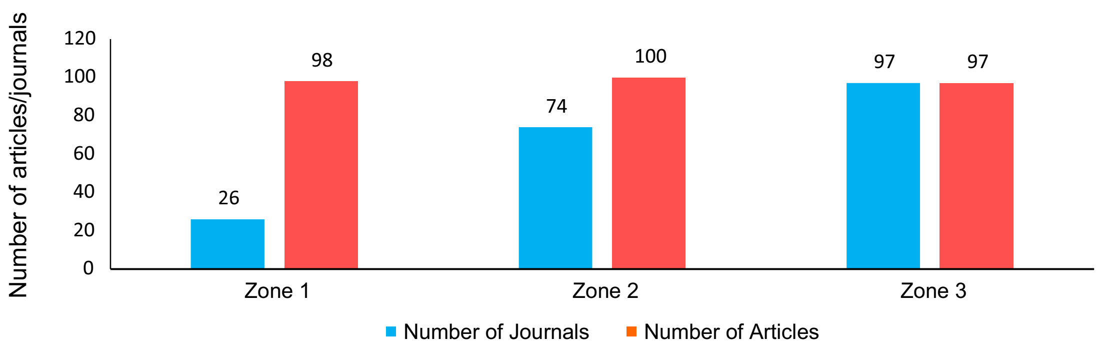

Figure 5 Distribution of Journals as per Bradford's Law

Table 5 Top 15 journals as per their local h-index

Source	h-index #	TC #	TP	PY	SJR	Quartile	Citescore	Publisher	Subject area	SNIP
Journal of the Knowledge Economy	**6**	128	**7**	2020	0.69	Q2	5.9	Springer	Economics and econometrics	1.744
Economic Modelling	4	**173**	4	2006	**1.34**	Q1	8	**Elsevier**	Economics and econometrics	1.785
Journal of Policy Modeling	4	87	4	2020	1.125	Q1	6.2	**Elsevier**	Economics and Econometrics	1.569
Sustainability (Switzerland)	4	127	5	2018	0.67	Q1	6.8	Multidisciplinary Digital Publishing Institute (MDPI)	Computer Science, Energy, Environmental Science, and Social Sciences	1.086

Journal of Economic Studies	4	59	4	2007	0.413	Q2	4	Emerald Publishing	Economics, Econometrics and Finance	0.967
Journal of Economic Issues	4	112	5	2009	0.38	Q2	1.5	**Taylor & Francis**	Business, Management and Accounting and Economics and Econometrics	0.793
Economics Bulletin	4	53	4	2013	0.23	Q3	1.6	Economics Bulletin	Economics, Econometrics and Finance	0.343
Structural Change and Economic Dynamics	3	40	4	2004	1.34	Q1	**9.6**	**Elsevier**	Economics and Econometrics	**1.8**
Social Indicators Research	3	50	5	2014	0.965	Q1	6.3	Springer Nature	Arts and Humanities, Developmental and Educational Psychology, Social Sciences, Sociology and Political Science	1.541
Economies	3	86	4	2018	0.497	Q2	4	Multidisciplinary Digital Publishing Institute (MDPI)	Economics, Econometrics and Finance and Development	0.999
Cogent Economics and Finance	3	38	5	2020	0.426	Q3	3	**Taylor & Francis**	Economics, Econometrics and Finance	0.974
Economics and Sociology	3	58	4	2020	0.451	Q2	5.4	Centre of Sociological Research	Business, Management and Accounting and Economics, Econometrics and Finance, and Social sciences	0.947
Applied Economics	3	51	3	2003	0.59	Q2	3.8	**Taylor & Francis**	Economics and Econometrics	0.9
Journal of the Asia Pacific Economy	3	17	3	2004	0.399	Q2	3.7	**Taylor & Francis**	Development, Geography, Planning and Development, Political Science and International Relations	0.728
Pakistan Development Review	3	91	6	2006	0.13	Q4	0.5	Pakistan Institute of Development Economics	Geography, Planning, and Development	0.144

TP: Total Publications in the research corpus, SJR: SCImago Journal Rank 2023, TC: Total citations, PY: year of first publication, #: Local impact

Source: Author's own

After that, for further in-depth analysis of the journals, they are arranged in the decreasing order of h-index, which considers both the quantity and quality of the journals to determine the better submission option for future research, for granting funds and libraries for future subscription. It tells how many journal articles have been cited that are at least equal to the number of publications. Table5 shows that the "Journal of the Knowledge Economy" acquires the highest rank not just in terms of h-index (6) but also in terms of the number of publications (7). It is one of the newest journals publishing in the area of governance and economic development, with the second-highest total citation count of 128, having fifth position in SJR (0.69), 6th in Citescore (5.9), and 3rd in SNIP (1.744). It shows the impact and influence of the Journal of Knowledge Economy in the field of GED nexus. Moreover, it is indexed as a Q2 journal by Springer, a publisher publishing in Economics and Econometrics. Quartile 1 journal, "Economic Modelling" shows the best performance in terms of a Total citation count of 173 and SJR 1.34 from the list. Most journals are from the publisher "Taylor & Francis" followed by Elsevier. The journal "Structural Change and Economic Dynamics" scores highest in SNIP and Citescore, also from the Elsevier Publisher. Five of the top 16 journals are listed as Q1 journals, which is a great sign that quality journals are publishing articles, as Q1 journals are the top 25% most prestigious journals of governance and economic development. Additionally, most of the journals are related to the Economics and Economics categories with the maximum number of publications in total, suggesting the significance of the topic not just in the present but also in the future for research.

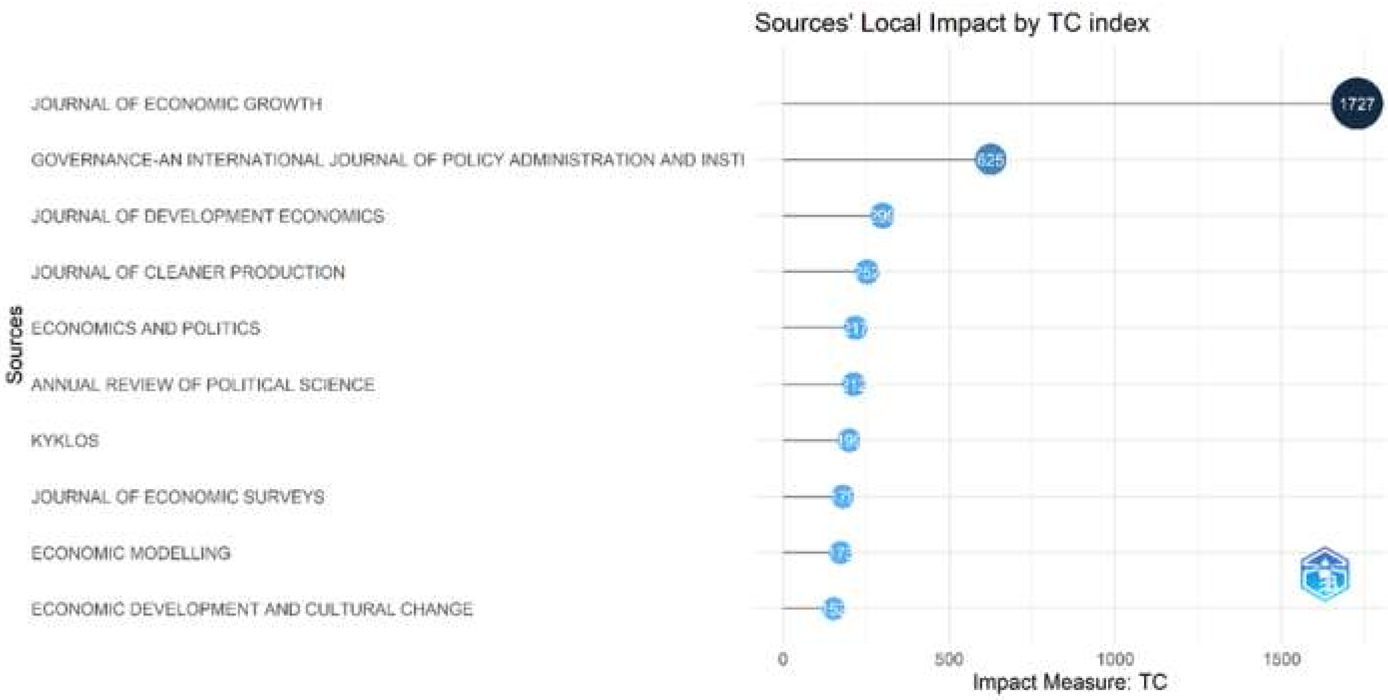

Figure 6 Top 10 most cited journals

Source: Author's own, using Biblioshiny

In contrast with the above findings, when the journals are ranked based on the total citation count for identifying the most prominent journals in the field, the results show that as per the total citations count in Figure 6, the three most influential journals are the Journal of Economic Growth, Governance-An International Journal of Policy Administration and Institutions, and Journal of Development Economics with 1727, 625, and 299 total citations, respectively. Despite being old and having only one publication in the domain, these journals still greatly influence the interest area and can be used for future references.

4.2. Science Mapping:

Performance analysis is one side of the story of bibliometric analysis. To understand the other half or to get in-depth knowledge of the research area's prospective trends, gaps, key themes, and topics, various tools can be used (de Bruyn et al., 2023; Lim & Kumar, 2024; Olden, 2007). Science mapping is one such technique thatincludes Co-authorship analysis, Co-citation analysis, Bibliographic coupling, Co-word or Co-occurrence of keywords analysis, Citation analysis, and PageRank analysis. This study uses bibliographic coupling of documents, co-occurrence of keywords, and thematic map to get some idea of the significantsub-themes under the central theme of GED nexus.

4.2.1. Bibliographic coupling of documents:

To understand the present development of themes in the nexus of GED, the bibliographic coupling can be referred to as a great tool of science mapping, as it clusters recent documents based on shared references between them. In other words, two papers are coupled if they both cite the same papers, one or more than one in number, unlike co-citation, which takes only highly cited articles co-cited in a third article (Donthu et al., 2021). The bibliographic coupling has advantages over co-citation, such as the constant list of references for the cited articles. Hence, this technique can be used for recent and evolving research topics (Dwivedi et al., 2023). The thickness of links between the nodes (documents) highlights the number of shared references. Articles with strong coupling form distinctive groups, indicating they have similar themes. Coupling in the documents is measured by references, and impact is measured by global citation score. The results are shown in Figure 7, in which five differently colored clusters show similar themes within each cluster. The nodes of cluster 1 are closer to each other; hence, they have more thematic similarities in contrast with other clusters. As is shown in Table 6, there are, in total, three clusters with a minimum document frequency of six. Twenty-one papers are grouped into red-colored Cluster No. 1, green-colored Cluster No. 3 with eight papers and blue-colored Cluster No. 2 with six documents. Based on the centrality, the documents in Cluster 1 are the most important in the research domain, while the articles in Cluster 3 are the most impactful. The articles in the red cluster are mainly concerned with institutions, followed by blue, green, purple, and yellow, focusing on financial development, governance quality, institutional quality, and governance, respectively, as labeled in Table 6.

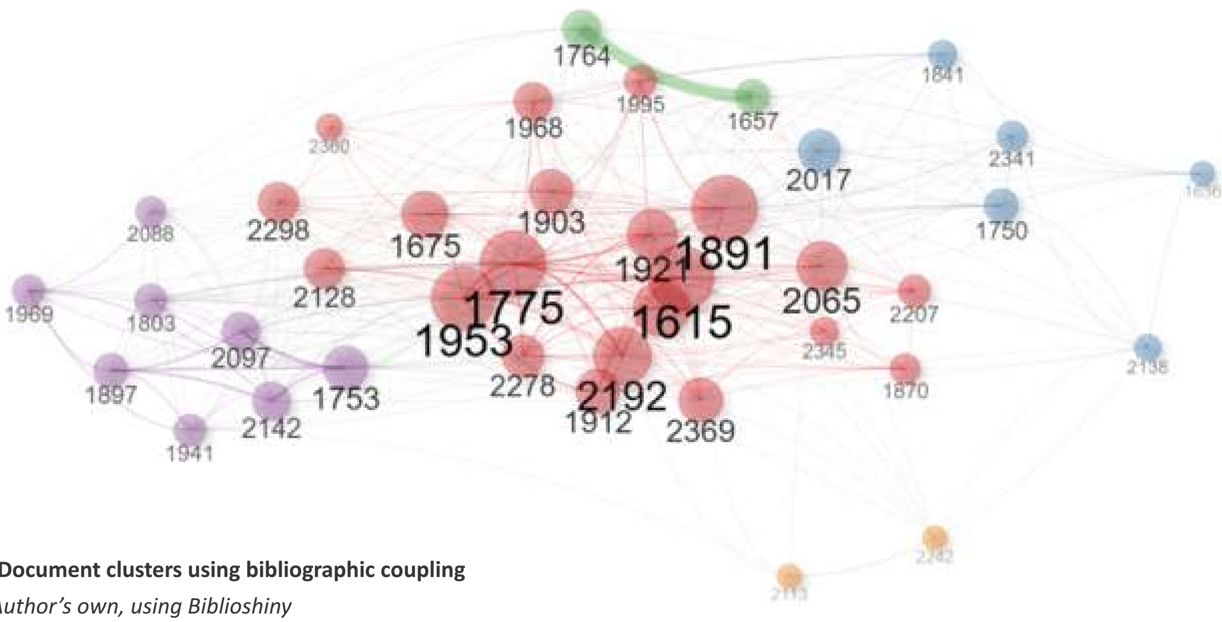

Figure 7 Document clusters using bibliographic coupling

Source: Author’s own, using Biblioshiny

Table 6 Document clusters based on centrality measures

Label	Cluster	Number of articles	Centrality	Impact	Color
Institutions	1	21	2.952	2.063	Red
Financial Development	2	6	1.67	1.866	Blue
Governance Quality	3	2	2.629	3.612	Green
Institutional Quality	4	8	2.591	3.207	Purple
Governance	5	2	0.997	2.922	Yellow

4.2.2. Keyword analyses

The author's keywords are analyzed in terms of their frequency over time to understand where most work has been done and where the research is headed in the specific area. A graph of the most frequently used keywords illustrates the use and trend of the words in the past. Figure 8 depicts the development process of the top 10 keywords in this specific research field and found that the word “economic growth” is frequently used in the articles, with “2” cumulative frequency in 2004 to 119 in 2024, showing a growing popularity since its first use in the domain. It also helps in suggesting future research areas (Alkhammash, 2023). The words that show steady progress along with economic growth are institutional quality, institutions, and governance, implying the strong association among these words even in 2024. Hence, studying the relationship among these keywords might yield insightful perspectives. These findings are in line with that of (Saisse et al., 2023). It is more intriguing to note here the growth of the keyword "institutional quality" in the literature that surpasses the keywords "governance" and "economic development" in the year 2019 and the keyword "institution" in 2023, reaching a cumulative frequency of 68 in 2024. The keywords institutional quality, institutions, governance, and economic development have a frequency of occurrence of 68, 57, 47, and 27, respectively.

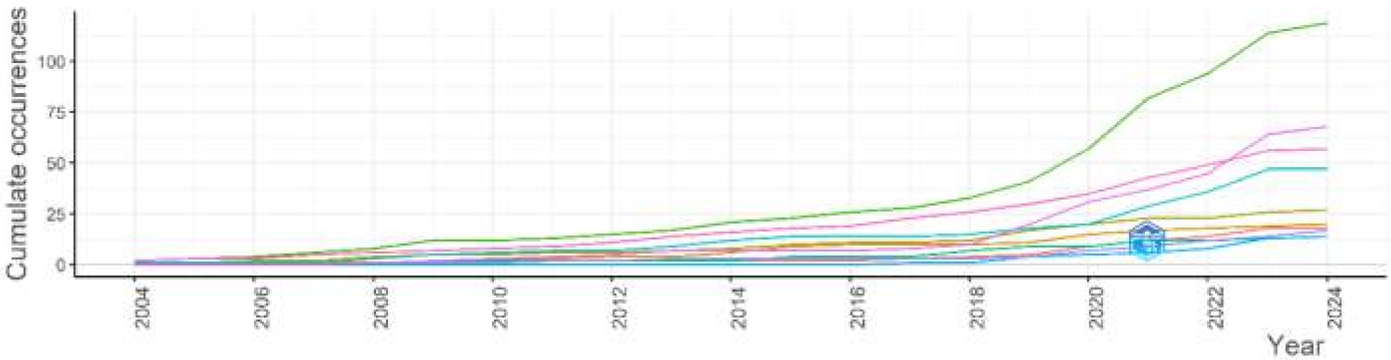

Figure 8 Top 10 Keywords over 1992-2024

Source: Biblioshiny

4.2.3. Co-occurrence of Author Keywords

Keywords are regarded as a door to the whole area of research (Kalita & Tiwari, 2023). The co-occurrence of authors' keywords is used to analyze the underlying themes by identifying the words that occur together (Donthu et al., 2021).The thematic clusters that are formed using bibliographic coupling (present themes) are supplemented with the future themes using the thematic map and co-occurrence of authors' keywords (Donthu et al., 2021; Florek-Paszkowska & Hoyos-Vallejo, 2023). The fifty most significant keywords are analyzed in Figure9 by applying Louvain clustering, one of the best clustering algorithms, to understand how the keywords in the field of GED nexus are distributed. The co-occurrence has been normalized using association, and automatic layout has been used for clear visualization. The co-occurrence network maps keywords as a network by checking their association. The node's size is represented by the circle that indicates the number of connections the keyword has with others, and the thickness of the linking line indicates the frequency of co-occurrence between the two interconnected keywords. The closeness among the keywords indicates that authors have used the respective keywords more often together. The map shows different clusters in various colors.

In this case, economic growth is at the center and has also occurred the highest number of times, shown by the node size. It is also connected to various other keywords, with the highest number of times with institutional quality, institutions, and governance, shown by the thickness of the edges connected to it. It indicates that scholars have focused more on these areas. Then, the knowledge clusters are formed using the centrality measures, as shown in Table 7.The keywords with the highest betweenness centrality act as a bridge and facilitate information flow throughout the network by being situated along the shortest paths between other keywords. Closeness centrality gauges the keywords that are frequently examined together in literature because it shows which keywords are the most crucial and can reach all other keywords in the network without the need for any intermediaries. A greater PageRank centrality indicates that a term is among the most powerful due to the quantity and quality of its linkages with other important words. PageRank takes importance into account in addition to number. The knowledge clusters so formed are as follows:

1. Economic growth: The cluster colored in red (Figure 9) contains 23 keywords. The biggest and central node in this cluster is economic growth, indicating its occurrence and importance, respectively. Also, it has the highest closeness centrality, as in Table 7. It is directly connected to other nodes in the same cluster, namely Institutional Quality, Corruption, Good Governance, Sub-Saharan Africa, Financial Development, Foreign Direct Investment, and Rule of Law. Among these institutional qualities, human capital and trade openness had the highest betweenness, closeness, and PageRank centrality, showing their importance and influence in the network.

2. Institutions: The second cluster is depicted in blue in Figure 9 and is central around the word institutions. It involves other keywords such as Economic Development, Human Capital, Growth, Panel Data, and Inequality. Overall, this cluster includes 12 keywords. The important keywords as per Pagerank appear to be Institutions, Economic Development, Sub-Saharan Africa, Growth, and Panel Data with values of 0.083, 0.039, 0.021, 0.014, and 0.017, respectively. The values of betweenness and closeness are the highest of institutions, economic development, and growth, indicating the focus of this cluster around institutions, economic development, and growth.
3. Governance: The biggest node in the green-colored cluster appears to be governance. It consists of 6 keywords. Governance has the highest PageRank, betweenness, and closeness centrality with other nodes, followed by Africa and human development. Hence, the focus of this cluster is governance and Africa.
4. Income inequality: This is shown by a group of only four purple-colored keywords, in which corruption and inequality have the highest closeness and PageRank values, but betweenness centrality is highest for income inequality.
5. Education and Health: The yellow cluster indicates that these nodes have low centrality with other keywords in the network.
6. Isolated Nodes: Two isolated nodes, namely, economic freedom and China, are also visible in the network; these might be future research topics. In other words, one of the studies might be conducted to gauge the relationship in China's context, or future studies couldlink economic freedom with the GED nexus.

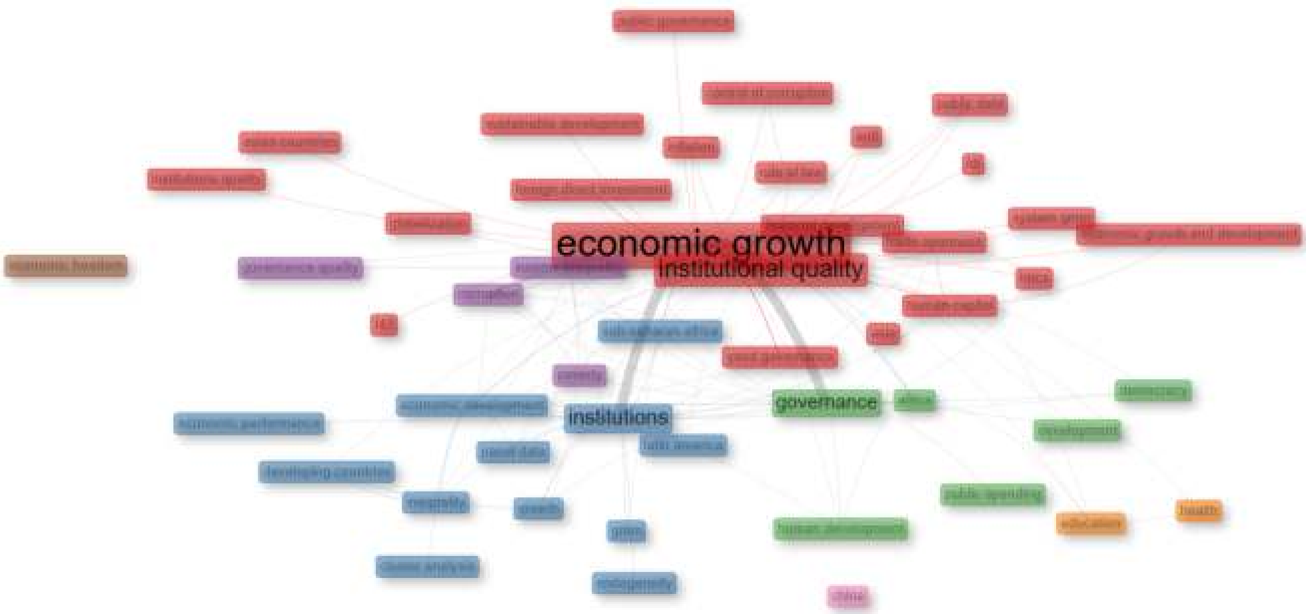

Figure 9 Keywords co-occurrence

Source: Author's own, using Biblioshiny

Table 7 Keyword clusters based on centrality measures

Node	Cluster	Betweenness	Closeness	PageRank
Economic Growth	1	628.093	0.018	0.208
Institutional Quality	1	239.422	0.014	0.114
Good Governance	1	0	0.01	0.015
Human Capital	1	7.529	0.011	0.025
Financial Development	1	0	0.011	0.017
Trade Openness	1	1.193	0.011	0.018
Foreign Direct Investment	1	0.067	0.011	0.013
Rule of Law	1	0.45	0.011	0.013
Asia	1	0	0.01	0.005

BRICS	1	0	0.01	0.01
Public Debt	1	0	0.011	0.012
Public Governance	1	0	0.01	0.006
F43	1	0	0.01	0.006
FDI	1	0	0.01	0.006
Globalization	1	0	0.009	0.006
Inflation	1	0	0.011	0.008
Institutions Quality	1	0	0.01	0.005
Sustainable Development	1	0	0.009	0.005
System Gmm	1	0	0.011	0.007
ARDL	1	0	0.011	0.007
Asian Countries	1	0	0.01	0.005
Control of Corruption	1	0	0.01	0.007
Economic Growth and Development	1	0	0.009	0.007
Institutions	2	159.922	0.014	0.083
Economic Development	2	56.086	0.013	0.039
Sub-Saharan Africa	2	0.172	0.011	0.021
Growth	2	4.292	0.01	0.014
Panel Data	2	0.074	0.011	0.017
Inequality	2	2.621	0.009	0.013
Gmm	2	0	0.01	0.009
Latin America	2	0	0.009	0.007
Cluster Analysis	2	0	0.008	0.005
Developing Countries	2	0.809	0.009	0.009
Economic Performance	2	0	0.008	0.005
Endogeneity	2	0	0.008	0.005
Governance	3	76.78	0.013	0.072
Africa	3	6.61	0.012	0.032
Development	3	0	0.01	0.009
Human Development	3	0	0.011	0.011
Democracy	3	0	0.011	0.008
Public Spending	3	0	0.008	0.005
Corruption	4	2.769	0.012	0.032
Income Inequality	4	6.704	0.012	0.029
Poverty	4	4.596	0.011	0.018
Governance Quality	4	0	0.01	0.007
Education	5	0.813	0.01	0.013
Health	5	0	0.01	0.008
Economic Freedom	6	0		0.003
China	7	0		0.003

4.2.4. Thematic analysis

To understand more about the current state and future scope of research in the domain of GED, a thematic map is of great use (Agbo et al., 2021).The authors' keywords were used for this analysis, which has been referred to as a better option than keyword plus (Florek-Paszkowska & Hoyos-Vallejo, 2023).The keywords are clustered into bubbles. The bubble size determines the number of articles that have used the specific term (Hanaa & Abdul, 2023). The clusters are further grouped into four quadrants based on Callon's centrality and density rank. Centrality tells how integrated the theme is with other themes, and density tells how mature the theme is. The former is measured on the x-axis and the latter on the y-axis

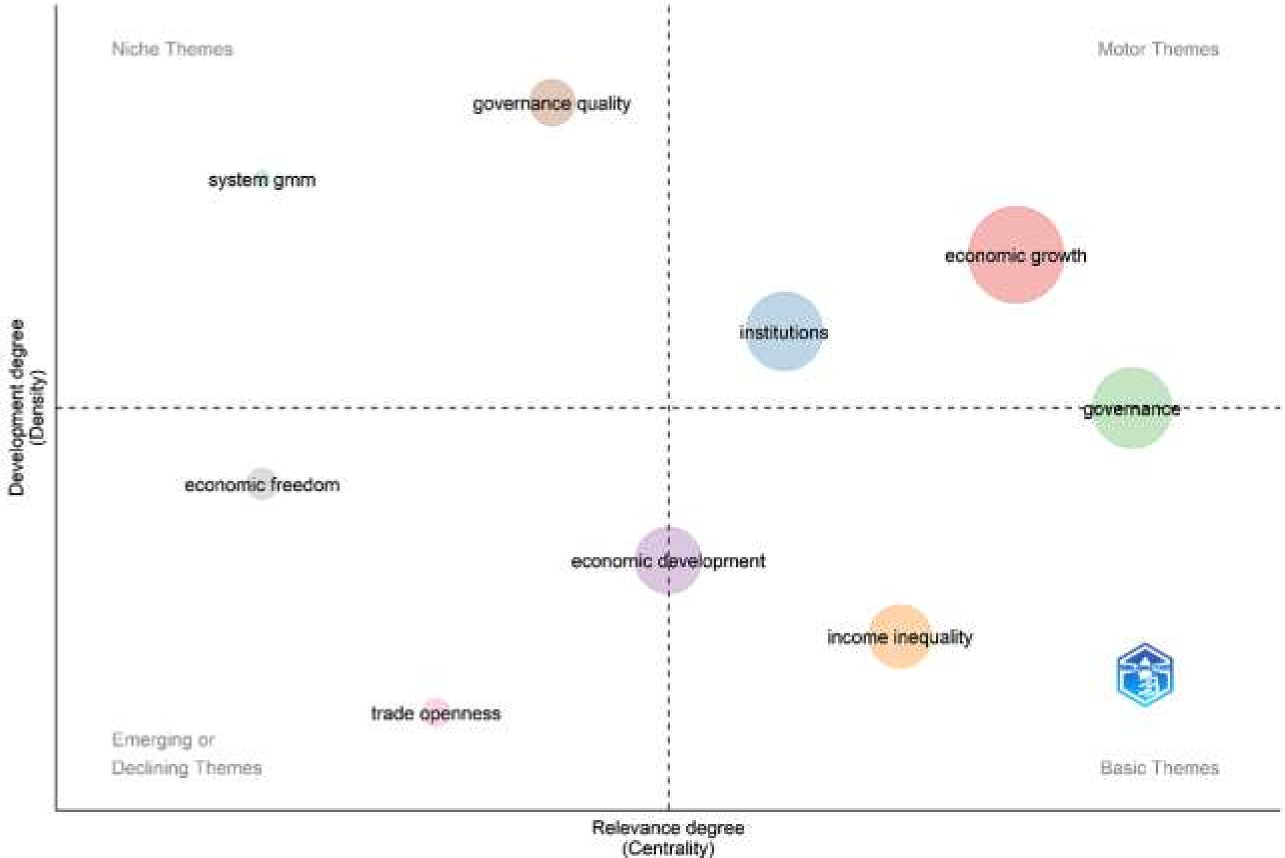

Figure 10 Thematic map

Source: Author's own, using Biblioshiny

The four quadrants thus formed are as follows:

- Quadrant 1 (Motor Themes): On the top right side of the graph, the keywords have higher centrality and higher density, which means the themes are well-developed and are also well connected with other themes, as in Figure 10 in the case of themes named by economic growth, and institutions.
- Quadrant 2 (Niche Themes): On the top left side, the keywords are grouped with the features of low centrality but higher density, also known by the name niche themes are understood as specialized or well-researched within the domain but little interdisciplinary work is done. So, more efforts are needed to develop themes such as "system gmm," and "governance quality" to establish more ties within the nexus of "governance and economic development.
- Quadrant 3 (Emerging or Declining Themes): The lower left side of the graph is characterized by low centrality and low density with themes, namely economic freedom and trade openness, in smaller circles showing lesser work can be either emerging or declining themes. It shows that either these themes have become obsolete or they have the potential to become central in the future research area.
- Quadrant 4 (Basic and transversal theme): The theme of income inequality has higher centrality but lower density, shown in the lower right side of the graph. It is an important topic but is not fully developed.

Economic development has some keywords belonging to basic themes and some to emerging or declining, showing that some components are essential for the domain's growth. Similarly, the governance theme also has some elements in the basic theme and some in the motor theme and, hence, is a leading theme.

The thematic analysis suggests that themes such as governance quality and system gmm must be developed concerning the nexus studied. The thematic map and word co-occurrence results show similar economic freedom results. Hence, more studies should be conducted to understand its link with the nexus.

5. Conclusion And Future Directions

This study's primary objective is to understand the evolving nature of the interplay between governance and economic development and suggest possible areas of future exploration. Using a novel bibliometric review, we examined 295 articles published in 197 scholarly journals in the fields of accounting, economics, finance, and management from 1992 to 2024, with an annual growth rate of publications of 8.07% and an average of 27.62 citations per document. The findings of this study identify trends, gaps, and further theoretical prospects related to the relationship between the studied variables. The results offer insights into the literature by tracking influential papers, top contributing authors, corresponding authors' institutions, and journal distributions of publications. A country's collaboration network, word growth dynamics, bibliographic coupling, Co-occurrence map of keywords, and a thematic map were produced as part of the bibliometric study using the bibliometric R-package and biblioshiny software. The purpose of using these multiple analyses is to assist the researchers in comprehending the scope of this topic, its intellectual structure, and present and emerging thematic trends.

The results conclude that the most influential author in the GED nexus is Chong A. Additionally, the USA is the major contributor to the publications, citations, and collaborations. More surprisingly, despite having fewer publications than them, Sweden has outperformed other countries in terms of total citations by securing second position in terms of the number of citations and only seven publications. It has been highlighted further for more international collaborations, especially between the rich and poor economies. While evaluating the most influential journals in the domain, the Journal of Knowledge Economics has surpassed others in the h-index list while maintaining a good count in other respects. It was further found in the core zone of Bradford's law and other most productive journals, namely, Journal of the Knowledge Economy, Pakistan Development Review, Cogent Economics and Finance, Journal of Economic Issues, and Social Indicators Research. Against this, a few old journals that have made it to the top of the total citation count are the Journal of Economic Growth, Governance-An International Journal of Policy Administration and Institutions, and Journal of Development Economics with 1727, 625, and 299 total citations, respectively. After this, the technique of science mapping was applied using a variety of tools. First, bibliographic coupling was applied to the documents, and the results reflect that there are three clusters with a minimum frequency of six documents; the central cluster was labeled by theme institution, also had the highest number of documents, and the most impactful cluster was labeled by the theme named governance quality. The most frequently used word in the domain is economic growth, which has the highest cumulative frequency, with its continuous growth, along with other frequently occurring keywords such as institutional quality, institutions, governance, and economic development. The keyword institutional quality has been growing exponentially. It indicates that these terms are likely to be studied in the future as well. The findings of the word co-occurrence network show that the keyword that occurred the most is economic growth, which has a close relationship with governance, institutional quality, and institutions. The current and emerging themes are analyzed using bibliographic coupling, and clusters are formed using co-word analysis. The themes that are well-developed and well-connected per the thematic map are economic growth and institutions. In contrast, economic freedom is an emerging theme with low centrality and density. An in-depth thematic analysis can provide more constructive insights, which is left for future studies. With bibliometric coupling, an extensive thematic analysis, and scientific mapping analysis with word co-occurrence, this study has closed a sizable research gap.

Research Implications:

Based on the findings, more studies are expected on emerging themes, such as economic freedom and trade openness, in governance and economic development. Scholars can analyze the current status of GED and gain insights about future trends. They can even look for collaborations with other authors who greatly impact their field and refer to influential journals for future work or submissions. Researchers from other fields can also use the methodology used in this study for better insights. Most prolific authors in the field can be consulted for making policy decisions to achieve good governance and to achieve the SDG targets on time. The results obtained are helpful for governments and various developmental institutions to anticipate their future expenditures outlay. Other practical implications of comprehending the relationship between GED for government and policymakers are formulating policies and practices supporting economic growth while lowering socioeconomic issues.

Limitations:

This study, like many other studies, has certain limitations. The bibliometric study utilizes two databases, namely Scopus and WoS, and didn't consider other databases such as Google Scholar for collecting data, which may have led to excluding publications from other databases. This may have led to some biases. The study has used only Biblioshiny for bibliometric analysis and visual representation, so in the future, the researchers can use other software, such as Vosviewer, to get better visuals. Since governance and economic development are important research areas, similar studies must be carried out to understand the topic's evolving nature and analyze other bibliometric aspects, such as co-citation. Another drawback is that our bibliometric technique does not examine the results of the existing studies. In light of this, future studies can be evaluated in a structured way by performing a systematic literature review on the research corpus to facilitate a better understanding of the relationship between governance and economic development. The study in the future might also be conducted with the inclusion of documents in non-English language or other types of documents, such as book chapters and conference proceedings, which have not been included in the present study and have a chance of altering the results of the analysis. Despite these limitations, this study offers an encompassing view of this field and provides valuable insights for researchers exploring this topic further.

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Financial Inclusion and Efficiency of Small Finance Banks Using Data Envelopment Analysis (DEA)

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**Durga Madhab Mahapatra

Abstract

Small Finance Banks are special banks created by the Reserve Bank of India (RBI) to focus on specific banking needs. Small Finance banks represent a significant innovation in the Indian banking sector, offering essential banking services such as accepting deposits and providing loans. SFBs aim to foster financial inclusion by serving segments of society traditionally overlooked by traditional banks. This study incorporates Small Finance Banks (SFBs) in India from 2021 to 2023. It focuses on efficiency and its post-COVID-19 role in financial inclusion. It employs a two-stage Data Envelopment Analysis (DEA) framework, revealing SFBs' resilience despite a brief 2020-21 dip in performance due to lockdowns. This study makes significant recommendations for growing specialized markets, controlling costs, and reducing liquidity risk. It suggests stock exchange listings and legislative assistance to improve the SFB ecosystem and its contribution to financial inclusion in India.

Keywords: *Bank, Finance, Financial Inclusion and Underserved.*

Introduction

The banking system plays a crucial role in the financial ecosystem by mobilizing public savings and channelizing them into various sectors for investment. This process is essential for driving economic activities and development (Mittal & Suneja, 2017). By offering services like purchasing and selling securities, shares, making payments, collecting utility bills, and handling subscription funds, bank contribute to the smooth functioning of the economy and support various government department in managing their financial transactions effectively (Laxman Goud, 2021). India economy has been steadily growing, and its banking sector indeed has vast potential for further expansion, it is one of the top 10 economies in the world (Purbey, 2020). They established Bank of Hisdustan in 1870, marked the beginning of indigeneous banking in India. The subsequent establishment of the three presidency banks under Presidency Bank's Act 1876 i.e Bank of Calcutta, Bank of Bombay, and Bank of Madras, played a crucial role in shaping the foundation of modern banking in India (Kapparashetty, 2020). The banking system is indeed crucial for the economy of any country. It facilitates the flow of funds, provides financial services, and supports economic activities by offering credit to individuals, businesses, and government entities (Kaur, 2017). The Indian Banking Sector indeed faces a dynamic landscape with various challenges like competition, regulatory changes, and economic growth fluctuations(Bansal, Singh, Kumar, Gupta, 2018). Banking sector accept small savings from citizens and providing various types of loans to individuals and businesses, banks stimulate economic activities, create employment opportunities, and contribute to the growth of physical assets in the economy. This cycle of savings, investment, and lending helps maintain the flow of money and supports overall economic development. (Haralayya & Aithal, 2021).

Small Finance Banks are special banks created by the Reserve Bank of India (RBI) to focus on specific banking needs. They do basic banking activities like accepting deposits from people and giving loans to those who needs them (Ray&Shantnu). Small Finance Banks (SFBs) are required as public limited companies under the companies Act,2013(Nandhini& Rathnamani,2021). Banks indeed play a crucial role in economic development, serving as the lifeblood of financial structures. With the evolution of India's economy, the banking sector has adapted to meet changing consumer needs and preferences, particularly with the advent of globalization and liberalization (Prasanth & Mohanprasanna, 2023). Small Finance banks represent a significant innovation in the Indian banking sector, offering basic

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banking services such as accepting deposits and providing loans. SFBs is aimed at fostering financial inclusion by serving segments of society traditionally overlooked by traditional banks. These include small business units, small and marginal farmers, micro and small industries, and the unorganized sector (Khan, 2018).The emergence of Small Finance Banks is a recent change in the banking industry. In December 2013, a committee was formed to look into providing comprehensive financial services for small businesses and low-income households. This committee recommended the creation of Small Finance Banks, which are specialized banks designed to offer basic banking services to people and businesses who may not have access to traditional banks. These banks focus on serving smaller businessess, farmers, and low-income individuals, helping them access essential banking services like saving accounts, loans, and other financial assistance (Jagwani, 2019). SFBs can perform all the operations of normal commercial banks, but they focus more on helping people with lower incomes (Srinivas, Shanigarapu, 2020). Small Finance banks, play a crucial role in providing fundamental financial services to rural and underserved sectors of the economy, the primary function is to efficiently channelize savings in rural and semi-urban areas of India, contributing positively to overall development (Arora, Sharma, Pahwa, Yadav, 2018). Small Finance Banks and payment banks help people in villages and rural areas understand how banking works and what services and products are available,they teach them about saving money, making payments, and borrowing if needed. By doing this, they help improve the financial situation of people in rural areas, giving them better opportunities to manage their money and improve their lives(Sharma K R S, Miss Vidyashree,2021). SFBs focus on opening branches in rural areas and serving the unbanked population is crucial for bringing banking services to underserved regions. By providing loans to priority sectors and encouraging people to save, SFBs can enhance their service offerings by providing financial products such as mutual funds, insurance, and pension products, subject to prior approval from the Reserve Bank of India (RBI)(Swain, 2023).

Table 1: Market Share of Small Finance Banks as Regards Advances and Deposits During 2019-20 To 2022-23.

Year	Advances (in ₹ Cr)	Market share (in %)	Deposit (in ₹ cr)	Market Share (in %)
March2019-20	91,509	0.91	83,628	0.62
March 2020-21	1,11,589	1.05	1,10,717	0.73
March 2021-22	1,40,003	1.18	1,45,731	0.87
March 2022-23	1,84,808	1.35	1,91,372	1.04
September 2023	2,02,756	1.34	2,16,414	1.11

Small Finance Banks do basic banking activities like taking deposits and giving loans to areas in our country that don't have many banking services. They have to follow rules just like regular banks, such as keeping a certain amount of money aside as reserves. These banks have to lend most of their money to areas like farming and small businesses, and have of their loans must be small, under Rs 25 lakhs. They need at least 100 crores as starting money, and the people who started the bank must own at least 40% of it, but that has to go down to 26% over 12 years.(Rashid, 2019).

Review of Literature

Anitha G (2024) stated that Small Finance Banks are a special type of banks in India made by the Reserve Bank of India and the government. Their main goal is to help people in rural areas to save money. These banks can do basic banking stuff like taking deposits and giving out loans, especially to people who usually don't have access to banking services like small businesses, farmers, and people in the unorganized sector. They were suggested by a committee led by Raghuram Rajan to improve financial services for small farmers, low-income families, and small businesses. **Abilash & Panneerselvam (2023)** stated that how ESAF Small Finance Bank has been performing and serving the needs of underprivileged people. Besides banking, ESAF also focuses on improving the quality of life in underserved communities. **Prasanth A & Mohanprasanna G (2023)** stated that Small Finance Banks are newer banks in India that focus more on including people who typically don't have access to banking services. The study looked at the reports of three Small Finance Banks from 2018 to 2022. It found that these banks grew quickly in terms of branches and money they handle, and they managed their money well. **Swain (2023),** The emergence of Small Finance Banks (SFBs) in India, cater to the unserved and underserved sections of the population, focusing on providing basic banking services and credit facilities to small businesses, farmers, micro-industries, and the unorganized sector. **Chand P and Poonia S (2022),** The paper examines how well Small Finance Banks have developed and contributed to India's growth over three years. **Samuvel K and Muhammed Jasir (2022)** It seems like the small finance banks in India, including Au Small Finance Bank, Equitas Small Finance Bank, and Ujjivan Small Finance Bank, have demonstrated solid financial performance according to the study. The assessment highlights aspects such as rapid growth in branches and assets, healthy asset quality, and effective outreach to under-served sectors. **Subrahmanyam, Umarani & Sultana (2022)** This paper stated that many people worldwide, especially in India, don't have access to banking services. Despite India having many banks, a large portion of the population still doesn't have formal bank accounts. This is a problem because access to banking services is essential for a country's economic growth, especially for sectors like agriculture. The research focuses on small finance banks and their role in bringing financial services to more people in India. **Manoj & Adwani (2021)** stated that there's a lot of people in smaller town and rural areas in India who don't have access to banking services. Banks need to teach people about banking, help them manage money, handle debt, save, rural areas, and provide them with affordable services. These banks should use new technology to improve their services and make sure they can keep helping people for a long time. **Patel C & Fulwari A (2021)** stated that since 2005-06, the Reserve Bank of India has been focused on financial inclusion, which means making banking services accessible to more people. **Ravikumar, Murugan, and Suhashini (2020)** The study also looked at things like how many bad loans they have (NNPA) and whether they have enough money set aside to cover their risks (CAR). It found that SFBs are in good financial shape. But the study also found that SFBs face challenges like restrictions on lending, the cost of banking services, and limits on where they can operate**.** **Shanigarap V and Srinivas K (2020)** stated about the role played by small finance banks from the inception and facing the challenges in achieving financial inclusion. The challenges faced by small finance banks are high costs of transformation efforts and cost of deposit mobilization, competition, controlling of NPAs, and adoption of technology, Predential Norms, Issues in Human Resource Management. **Rashid (2019),** The study looks at how small finance banks (SFBs) in India are helping poor people get banking services. Despite many ways banks try to include everyone in banking, there's still work to do. SFBs are new banks aiming to serve the poor. **Arora, Sharma, Pahwa & Yadev (2018),** This paper focuses on effective financial system and the same government has introduced various initiative starting from Jandhan Yojana to giving licence to local bank to operate as small bank in India. This articles it has also studied the role of small banks in the growth and development of economy by involving more people into the formal financial sector though financial inclusion. **Mahananda K and Chittawadagi B (2018)** stated that banks focus on giving banking services to people in small towns and villages. They offer basic services like savings accounts and loans that work well for these communities. In summary, the goal is to make sure everyone, especially in rural areas, can use banks easily. This helps people manage their money better and helps the country's economy grow. **Sharma H and Tiwari S (2023)** stated about in India, noticed that private banks, both in India and abroad, are much better at this marketing stuff than public banks. Basically, the banks that figure out the best ways to make customers trust them will be the winners in the long run. **Haralayya B and Aithal PS (2021)** it emphasizes the importance of controlling inflation and real interest rates to bolster economic growth by stimulating demand for goods and services. Overall, the findings underscore the crucial contribution of financial activities in fostering India's economic development. **Kapparashetty B.V (2020)** This paper aims to explore the role of the banking sector in fostering Indian economic growth amidst global financial turmoil. It highlights the resilience of India's banking industry despite worldwide economic challenges. It discusses historical milestones like bank nationalization and reforms recommended by committees like the Narasimha Committee. Understanding the structure and challenges of the Indian banking industry is crucial for assessing its opportunities for growth. Purbey K (2020) stated that Banks are crucial for helping the country grow economically by investing in different parts of the economy. **Bansal R and Singh A, Kumar S and Gupta R (2018)** This paper aims to analyse the determinants of profitability for listed Indian banks, including both public and private sector banks, over a six-year period. The study uses various financial ratios as independent variables and employs panel data regression techniques. The findings suggest that factors like interest expended, credit deposit ratio, and quick ratio have varying effects on profitability for different types of banks. **Kalyan N (2017)** This paper studies the Indian banking sector indeed plays a crucial role in the country's economy, serving as a backbone and indicator of its overall health. With numerous public and private sector banks, along with cooperative institutions, its performance is essential for economic stability. Studying its performance and the impact of reforms is crucial for understanding and ensuring its continued growth and resilience. **Pratihari S and Uzma S.H (2017)** This paper examines how Indian banks prioritize different corporate social identities (CSIs) to enhance their corporate branding process, linking CSR initiatives to profitability. It uses content analysis to analyze CSR dimensions and sub-dimensions, and statistical methods to establish relationships. **Malik S (2014)** It's studies how technology has revolutionized the banking sector in India, with innovations like ECS, RTGS, EFT, NEFT, ATM, online banking, and mobile banking greatly enhancing services and operations. However, with these advancements come challenges such as adapting to changing customer needs, complying with new regulations, and managing the costs of technological upgrades. Finding a balance between innovation investment and cost efficiency is crucial for banks in navigating these changes effectively. **Goel M (2013)** this paper stated the evolution of banking is remarkable. From traditional services like deposits and loans to a plethora of digital offerings. **Damji B.H (2012)** Stated that the banking sector indeed plays a crucial role in India's economic development, facilitating growth through lending, investment, and financial services. **Mohanty (2018)** This paper discusses the problem of financial exclusive and how SFBs play a crucial role in expanding access to financial services as part of the government agenda. **Jayadev M, Singh H, Kumar P (2017)** This paper studies a new type of banks (SFBs) has been introduced in India to help more people access banking services.

Research Gap

While some articles highlight the financial performance and growth of individual SFBs which assess their long-term sustainability and resilience, particularly in the face of evolving market dynamics and economic challenges. however, no study has been undertaken in listed banks of financial performance.

Objectives of Study

1. To discuss about RBI guidelines related to SFBs in India.
2. To analyse the financial performance of listed SFBs operating in India.

Research Methodology

Research Design: This study adopts a descriptive research design to examine the financial performance of small finance banks in India.

Data collection: The research study is based on secondary data. Data have been collected from various sources, viz., journals, published papers, news articles, RBI Data, Money control, Indian Banks` Association (IBA) annual reports of SFBs.

Period of Study: These variables and measures provide a comprehensive framework for assessing the financial performance of small finance banks in India. The financial data will be collected for the study period from 2021 to 2023.

Data Analysis and Discussion of the Paper

An overview of Small Finance Banks (SFBs) in India, emphasizing their role in financial inclusion and their regulatory framework. It describes SFBs as specialized banks established by the Reserve Bank of India (RBI) under the Companies Act, 2013, to cater to specific banking needs. Unlike traditional banks, SFBs focus on providing basic banking services such as accepting deposits and providing loans to underserved segments of society, including small businesses, low-income households, and rural communities. SFBs operate under stringent regulatory requirements, including compliance with various acts such as the Banking Regulation Act, 1949, and the Reserve Bank of India Act, 1934. These banks are mandated to allocate a significant portion of their lending to priority sectors and ensure financial inclusion by reaching out to those who have limited access to mainstream banking services.

The growth and impact of SFBs since their introduction in 2015, noting their contribution to economic development by facilitating savings mobilization and credit disbursement in rural and semi-urban areas. Overall, these metrics provide a holistic view of the small finance bank's financial health, stability, and operational performance. The consistent distribution across various metrics indicates steady performance in key areas, although challenges such as fluctuating ROA and potential liquidity.

CCR Model (Constant Returns to Scale)

The CCR model evaluates efficiency under the assumption that all DMUs operate at an optimal scale, making it suitable for assessing technical efficiency. The mathematical formulation is:

Input-Oriented CCR Model

Minimize θ

Subject to: $\sum_{j=1}^{n} \lambda_j x_{ij} \le \theta x_{io}$ for all i

$\sum_{j=1}^{n} \lambda_j y_{rj} \ge y_{ro}$ for all r

$\lambda_j \ge 0$ for all j

Output-Oriented CCR Model

Maximum

Subject to: $\sum_{j=1}^{n} \lambda_j x_{ij} \le x_{io}$ for all i

$\sum_{j=1}^{n} \lambda_j y_{rj} \ge \phi y_{ro}$ for all r

$\lambda_j \ge 0$ for all j

Where x_{ij} is the amount of input i for DMU j

y_{rj} is the amount of output r for DMU j

λ_j is the weight assigned to DMU j in the peer group

θ is the efficiency score of the evaluated DMU

ϕ represents the proportional increase in outputs possible while keeping inputs constant.

BCC Model (Variable Returns to Scale)

The BCC model extends the CCR model by incorporating variable returns to scale through an additional convexity constraint, allowing for a more flexible evaluation of technical and scale efficiency.

Input-Oriented BCC Model

Minimize Θ

Subject to: $\sum_{j=1}^{n} \lambda_j x_{ij} \le \theta x_{io}$ for all i

$\sum_{j=1}^{n} \lambda_j y_{rj} \ge y_{ro}$ for all r

$\sum_{j=1}^{n} \lambda_i = 1$ (convexity and accounts for variable returns to scale)

$\lambda_j \ge 0$ for all j

Output-Oriented BCC Model

Maximum φ

Subject to: $\sum_{j=1}^{n} \lambda_j x_{ij} \le x_{io}$ for all i

$\sum_{j=1}^{n} \lambda_j y_{rj} \ge \phi y_{ro}$ for all r

$\sum_{j=1}^{n} \lambda_i = 1$

$\lambda_j \ge 0$ for all j

Data Analysis and Discussion

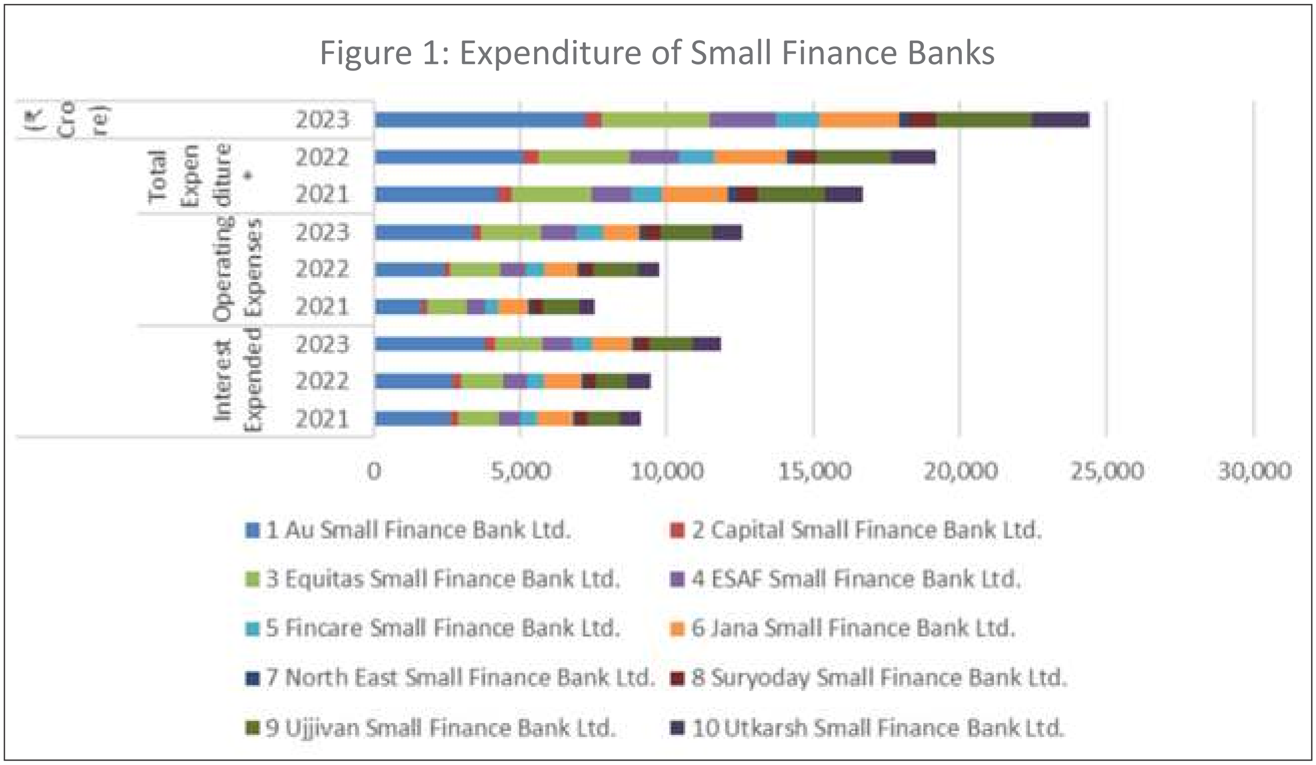
Figure 1: Expenditure of Small Finance Banks
(₹ Crore)
Total Expenditure *
Operating Expenses
Interest Expended
2023
2022
2021
0
5,000
10,000
15,000
20,000
25,000
30,000
1 Au Small Finance Bank Ltd.
2 Capital Small Finance Bank Ltd.
3 Equitas Small Finance Bank Ltd.
4 ESAF Small Finance Bank Ltd.
5 Fincare Small Finance Bank Ltd.
6 Jana Small Finance Bank Ltd.
7 North East Small Finance Bank Ltd.
8 Suryoday Small Finance Bank Ltd.
9 Ujjivan Small Finance Bank Ltd.
10 Utkarsh Small Finance Bank Ltd.

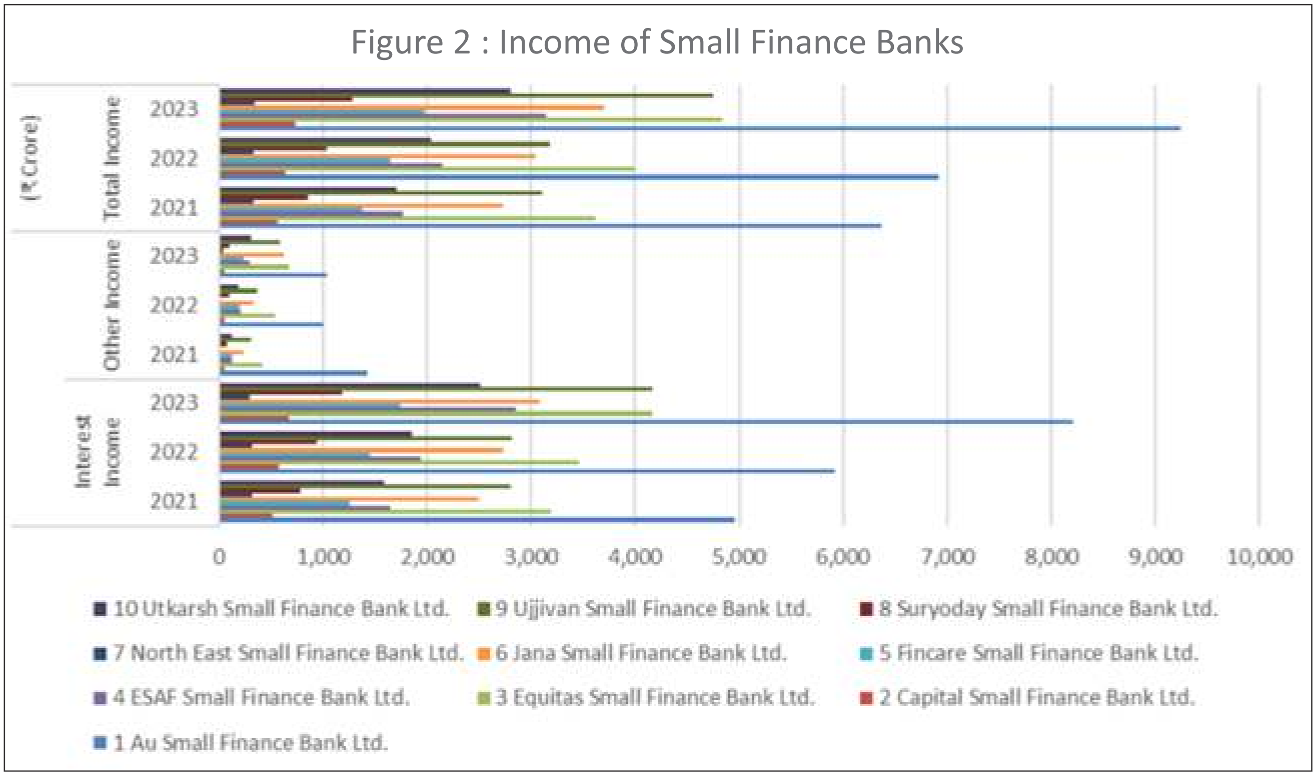
Figure 2 : Income of Small Finance Banks
(₹ Crore)
Total Income
Other Income
Interest Income
2023
2022
2021
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
10 Utkarsh Small Finance Bank Ltd.
9 Ujjivan Small Finance Bank Ltd.
8 Suryoday Small Finance Bank Ltd.
7 North East Small Finance Bank Ltd.
6 Jana Small Finance Bank Ltd.
5 Fincare Small Finance Bank Ltd.
4 ESAF Small Finance Bank Ltd.
3 Equitas Small Finance Bank Ltd.
2 Capital Small Finance Bank Ltd.
1 Au Small Finance Bank Ltd.

Table 2: CRS and VRS Efficiency of Small Finance Banks

Bank Name	Year	CRS Efficiency	VRS Efficiency	RTS
Au Small Finance Bank Ltd	2021	1.00000	1.00000	Constant
	2022	0.94362	1.00000	Decreasing
	2023	0.90590	1.00000	Decreasing
Capital Small Finance Bank Ltd	2021	0.82823	1.00000	Increasing
	2022	0.87727	1.00000	Increasing
	2023	0.92325	1.00000	Increasing
Equitas Small Finance Bank Ltd	2021	0.93605	0.94202	Decreasing
	2022	0.89471	0.90221	Decreasing
	2023	0.92232	0.94920	Decreasing
ESAF Small Finance Bank Ltd	2021	0.95649	0.97210	Increasing
	2022	0.92563	0.93559	Increasing
	2023	1.00000	1.00000	Constant
Fincare Small Finance Bank Ltd	2021	0.97249	1.00000	Increasing
	2022	0.95326	0.97527	Increasing
	2023	0.91167	0.92573	Increasing
Jana Small Finance Bank Ltd	2021	0.85911	0.85913	Increasing
	2022	0.86438	0.86440	Decreasing
	2023	1.00000	1.00000	Constant
North East Small Finance Bank Ltd	2021	0.87782	0.97505	Increasing
	2022	0.93348	1.00000	Increasing
	2023	0.72711	1.00000	Increasing
Suryoday Small Finance Bank Ltd	2021	0.87629	0.89679	Increasing
	2022	0.95936	0.97563	Increasing
	2023	0.98446	0.99569	Increasing
Ujjivan Small Finance Bank Ltd	2021	0.95416	0.95419	Decreasing
	2022	0.87058	0.87107	Increasing
	2023	1.00000	1.00000	Constant
Utkarsh Small Finance Bank Ltd	2021	0.96425	0.97001	Increasing
	2022	0.95353	0.95699	Increasing
	2023	1.00000	1.00000	Constant

The above table highlights the cost efficiency scores of five banks from 2021 to 2023 under CRS, VRS, and scale efficiency. Au Small Finance Bank achieved perfect efficiency (CRS, VRS, and scale) in 2021 but experienced decreasing returns to scale in subsequent years, indicating potential inefficiencies in input usage. ESAF Small Finance Bank exhibited increasing returns to scale in 2021 and 2022, transitioning to constant returns to scale in 2023 with perfect efficiency. Capital, Equitas, and Fincare banks showed stable but varied levels of scale efficiency, with increasing or decreasing returns to scale based on the year.

Table 3: Scale Efficiency of Small Finance Banks

Bank Name	Scale Efficiency (2021)	Scale Efficiency (2022)	Scale Efficiency (2023)	Mean Scale Efficiency
Au Small Finance Bank Ltd	1.00000	0.94362	0.90590	0.94984
Capital Small Finance Bank Ltd	0.82823	0.87727	0.92325	0.87625
Equitas Small Finance Bank Ltd	0.99367	0.99169	0.97169	0.98568
ESAF Small Finance Bank Ltd	0.98394	0.98935	1.00000	0.99110
Fincare Small Finance Bank Ltd	0.97249	0.97743	0.98481	0.97824
Jana Small Finance Bank Ltd	0.99997	0.99998	1.00000	0.99998
North East Small Finance Bank Ltd	0.90029	0.93348	0.72711	0.85362
Suryoday Small Finance Bank Ltd	0.97713	0.98332	0.98872	0.98306
Ujjivan Small Finance Bank Ltd	0.99997	0.99944	1.00000	0.99980
Utkarsh Small Finance Bank Ltd	0.99406	0.99639	1.00000	0.99682

Scale efficiency trends reveal that ESAF, Jana, and Utkarsh Small Finance Banks were the most scale-efficient, achieving the maximum score of 1 in 2023. The lowest mean scale efficiency was observed for North East Small Finance Bank (0.85362), primarily driven by its low score in 2023. Au Small Finance Bank demonstrated a declining trend in scale efficiency over the years, while Equitas and Suryoday exhibited relatively stable performance. Most banks operate close to the optimal scale, with notable improvements required for specific cases like those in the Northeast.

Conclusion

Au Small Finance Bank Ltd., ESAF Small Finance Bank Ltd., Jana Small Finance Bank Ltd., Ujjivan Small Finance Bank Ltd., and Utkarsh Small Finance Bank Ltd. achieved full efficiency with constant returns to scale in 2023. Capital Small Finance Bank Ltd., Suryoday Small Finance Bank Ltd., and North East Small Finance Bank Ltd. improved efficiency over the years. Still, they operate under increasing returns to scale, suggesting potential for further gains with scale adjustments. Au Small Finance Bank Ltd. and Equitas Small Finance Bank Ltd. showed decreasing efficiency over the years, operating under decreasing returns to scale, which suggests they may need to reduce their scale to enhance efficiency. Small Finance Banks (SFBs) in India marks a significant step towards enhancing financial inclusion and catering to the banking needs of underserved populations. These banks focus on providing basic banking services such as deposits, loans, and payment services to segments like small businesses, low-income households, rural communities, and the unorganized sector. Since their inception in 2015, SFBs have played a crucial role in expanding the reach of formal banking services across the country. They operate much like regular commercial banks but with a specific mandate to serve marginalized sectors that traditional banks often overlook. This includes allocating a significant portion of their lending to priority sectors like agriculture, small industries, and micro enterprises. Moreover, SFBs are required to adopt technology-driven and cost-effective operational models, which enables them to reach remote areas efficiently. By doing so, they contribute to economic growth by facilitating savings mobilization and providing credit to sectors that are pivotal for the country's development. In conclusion, the performance of Small Finance Banks in India underscores their role in driving financial inclusion and supporting economic development. By focusing on areas traditionally underserved by mainstream banks and leveraging digital solutions, SFBs are pivotal in extending the benefits of banking services to all sections of society, thereby contributing to overall economic progress and poverty reduction efforts.

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Understanding Gender-Based Differences in Brand Hate: A Mobile Phone Industry Analysis

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Abstract

This study examines the cause of brand hate with a particular emphasis on the moderating role of gender. Specifically, it examines how ideological incompatibility, negative past experiences, and poor relationship quality all contribute to brand hate. The study used quantitative research methodology and found that all three factors – "ideological incompatibility," "negative past experience," and "poor relationship quality"- significantly contribute to "brand hate." Thus, hypotheses H1, H2, and H3 were accepted. Furthermore, this study examines the differential reactions between genders. The result indicates that women exhibit stronger brand hate in response to ideological incompatibility, supporting hypothesis H4a. On the other hand, there were no significant gender-based differences found regarding the influence of "negative past experiences" and "poor relationship quality" on "brand hate." The findings of this study underline the importance of understanding the role of gender in "consumer-brand relationships" and offer insightful information to the marketer hoping to lessen the negative impact of brand hate within the mobile phone industry.

Keywords: *Ideological incompatibility, Gender differences, Negative past experience, Poor relationship quality, Brand hate*

Introduction

There are abundant studies in the marketing literature on brand preference, obsession, and love. Therefore, Practitioners were more interested in positive practical consequences than negative knowledge. (Husnain et al., 2022). Because there are many differences in the types of consumers of the brands, while some will have a feeling of love toward the brand, others will not like the brand, and some will have a sense of hatred towards the brand (Alvarez & Fournier, 2016; Lunardo & Mouangue, 2019). Very little research has been done on "negative emotions" (Batra et al., 2012; Sarkar & Sreejesh, 2014). The literature on consumer brand relationships has presented various approaches, conceptual models, and theories to understand the consumer relationship with brand (Fetscherin, 2019). Fehr and Russell (1984) stated that "hate" is the second most crucial emotion after "love." The literature on branding offers little insight into the negative feelings that consumers experience about the brand (Romani et al., 2012).

Researchers have observed significant behavioral changes across the world. "Brand hatred" is experienced by consumers more frequently than previously (Da Silva, 2019). Recent instances of brand deterioration, like Volkswagen's diesel gate failure, caused a 46% decline in "brand value" in the two months after it came to light (Colvin, 2020). "Dolce & Gabbana's" portrayal of identity through its "marketing campaign" in "China" faces intense criticism for being perceived as "derogatory," "stereotypical," and "racist." The literature on psychology also indicates that negative emotions impact consumer behavior intention more than positive emotions (Yadav, 2024). Despite all this evidence, research on negative emotions is scarce compared to positive emotions (Roy et al., 2022; Yadav & Chakrabarti, 2022). Brand hate is a strong negative emotion. It includes both deep resentment and disgust. When consumers experience persistent negative emotions, they have less control over the effect of things and events on their lives (Ross et al., 2001). However, there are feelings of disgust and distancing oneself from the hatred brand (Woodside et al., 2023). Brand hate negatively affects consumer purchase intention (Rodrigues et al., 2024). "Brand hate" is an expression of feeling of the highest magnitude. The most severe ones include terrible outcomes for customers regarding the brand.

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When a company practices greenwashing and deliberately deceives consumers about the benefits or products/services and violates their expectations, it can affect its reputation and damage its brand image (Santos et al., 2023). The voice of the customer has become more vocal due to the Internet's rapid expansion, which has altered the dynamic between customers and businesses (Zarantonello, 2020). Positive consumer-brand relationships were given priority in the literature, while negative consumer-brand relationships were given less attention (Pinto & Brandão, 2020; Fetscherin, 2019). Negative consumer actions can take many forms, including verbal abuse and hostile backlash against the brand. (Marticotte et al., 2016; Gois et al., 2022). Scholars have examined the “antecedents of brand hate” from different perspectives. This study identifies the critical factors of brand hate and examines the moderating role of Gender.

2. Theoretical Framework

Branding in the Mobile Phone Industry

Mobile phones play an important role in people's lives. The small device held in hand can do much helpful work. It is widely used to communicate messages and connect with others. The development of smartphones had a significant impact on consumer preferences. The earlier mobile phone was used only for communication purposes. However, additional features have also been added, creating a vast market and changing consumers' purchasing behavior (Appiah & Ozuem, 2019). Mobile phone brands also play an essential role in purchasing decisions (Liu & Liang, 2014). Customers often choose mobile phones due to some expectations. When customers feel content with a mobile phone brand, they consistently commit to purchasing the same brand and become loyal customers (Cassavoy, 2023). A brand that fails to meet customer expectations can lead to customer disappointment, and this dissatisfaction becomes the reason for brand hatred (Attiq et al., 2022).

2.1 Triangular Theory of Hate

Triangular theory is one of the broad concepts of “hate” (Stenberg, 2003). This theory applies to “individuals” and “masses” because the “expressions of hate” in “individuals and masses” are synonymous. Hate consists of “three components” (Stenberg, 2003). The first element of “hate” is the “negation of intimacy.” Seeking distance is characterized by the negation of intimacy. The second element is “passion,” and the causative factor is anger. When individuals feel threatened, passion manifests in intense anger as a violation of their self-respect (Rozin et al., 1999). “Passion” arises quickly and ends quickly. The third factor is associated with its “devaluation and diminution.” “Devaluation and diminution” are associated with commitment when there is disdain for the object of hatred. Devaluation often occurs gradually and diminishes similarly.

2.3 Brand hate conceptualization

The term “negative consumer-brand relationship” originated in “marketing” with the article (Fournier, 1998), which gave the concept of brand enmity, which means the negative relationship between consumer and brand. After that, multiple scholars have discussed the idea of “Brand hate” within the domain of the “ love becomes hate effect,” which means that a “robust brand connection” with “customers” can deteriorate (Gregoire & Fisher, 2006; 2009). Although these researches were utilized to establish the theory later, they did not investigate the idea of “brand hate” (Aziz & Rahman, 2022). The “brand hate” term was initially used by (Carroll Ahuvia, 2006), who connected “brand hate” with “consumer dissatisfaction.” Recently, scholars have given considerable attention to “brand hate.” One can comprehend that “Brand hate” is the opposite of “brand love” and “obsession,” resulting in a deliberate or intentional intention to avoid the brand (Bauer et al., 2007; Bryson et al., 2013). Alba and Lutz (2013) connected “brand hate” with disgust and described that “brand hate” is commonly voiced on “social media.” Zarantonello et al. (2016) discussed the two dimensions of “brand hate”: active and passive. “Active brand hate” includes anger or disrespect, while “passive brand hate” includes fear, disappointment, and disrespect. Consumers have diverse feelings toward the brands (Fonberg, 1986). some customers experience “positive feelings,” such as “love,” while others experience emotions, such as “hatred” (Fournier, 1998; Hashim & Kasana, 2019). Studies on “brand hate” show that consumer personalities, such as “narcissism” and “ambivalence,” can increase “brand hate” (Mednini & Turki, 2023). Hate is one of the strongest human emotions. Most people do not want to discuss these emotions and wish to eliminate them (Kucuk, 2018a). Dissatisfaction needs to cause negative feelings in individuals. Husnain et al. (2022) defined “brand hate” as a “negative emotion” that can cause “dissatisfaction” in the customer, which represents anger, fear, and disrespect. Khan and Lee (2014) shed light on the diversity of consumer feelings toward brands, ranging from good feelings like ”love to negative feelings like hate.” Positive emotion is associated with “brand attachment” (Grisaffe & Nguyen, 2011), “brand loyalty” (Bloemer & Kasper, 1995), “brand passion” (Albert & Merunka, 2013), and “brand love” (Batra et al., 2012). “Negative feelings” appear in a variety of ways, such as “brand rejection” (Sandıkcı & Ekici, 2009), “brand opposition” (Wolter et al., 2016), “brand sabotage” (Kähr et al., 2016), “brand disgust” (Alba & Lutz, 2013), “brand avoidance” (Lee et al., 2009), “brand retaliation” (Gregoire & Fisher, 2006), or “brand dislike” (Dalli et al., 2006).

In their article, Kucuk (2007) reveals that more love brands attract more attention to anti-brand websites. In 2019, Kucuk proposed the “hierarchical model” on “brand hate”. This model identifies multifaceted and unidimensional elements of “brand hate” based on the intensity of “brand hate.” Sternberg (2003) posits that “hate” is ultimately just one feeling out of a collection of emotions. These distinct emotion phases are defined as mild to extreme hatred. The phases of “mild hate” are cold, calm, and hot hate. It has a unidimensional structure. Moderate hate consists of “seeing,” “simmering,” “boiling,” and “severe hate” are conceptualized as “multidimensional structures” (Mushtaq et al., 2024). Zarantonello et al. (2016) affirm this perspective, demonstrating the “multidimensional structure” of brand hate by stating that those who experience regular “brand hate” experience “seething brand hate” while those who experience “extreme brand hate” experience “boiling brand hate.”

Review of Brand Hate Research

Author’s & year	Methodology	Brand Hate type	Country	Findings
Bryson et al. (2013)	Quantitative	“Luxury Brand Hate”	Germany and UK	The causes of “brand hate” include “Country of origin,” “consumer dissatisfaction,” and “negative stereotypes.”
Zarantonello et al. (2016)	Quantitative	“Active and passive brand hate”	Europe	“Brand hate” is significantly associated with adverse behavioral outcomes, including “complaining” “negative word of mouth,” and “protest.”
Kucuk (2016)	Qualitative	“Attitudinal and behavioral brand hate”	USA	“Brand hate” consists of “cool, cold, and hot brand hate.” The factors that affect brand hate include “company-related” and “consumer-related,” and outcomes include boycotts and consumer complaints.
Hegner et al. (2017)	quantitative	“Determinate and outcome of brand hate”	Germany	“Negative past experiences,” “symbolic incongruity,” and “ideological incompatibility” are the antecedents of “brand hate.” Consequences include “brand avoidance,” “negative word of mouth,” and “brand retaliations.”
Kucuk (2018)	Quantitative	“Macro-level predictor of brand hate”	USA	“Brand hate” is generated due to consumer dissatisfaction, and CSR is inversely correlated with “brand hate.”
(Kucuk, 2018b)	Quantitative	“True hater and regular brand hater”	USA	Actual haters show boiling hate, and regular haters reveal seething brand hate.
Zarantonello et al. (2018)	Qualitative	“Trajectories of brand hate”	NA	Five trajectories were identified: “negative,” “down-up,” “downward slope,” “flattens,” “Roller coasters,” and “steady increase.”
Fetscherin (2019)	Quantitative	“Five types of brand hate”	USA	“Brand hate” includes three components: “anger,” “contempt,” and “disgust.” These components generate different types of “brand hate,” such as “incredible hate,” “hot hate,” “simmering hate,” “burning hate,” and “boiling hate.”

Banerjee and Goel (2020)	Quantitative	"Party brand hate in the political market"	India	The study conclusion indicates that "unmet expectations," "symbolic incongruity," and "ideological incompatibility" positively impact "brand hate" intensity.
Curina et al. (2020)	Quantitative	"Brand hate in cross-channel settings (online and offline environments)"	Italy	"Brand hate" positively influences "offline negative word of mouth," "online complaining," and "nonpurchase intention."
Joshi and Yadav (2020)	Quantitative	"Predictors of Brand Hate	India	Negative past experiences and subjective norms positively influence brand hate.
Pinto and Brandão (2020)	Quantitative	"Negative consumer-brand interaction in the telecom sector"	Europe	"Brand hate" mediates all "negative relationships" while being especially significant in mediating "negative word of mouth."
Zhang and Laroche (2020)	Qualitative and quantitative	"Analyze how feelings vary according to the intensity of brand hate."	USA	Brand hate is a multidimensional construct consisting of "anger," "sadness," and "fear-related emotions," and the author proposed and tested a new model.
Gois et al. (2022)	Quantitative	"Brand hate among students from higher education institutions"	Brazil	This study reveals that negative experience is the most significant driver of "brand hate," mainly emphasizing male students. The study also investigates the development of hatred among female students due to "ideological incompatibility" and "symbolic incongruence."
Husnain et al. (2022)	Qualitative and quantitative	"How brand hates flares up under awkward circumstances."	NA	Quantitative and qualitative findings show that embarrassment causes brand hate, leading to detachment.
Beermann et al. (2024)	Qualitative	"Brand hate" in the context of "German and Australian National Rugby League"	Germany and Australia	In this study, the author analyzed reader comments posted below the online article and found that 85% of hateful comments are mild.
Yadav (2024)	Quantitative	"Influence of negatively valenced brand personality traits on the emergence of brand hate."	India	The result of the study reveals that negatively valenced brand personality is a significant predictor of "brand hate." "Brand hate" leads to various outcomes, such as "anti-brand actions" and "nonpurchase intentions."

3. Brand Hate Antecedents

"Brand hate" is a multifaceted concept with three dimensions: "denial of intimacy," "passion" and "commitment" (Sternberg, 2003). According to Zhang and Laroche (2020), hatred involves the dimensions of "phenomenology," "perception," "verbal expression," "impulses," "physical symptoms," and "associated emotions." Zarantonello et al. (2016) and Yadav and Chakrabarti (2022) view "brand hatred" as the most potent and significant form of "negative emotions." Husnain et al. (2021). Husnain et al. (2021) defined "brand hate" as an intense "negative emotion" that causes "consumer dissatisfaction."

To prevent "brand hate," managers must need to comprehend it. Traditionally, "brand hate" has four antecedents: symbolic incongruence, moral avoidance, deficit value avoidance, and experimental avoidance (Lee et al., 2009). The antecedents are described in previous articles. Brand hate is seen as increased brand avoidance within the domain (Ong & Vila-Lopez, 2023).

3.1 Negative past Experiences and brand hate

"Negative experience" is based on defects in products or services and customer dissatisfaction (Pinto & Brandão, 2020). Prior experiences are related to day to day lives (Haarhoff, 2018). When consumers use a product, they begin to put in cognitive efforts and create experiences about the product, and they consider positive and negative experiences as internal sources (Hanaysha, 2018). Negative experiences mainly arise from a previous association with the brand (Khan & Khawaja, 2018). When a customer's initial expectations of the product are unmet, it leads to a negative experience (Joshi & Yadav, 2020). However, various factors influence consumers to Favor one brand over another (Lee et al., 2009b). Thus, the consumer assesses the product's performance by contrasting it with their initial expectations. When a product does not meet the expectations of the users, then consumers feel cheated by the brand, which generates dissatisfaction among consumers (Banerjee & Goel, 2020). When customer experiences differ from the initial expectations, they might lead to disconfirmation (Banerjee & Goel, 2020). According to Bryson et al. (2013), "customer dissatisfaction" is the strong possibility that behavior develops from adverse feelings such as hatred towards the brand. Based on the literature, we believe that "negative experiences" lead to "brand hate." Based on this, the following hypothesis is proposed.

H1: Negative experiences positively affect brand hate.

3.2 Poor relationship Quality and brand hate

"Poor relationship" refers to a customer's poor relationship with a brand other than previous experience, image congruity, and ideological incompatibility (Hashim & Kasana, 2019). Poor relationship quality is associated with equity, which emphasizes the stickiness of relationships (Lemon et al., 2001). According to Lemon et al. (2001), a brand must build a "good relationship" based on "brand equity" and "value equity." He considers "relationship equity" equally vital through a unique recognition program and affinity program that helps the community build relationships.

Lemon et al. (2001) state that "relationship equity" becomes essential when customers in an affinity program receive benefits that are not commensurate with their perceived value or when there is a chance for business to increase "relationship equity" by offering more significant incentives to the customer as an investment in the future. Relationship quality is related to value exchange, which is considered long-term. However, if inequity is seen by the customer or the company rather than equity in the value exchange, then the customer's or suppliers' desire for alternatives is aroused. Halstead (1989) and Söllner (1999) state that the more uneven the relationship, the more "dissatisfaction" and "negative emotions" are widespread. Although it significantly produces negative consequences, this factor is not widely used to predict "brand hate" (Hashim & Kasana, 2019). The relationship built with a brand dictates the perception and behavior of the brand (Fournier & Alvarez, 2013). Fournier and Alvarez (2013) stressed that "negative feelings" in "consumer brand relationships" are more critical than pleasant emotions.

H2: Poor relationship quality positively impacts brand hate.

3.3 Ideological Incompatibility and Brand Hate

"Ideological incompatibility" is related to consumer perception of legal, corporate, social, and ethical practices (Banerjee & Goel, 2020). These allegations are related to misconduct by the companies that may cause harm to consumers or other communities (Gois et al., 2022). Disrespect of human rights and environmental damage are examples (Hegner et al., 2017). Consumers feel an ideological mismatch when there is a clash between societal "values and legal issues" or a lack of "corporate ethical commitment," which can create hatred toward the brand (Bryson et al., 2013; Romani et al., 2012; Zarantonello et al., 2016; Banerjee & Goel, 2020). Bhattacharya and Sen (2003) suggest that the "consumer brand relationship" is affected by corporate social responsibility. Krishnamurthy and Kucuk (2009) emphasized the "ideological differences" between brands and consumers. The most notable is corporate wrongdoing because this is related to unethical behavior of the brand and company. Deceptive communication, moral misconduct, and unethical behavior adopted by consumers often give rise to the brand's negative connotation (Hegner et al., 2017).

Based on the above literature, the following hypothesis has been proposed.

H3: Ideological incompatibility positively leads to brand hate.

4. Gender differences and consumer brand relation

In the world of marketing, segmentation is extremely common. Professionals use gender as a criterion to create this division

(Monga, 2002). The segmentation is because men and women behave differently while "using" and "discarding products" (Fischer & Arnold, 1994). Several studies suggest that "women tend to buy more impulsively than men" (Nawaz et al., 2020). Gender differences exist in the purchasing behavior of consumers (Gois et al., 2022). According to Monga (2002), men may not see the brand connection like women do since they require assistance in telling the difference between a "nearby" and a "distant brand." Sahay et al. (2012) explain that these interactions are based on sentiments of affection toward men and women. Nawaz et al. (2020) found that women considerably alter their brand equity commitment compared to male customers.

For a long, marketers have believed that men and women respond differently to brands and have distinct tastes. There are many differences between the feelings and emotions of men and women. It is believed that women are more sensitive than men. Gender can influence a consumer's decision-making process. Men are more prone to concentrate on objective factors, whereas women are more likely to consider emotional elements. (Gao & Shen, 2024).

Based on the above literature, the researcher has proposed the following hypothesis.

H4a: There are significant gender differences in the impact of negative past experiences on brand hate in the mobile phone industry

H4b: There are significant gender differences in the impact of poor relationship quality on brand hate in the mobile phone industry

H4c: There are significant gender differences in the impact of ideological incompatibility on brand hate in the mobile phone industry.

5. Methodology

The researcher reviewed the existing literature to conduct this study. The researcher found that the previously conducted research on respondents of brand hate is unrelated to the mobile phone industry and does not address gender differences. This study fills this gap. A pre-test (n=30) was conducted to check the "internal consistency" of the "questionnaire." Self-administrated questionnaires were distributed to mobile phone brand users to gather data for the primary survey. The study was conducted on people living in Delhi-NCR. The researcher adopted purposive sampling. The study was limited to participants who hate any brand of mobile phone. Brand haters are better suited to provide accurate responses when measuring brand hate than non-haters; that is why they were chosen. The "questionnaire" items were taken from various studies. The items regarding "negative past experiences," "ideological incompatibility," and "brand hate" were taken from (Hegner et al., 2017). The item for "poor relationship quality" was taken from (Chen & Myagmarsuren, 2011; Hashim & Kasana, 2019). The researcher found that Xiomi is the most disliked brand among consumers.

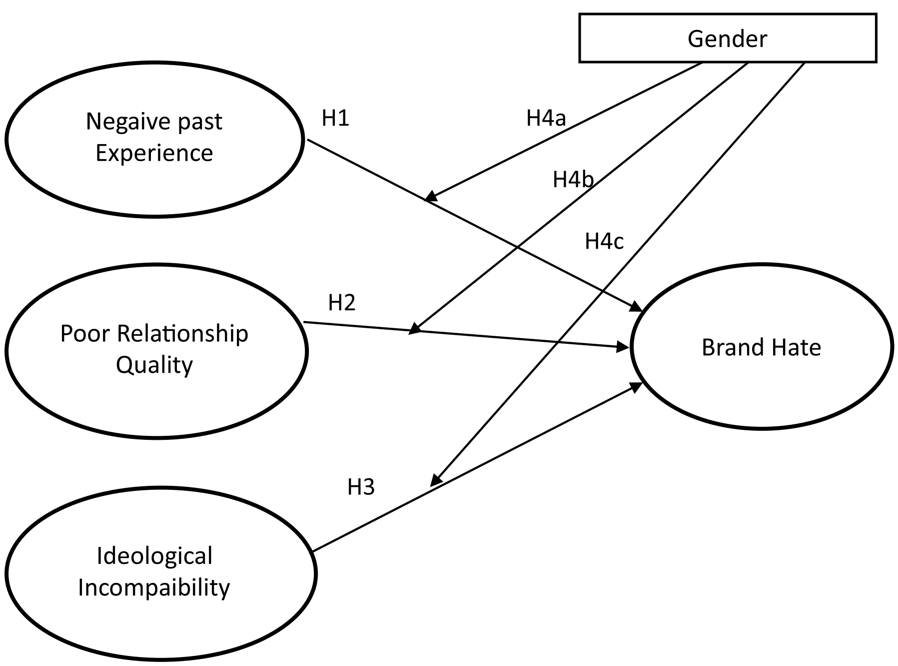


Figure-1
Source: Author Elaboration

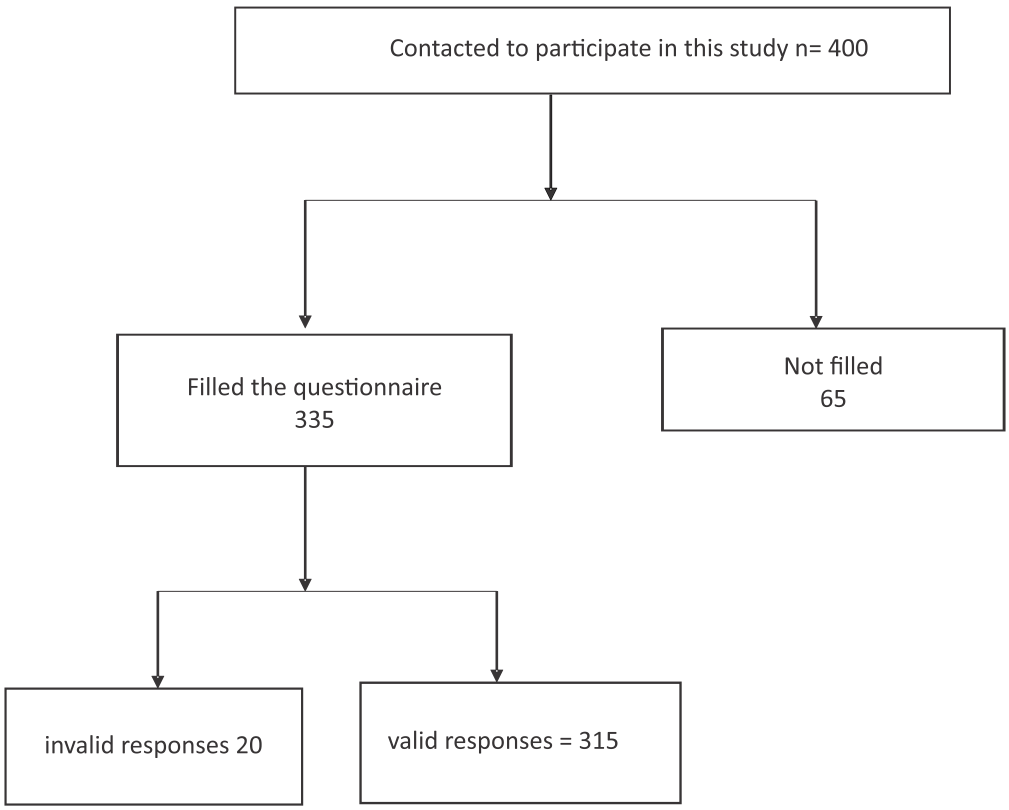
Table 2

Construct	Number of item	Source
Negative Experience	4	Hegner et al. (2017) adapted from Lee et al. (2009)
Poor Relationship Quality	5	Hashim and Kasana (2019) adapted from Chen and Myagmarsuren (2011)
Ideological Incompatibility	4	Hegner et al. (2017) adapted from Lee et al. (2009)
Brand Hate	5	Hegner et al. (2017)

5. Data Analysis

Sample profile and exploratory analysis

Four hundred questionnaires were distributed among respondents with negative emotions toward any mobile phone brand. Three hundred thirty-five filled questionnaires were received, but only 315 were used for analysis after screening. Thus, the completion rate was (83%). No blank responses were allowed during the data collection process. Thus, among the 315 respondents, there was no instance of missing data. Sample validation was the first step in the data analysis process. In this manner, the Ks test was conducted. If the sample p-value < 0.05, it indicates that its distribution is not normal.



Sample selection tree
Figure-2

6. Demographic profile

Of the 315 individuals who participated in this study, 48.3% were female, and 31.7% were female. Most of the respondents (63.5%) were between the age of 18-25, (33%) were in the 26-35 age range, and 3.5% belonged to the 36-45 age group. In addition, 32.4% of respondents had a graduation degree, 41% had a post-graduate degree, and 19.4 were pursuing a Ph.D. 52.1% of respondents had income below 4,00,000, 29.2% had income between 4,00,000-6,00,000 and 13.3% had income between 6,00,000-8,00,000. 31.7% of the respondents were students, 10.8% were government employees, 14.3% were running businesses, and 18.7% were working professionals.

Socio-demographic characteristics	Categories	%
Age	18-25	63.5
	26-35	33
	36-45	3.5
Gender	Male	48.3
	Female	51.7
Qualifications	10th	0.3
	12th	2.5
	Graduation	32.4
	PG	41.0
	PhD	19.4
	Others	4.4
Occupations	Govt Employee	10.8
	Private Employee	24.4
	Business	14.3
	Working professional	18.7
	Student	31.7
Income	Below 4,00,000	52.1
	4,00,000-6,00,000	29.2
	6,00,000-8,00,000	13.3
	8,00,000-10,00,000	3.8
	More than 10,00,000	1.6

Source: Research Data

7. Construct reliability and validity

In this sense, the first step is confirming that each construct results from single-factor creation. EFA was performed to determine the individual constructs to develop this unique hypothetical model. After following the suggested process, all constructs demonstrated sufficient commonality, component, and spatial consideration. At the 95% significance level, every construct indicator was statistically significant. The Barlett test of sphericity value was equal to 0.000, and the KMO value was above 0.6. A reliability and validity analysis is also necessary to measure each construct. The reliability and validity of the four constructs are demonstrated by Cronbach's alpha, which is more than the estimate of 0.70 estimated by Malhotra et al. (2017).

The result indicates that each construct has a substantial load (P< 0.01) for every item. Two parameters are used to test the “convergent validity”: “average variance explained” and “composite reliability.” The value of “AVE should be at least 0.5”, and the “composite reliability value should be 0.7”. Rho_A indicator evaluates internal consistency. It satisfies a value greater than equal to Cronbach alpha. Therefore, it may be said that the construct is free from random error and has a suitable level of reliability.

“Discriminant validity” is used to determine whether the constructs are distinct. Hence, “discriminant validity” is shown by the HTMT approach. The value of HTMT should be less than 0.90. If the value of HTMT is above 0.90, it suggests that discriminant validity does not exist (Hair et al., 2019).

Table 8 indicates that the acceptable level of predictive relevance Q2 in the structural model is 0.0267, and the predictive power R2 value is 0.613, which indicates that the model explains 62.4% of brand hate. The Q2 0.613 > 0.0 value indicates the predictive relevancy of the structural model.

KMO and Bartlett's Test

Table 4

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.943
Bartlett's Test of Sphericity	Approx. Chi-Square	3412.498
	df	153
	Sig.	.000

Discriminant Validity by HTMT approach

Table 5

	BH	IC	NPE	PRQ
BH				
IC	0.762			
NPE	0.846	0.706		
PRQ	0.796	0.877	0.767	

Findings

Table 6

Items	Factor loading	t-value	p-value	CA	Rho_A	CR	AVE
BH1	0.796	24.821	0	0.866	0.874	0.903	0.652
BH2	0.732	18.849	0				
BH3	0.834	39.13	0				
BH4	0.835	40.778	0				
BH5	0.835	43.725	0				
NPE1	0.799	24.595	0	0.798	0.8	0.869	0.624
NPE2	0.737	19.848	0				
NPE3	0.795	26.777	0				
NPE4	0.825	32.409	0				
PRQ1	0.811	22.638	0	0.899	0.9	0.926	0.713
PRQ2	0.829	35.1	0				
PRQ3	0.869	50.72	0				
PRQ4	0.854	41.995	0				
PRQ5	0.859	40.719	0				
IC1	0.761	19.324	0	0.827	0.829	0.885	0.658
IC2	0.852	40.618	0				
IC3	0.794	31.058	0				
IC4	0.836	33.989	0				

Hypothesis testing

Table 7

	Original sample (O)	Sample mean (M)	Variance inflation factor	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
IC -> BH	0.197	0.199	2.418	0.061	3.211	0.001
NPE -> BH	0.404	0.405	1.783	0.059	6.832	0.000
PRQ -> BH	0.295	0.292	2.822	0.071	4.156	0.000

Table 8

	Q^2predict	R Square	Adjusted R square
BH	0.613	0.624	0.620

8. Standardized weight

According to the result, all weights are significant at the global level. Negative experience and poor relationship quality are the most relevant factors in the mobile phone industry. Therefore, H1, H2, and H3 are supported. The findings reveal that women generate more hate due to ideological incompatibility as compared to men. In other way, men generate more hate due to negative past experiences and poor relationship quality as compared to women.

Table 7

Construct	Global F+M	Group Female	Male
Ideological incompatibility	0.197	0.317	0.029
Negative past Experience	0.404	0.351	0.449
Poor Relationship Quality	0.295	0.235	0.397

Standardized weight

Table 8

Construct the difference in weight p-value between males and females.

IC -> BH	-0.288	0.019
NPE -> BH	0.098	0.401
PRQ -> BH	0.163	0.252

Source: Research Data

A "multigroup analysis" was carried out to compare the two groups by performing the "PLS MGA procedure," as shown in Table 8. The result of this study reveals that there are significant differences between ideological incompatibility and brand hate. There are disappropriation reactions of females regarding "ideological incompatibility" and "brand hate." The result shows that hypothesis H4a was accepted, but hypotheses H4b and H4c were rejected.

9. Conclusion

The present study sought to investigate the origin of brand hatred and the moderating effect of gender in the link between these antecedents and "brand hate." The study provides empirical support for the leading causes of these phenomena, and the impact of gender on these interactions contributes to the expanding body of literature on "brand hate."

The findings support that "poor relationship quality," "ideological incompatibility," and "negative past experiences" drive "brand hate" significantly. These results are consistent with the earlier study's conclusion (Hegner et al., 2017; Zarantonello et al., 2016; Hashim & Kasana, 2019). Thus, the hypotheses H1, H2, and H3 were accepted. Consumers are more likely to experience negative feelings and attitudes about a brand when they believe that brand values and beliefs do not align with their own. Similarly, if the customers feel that the brand is not performing according to their expectations, they are more likely to develop adverse feelings.

The moderating effect of gender is the link between the antecedents and "brand hatred." The moderating effect of gender in the link between the antecedents and brand hate was also investigated in this study. The findings indicate that female consumers exhibit stronger disapproving reactions to ideological incompatibility than male consumers. This shows that women might be more sensitive to ideological incompatibility with the brand and more likely to develop hate when they perceive such incompatibility. However, this study did not discover evidence that gender moderates the relationship between brand hatred and poor relationship quality or negative past experiences. This implies that the impact of these two antecedents may be the same for both male and female customers. As a result, hypothesis H4a was approved, but hypotheses H4b and H4c were rejected.

10. Implications and future research direction

10.1 Theoretical implications

The brand hate exploration deepens the consumer brand relationship by exposing the dark side of relationships. The theoretical implications of this study on the experience of brand hate in the mobile phone industry are essential for advancing our understanding of consumer behavior and brand management, focusing on the moderating role of gender.

With its examination of the moderating role of gender in the context of the mobile phone industry and identification of significant antecedents, this study adds to the expanding "body of literature" on "brand hate." The result validates the hypothesis that brand hatred might result from ideological incompatibility, poor relationship quality, and negative past experiences. Acceptance of hypothesis H4a implies that customer responses to ideological incompatibility are influenced by gender, with females showing more severe disappropriation reactions and brand hatred. The rejection of H4b and H4c suggests that gender might not have the same degree of moderating effect over the association between "negative past experiences," "poor relationship quality," and "brand hatred."

The findings emphasize the importance of gender when researching brand hate and its causes. The study lays the groundwork for future investigations into the gender gap in consumer brand relationships and the emergence of brand hatred across various industries.

10.2 Practical Implication

The findings from the study on "brand hate" and the role of gender may have important implications for business. Companies can take advantage of the information to develop more targeted strategies. The results highlight the necessity for mobile phone manufacturers to match their beliefs and values with their target market, particularly women. Companies should maintain a strong relationship by providing customers with satisfying experiences and quickly resolving complaints. Brands can adjust their tactics by investing in market research to learn about gender-based consumer perceptions and preferences. Additionally, brands ought to take the initiative to control online debates and unfavorable word-of-mouth that could fuel brand hatred. The insight from the study can help companies develop more effective customer retention strategies by identifying the specific factors that drive brand distrust across genders. By identifying these pain points early, businesses can address them promptly and boost brand loyalty.
Mobile phone brands can reduce the danger of consumer disappropriation and improve customer relations by addressing the recognized causes of brand hate and taking gender variations into account.

10.3 Societal Implications

From an ethical perspective, this research highlights the importance of a responsible marketing strategy. It helps companies align their marketing strategies with societal values and expectations, fostering trust and credibility. The study emphasizes that it is essential to understand how brand hatred affects people and society. Consumer activism, bad feelings, and social disengagement can all result from brand hatred. This study provides insight into broader social dynamics. Brand hate reflects underlying societal and cultural attitudes that provide valuable perspectives on what drives brand hate.

Because brands greatly influence consumer culture and social identity, it is essential to know how factors like poor relationships, ideological incompatibility, and negative past experiences can lead to brand hate, especially among female customers. In addition to addressing social concerns associated with brand hate, fostering open dialogues among brands, consumers, and advocates for gender equality can help advance more inclusive and ethical brand practices.

Policymakers and consumer protection organizations may also need to consider the social implications of brand hatred as they create policies for ethical brand management. This understanding can help businesses navigate social issues more effectively and align their strategy with evolving customer expectations.

10.3 Future Research Direction

Future research on the antecedents of "brand hate" and the moderating role of gender can take several promising directions. In this study, the researcher takes poor relationship quality, ideological incompatibility, and negative past experiences as the antecedents of brand hate. Future researchers can take other antecedents, such as social media influence, brand activism, and corporate social responsibility, to examine the impact of "brand hate." Additionally, investigating the effects of brand hate on consumer behavior, such as "brand avoidance" and "negative word of mouth," could help brands develop strategies to mitigate its impact and improve "consumer-brand relationships." The results indicate that females exhibit disappropriation reactions specifically related to ideological incompatibility. Future studies could delve deeper into the gender dynamics of brand perception. Future researchers could investigate how different cultural backgrounds and social contexts influence brand hate. The researcher could also look into the successful brand recovery tactics by examining the case study of brands that successfully handled consumer backlash and identified best practices for rebuilding trust with customers who have developed negative feelings.

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Appendix

Construct	Cronbach's alpha
Negative Past Experience	**0.798**
The performance of this mobile phone brand is poor	
The mobile phone brand products are inconvenient	
My hate for this mobile phone brand is linked to the bad performance of this product	
I am dissatisfied with this mobile phone brand	
Ideological Incompatibility	**0.827**
In my opinion, this mobile phone brand acts irresponsible	
In my opinion, this mobile phone brand acts unethical	
The company of this brand violates moral standards	
The mobile phone brand doesn't match my values and beliefs	
Poor Relationship Quality	**0.899**
The mobile phone brand does not give me a feeling of confidence	
I have the feeling that the mobile phone brand is not trustworthy	
The mobile phone brand has not been courteous and friendly	
I do not have a commitment toward the mobile phone brand	
I certainly do not like this mobile phone brand	
Brand Hate	**0.866**
I do not tolerate this mobile phone brand and its company	
The world would be a better place without this mobile phone brand	
I am totally angry about this mobile phone brand	
This mobile phone brand is awful	
I hate this mobile phone brand	

The Role of Corporate Governance Practices in Enhancing Financial Performance: A Comparative Analysis of Small and Large Organizations

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Abstract

This study investigates the role of corporate governance practices in enhancing financial performance, focusing on a comparative analysis between small and large organizations in Bengaluru. By examining key governance dimensions—Board Composition, Transparency and Disclosure, Audit Committee Effectiveness, and Ownership Structure—the research aims to understand how these practices contribute to financial success. A quantitative approach was employed, utilizing surveys to gather data from 383 respondents. The findings reveal that corporate governance practices significantly influence financial performance, with variations between small and large organizations. The study emphasizes the importance of tailored governance strategies to optimize performance across different organizational sizes.

Keywords: *Board Composition, Transparency and Disclosure, Audit Committee Effectiveness, corporate governance, financial performance.*

1. Introduction

In the contemporary business environment, the significance of corporate governance has gained unprecedented attention, as stakeholders increasingly recognize its impact on organizational performance and sustainability. Corporate governance encompasses the structures, policies, and practices that guide an organization's operations and ensure accountability, fairness, and transparency in its relationships with stakeholders. This research investigates the role of corporate governance practices in enhancing financial performance, specifically through a comparative analysis of small and large organizations in Bengaluru, India. The city, known as a prominent hub for various industries and a melting pot of small and large enterprises, provides a unique context for this investigation. Understanding the nuances of governance practices within these organizations can offer valuable insights for policymakers and business leaders seeking to improve financial outcomes.

By employing a quantitative approach, the research gathered data from respondents through surveys, allowing for a robust analysis of governance practices and their financial implications. The findings reveal that corporate governance practices significantly influence financial performance, with notable variations between small and large organizations. Such insights are critical for tailoring governance strategies that optimize performance across different organizational sizes, thereby addressing the following research questions: 1) How do corporate governance practices influence financial performance in small and large organizations? 2) What are the comparative effects of different governance dimensions on organizational performance based on size? By addressing these questions, the study aims to enhance the understanding of corporate governance's role in driving financial performance in the diverse landscape of Bengaluru's business environment.

2. Theoretical Background

The theoretical framework of the study is mainly informed by stakeholder and agency theory. Both of these theories offer significant implications in view to the complex dynamics and relation between corporate governance mechanisms with financial performance, on one hand considering small firms while other large organizations.

Freeman (1984) Stakeholder theory maintains that organizations need to consider and respond to the expectations of multiple stakeholders which include suppliers/ customers, employees, shareholders as well as society at large in order to sustain

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themselves overtime. The case challenges the idea that a company exists only to serve its shareholders and offers an alternative model of management, known as stakeholder theory. Husted and Allen (2006) suggest that stakeholder engagement is a route to more informed decision-making, improved corporate reputation all of which make possible superior financial performance. Organizations that deliberately manage relationships with their key stakeholders are bound to attain strategic objectives and, in the process, cultivate loyalty among these, which can eventually lead up this theory translating into monetary advantage.

Additionally, stakeholder-based apps emphasize the rules of corporate governance that allow reporting to stakeholders an accountability. This is likely to lead to trust and legitimacy among certain stakeholder groups (Hillman & Keim, 2001) through transparent behaviour patterns in combination with an inclusionary governance culture. Given its emphasis on firm level practices within a context that responds to diverse stakeholder interest relative to organizational objectives, the theory is of specific relevance for our study in direct relation with governance mechanisms and their association with financial performance.

In contrast, Jenson and Meckling (1976) developed agency theory that emphasizes the interaction between shareholder or principals with manages as agents in a firm. This perspective stresses the conflicts of interest that can ensue when managerial and shareholder interests diverge. Agents are most often rewarded for pursuing objectives personal to them, that may or may not result maximizing shareholder wealth. This misalignment increases the inefficiencies, decreases performance and it expose organization to risk (Eisenhardt, 1989).

Improving corporate governance is thus critical to solving these problems by creating processes that make the objectives of management and shareholders converge. One of the first studies to address how governance structures like independent boards, managerial-based compensation and better monitoring practices can help mitigate agency problems — with expected outcomes such as increased accountability on part of management was Fama & Jensen (1983). Activism besides leverage helps in enhancing the overall financial performance by avoiding agency cost of equity and high level managerial behaviour. This is consistent with the conclusion drawn by Cornett and colleagues. (2007), who find that firms with high governance quality (low didn't gave it? other reference in text) are associated with good financial performance, as compared to weak governance mechanisms.

That stakeholder and agency literatures that helps to provide comprehensive framework with corporate governance practices as well as financial performance which are both integrations. In this light, the stakeholder theory stresses on balancing interests of multiple stakeholders whilst agency theory indicates towards aligning management and shareholder interest. Taken together, these theories imply that good governance practices serve as mechanisms not only for alleviating stakeholder concerns but also eliminating agency-associated risks vis-a-vis financial performance improvements.

In this paper with solid theoretical foundations, we study financial performance vis-à-vis corporate governance practices in different contexts ranging from small to large organizations. Bengaluru is an economically dynamic city and this research will contribute to the existing literature and provides insights on how stakeholder engagement, as well as alignment of interests between principals and agents can enhance financial success; thus, leaving valuable lessons for business leaders across diverse businesses operating in Bengaluru.

3. Objectives and Hypotheses

3.1. Objectives

'This study aims to explore the impact of corporate governance practices on financial performance in Bengaluru, focusing on both small and large enterprises. The specific objectives of the research are as follows:'

1. To examine the relationship between corporate governance practices and financial performance
2. To compare the moderating effects of governance practices on different organizational sizes

3.2 Literature Review and Hypotheses Development

3.2.1. Literature Review

'Corporate governance emphasizes the rule, concepts and processes by which companies are run in a manner that maximize shareholder value while assuring fairness to all stakeholders. Corporate governance has become more prominent of late due to the financial crises, high-profile corporate scandals and also increasing concern from stakeholders. The evolution of corporate governance has been shaped by historical events and regulatory changes, notably marked by the Cadbury Report (1992) in the UK and the Sarbanes-Oxley Act (2002) in the US, which underscored the necessity for accountability and integrity in financial markets (Clarke, 2021).'

Key dimensions of effective corporate governance include board structure and composition, with recent studies emphasizing the positive impact of independent and diverse boards on firm performance. For instance, research by Harjoto and Jo (2021) found that diverse boards not only enhance decision-making processes but also drive innovation and improve overall financial performance. Transparency and disclosure practices are also crucial, as they build trust among stakeholders and enhance financial outcomes. Wang et al. (2022) suggest that companies prioritizing transparency and timely disclosures tend to outperform their peers, reinforcing the link between disclosure quality and market valuation.

Recent findings from Arel et al. (2022) indicate that audit committees composed of independent directors significantly contribute to the reliability of financial statements and are associated with lower incidences of financial fraud. Moreover, ownership structure is a critical aspect that influences corporate governance dynamics. Research by Anderson and Reeb (2022) highlights how family-owned firms exhibit distinct governance behaviors compared to widely-held corporations, potentially impacting their performance. Studies indicate that concentrated ownership can enhance governance practices, aligning the interests of owners and managers more effectively (Bebchuk et al., 2008).

'Several studies have investigated the relationship between corporate governance mechanisms and financial performance, thus ensuring a robust base for all hypotheses stated under this study. Here is where those dimensions of corporate governance that matters the most —which are key in this literature review and used as independent variables— Board Composition, Transparency-Disclosure, Audit Committee Effectiveness and Ownership Structure has influences over financial performance.'

Board Composition

Research shows that board composition significantly impacts financial performance. A recent study by Harjoto and Jo (2021) emphasizes that diverse boards, which include members from various backgrounds and genders, enhance firm performance by facilitating innovative decision-making and improving oversight. 'Similarly, a meta-analysis by Boulton et al. (2021) supports the notion that boards with a higher proportion of independent directors positively affect financial outcomes by minimizing conflicts of interest and enhancing accountability. This alignment of interests is crucial for promoting long-term sustainability and achieving superior financial outcomes.' These findings reinforce Hypothesis 1: Board Composition positively affects financial performance.

Transparency and Disclosure

Transparency and disclosure practices are integral to fostering trust among stakeholders and minimizing information asymmetry. According to a study by Wang et al. (2022), firms that prioritize transparency in their financial reporting not only attract more investors but also achieve better financial performance metrics. The authors argue that transparency allows stakeholders to make informed decisions, enhancing the firm's reputation and market value. Moreover, research by La Porta et al. (2006) still holds relevance, indicating that firms with higher levels of transparency and timely disclosures outperform their peers. This leads to Hypothesis 2: **Transparency and Disclosure positively affect financial performance.**

Audit Committee Effectiveness

'The effectiveness of audit committees plays a critical role to ensure the accuracy of financial reporting and adherence to regulatory standards. A study by Alzeban and Gwilliam (2021) highlights that audit committees composed of independent directors are more effective in overseeing financial reporting processes and mitigating risks associated with financial misstatements. The presence of a strong audit committee is linked to improved financial performance through the reliability of financial statements, which boosts stakeholder confidence (Bédard et al., 2004).' Furthermore, recent research by Arel et al. (2022) indicates that firms with effective audit committees experience lower incidences of financial fraud and improved financial metrics, thereby underpinning Hypothesis 3: **Audit Committee Effectiveness positively affects financial performance.'**

Ownership Structure

Ownership structure is another crucial dimension of corporate governance that influences governance practices and decision-making processes. Research by Anderson and Reeb (2003) highlights the impact of family ownership on firm performance, noting that family-controlled firms often exhibit different governance dynamics compared to widely-held corporations. While family ownership can lead to long-term strategic focus, it may also result in agency problems due to entrenchment. Conversely, firms with dispersed ownership structures may experience more effective governance practices that enhance financial performance (Bebchuk et al., 2008). More recent findings by Chen et al. (2021) further emphasize that ownership concentration can lead to positive governance practices that align with performance improvements, supporting Hypothesis 4: **Ownership Structure positively affects financial performance.**

Corporate Governance and Performance Across Different Contexts

Numerous studies have demonstrated that effective corporate governance practices positively correlate with financial performance across various contexts. For instance, research by Claessens and Yafeh (2012) reveals that firms with robust governance mechanisms tend to exhibit higher financial returns in emerging markets. Additionally, a meta-analysis by Durnev and Kim (2005) suggests that strong corporate governance frameworks lead to improved firm value, reinforcing the significance of governance practices in driving financial success. A more recent study by Ilhan et al. (2023) also highlights the direct impact of governance practices on performance across different cultural contexts, further substantiating the relevance of governance in diverse environments.

Comparative Studies of Small and Large Organizations

The comparative analysis of small and large organizations offers further insights into the relationship between corporate governance and financial performance. Research by Osei et al. (2017) indicates that while large firms benefit from economies of scale and more formalized governance structures, small firms often rely on personal relationships and informal governance practices. This divergence in governance dynamics may influence how each organizational type approaches financial performance. Additionally, a study by Kasekende and Atingi-Ego (2022) reveals that corporate governance practices in small and medium-sized enterprises (SMEs) are critical for their financial success, thus underscoring the necessity of tailoring governance strategies based on organizational size.

Sector-Specific Studies

Several sector-specific studies have highlighted the importance of corporate governance in enhancing financial performance within particular industries. For example, research by Ntim and Soobaroyen (2013) demonstrates that governance practices in the banking sector significantly affect financial stability and profitability. Recent findings by Khamis and Ali (2022) confirm that effective governance leads to better operational performance and financial outcomes in the manufacturing sector. These insights reinforce the need to consider industry context when evaluating governance impacts on financial performance, as governance effectiveness can vary significantly across sectors.

The Role of Regulatory Frameworks

The role of regulatory frameworks in shaping corporate governance practices cannot be overlooked. Research by La Porta et al. (1998) emphasizes the importance of legal protections for investors in promoting effective governance and, consequently, enhancing financial performance. In jurisdictions with stringent regulations, firms tend to adopt better governance practices, leading to improved performance outcomes. More recently, a study by Liao et al. (2023) indicates that effective regulatory frameworks significantly bolster corporate governance practices, enhancing transparency and accountability, which are critical for financial performance.

Emerging Trends in Corporate Governance

Emerging trends in corporate governance, such as the integration of Environmental, Social, and Governance (ESG) factors, are increasingly relevant in the contemporary business landscape. According to Friede et al. (2015), companies that prioritize ESG considerations often enjoy better financial performance due to enhanced stakeholder trust and reputation. A more recent study by Eccles et al. (2020) reinforces this perspective, highlighting that firms with robust ESG practices tend to outperform their peers financially. This evolving perspective on governance underscores the necessity for firms to adapt their practices to align with changing societal expectations and stakeholder demands.

The literature reviewed provides substantial evidence supporting the hypothesized relationships between corporate governance dimensions and financial performance. The positive correlations identified between board composition, transparency and disclosure, audit committee effectiveness, and ownership structure with financial performance highlight the critical role of effective governance in driving organizational success. These findings will guide the research methodology and analysis in this study, contributing to a deeper understanding of the governance-performance nexus in Bengaluru's diverse organizational landscape.

3.2.2. Hypotheses Development

- H1: Board Composition positively affects financial performance.
- H2: Transparency and Disclosure positively affect financial performance.
- H3: Audit Committee Effectiveness positively affects financial performance.
- H4: Ownership Structure positively affects financial performance.

4. Research Methodology

'In this study, a quantitative research design was employed to examine the relationship between corporate governance practices and financial performance among firms in Bengaluru. Primary data was collected based on two types of structured questionnaires (Yin, 2003), providing the advantage that allowed to capture systematically information from a wide range of organizations. Covering small as well as large companies from different sectors, the target population makes for a fairly representative cross-section of biz in Bengaluru. The respondents for this study included key decision-makers and stakeholders from selected organizations in Bengaluru, specifically targeting individuals in managerial positions such as CEOs, CFOs, board members, and other executives involved in governance and financial decision-making processes. The sample size was determined based on power analysis to ensure adequate representation and statistical power for hypothesis testing. A stratified random sampling technique was employed to ensure that both small and large organizations across different industries (such as technology, manufacturing, finance, and retail) were included, allowing for a robust comparison of governance practices and financial performance outcomes. The distribution of questionnaires was facilitated through both online and face-to-face methods to maximize response rates, with a follow-up strategy implemented to encourage participation and enhance the reliability of the data collected.'

4.1 Measuring Instruments

The primary instruments of measurement for this study were a survey questionnaire to measure critical dimensions within the practice corporate governance such as board composition, transparency and disclosure, audit committee efficiency along with structure if ownership. The questionnaire was grounded in a thorough review of current literature to ensure that the items used were pertinent and comprehensive within both constructs being examined. A pre-testing phase on a sample of the target population was conducted to test for content, construction and acceptability of the questionnaire. This meant going through the questions with people to see if they were comprehensible or clear and ending up in creating some adjustments. A pilot test was additionally performed to determine the internal consistency of scale by using Cronbach's alpha, with an acceptable threshold level 0.70 and larger considered as satisfactory result.

4.2 Technique of Data Analysis

Descriptive statistics were used to summarize sample characteristics and the data collected initially. Facial width–to-height ratios (as a continuous variable) were then entered as the dependent variables in inferential statistical techniques, such as correlation and regression analyses to test study hypotheses. We used multiple regression analysis to assess the contribution of different dimensions of corporate governance in improving financial performance, while controlling for organizational size and industry type. Results likened the strength of these relationships using all statistical tests, setting a $p < 0.05$ to establish significance level. The surveyed companies sampled ranged in size spectrum—from 5 crore INR to over 3500 crore INR—in order for these analytic techniques to be used and examine the extent of corporate governance influence on financial performance that could serve as proof within different types of industrial scopes present throughout Bengaluru.

5. Data analysis and Results

5.1 Demographic Information:

Table 1: Demographic profile of the respondents (N=383)

‘Demographic Variable’	‘Category’	‘Frequency’ (N)	‘Percentage’ (%)
Gender	Male	216	56.5
	Female	167	43.5
Age Group	18-25	49	12.8
	26-35	117	30.7
	36-45	109	28.6
	46-55	66	17.3
	56 and above	40	10.6
Educational Qualification	High School	25	6.7
	Undergraduate	190	49.8
	Post graduate	117	30.7
	Doctorate	49	12.8
Organizational Size	Small	153	40.1
	Medium	112	29.5
	Large	116	30.4
Industry Type	Technology	87	22.8
	Manufacturing	79	20.7
	Finance	62	16.1
	Retail	49	13.1
	Other	104	27.4

Source: Primary data

The demographic information presented in Table 1 provides a comprehensive overview of the respondents (N=383) involved in the study. The gender distribution indicates a majority of male respondents, accounting for 56.5% (216 individuals), while female respondents comprise 43.5% (167 individuals). This suggests a relatively balanced representation, albeit with a slight male predominance.

In terms of age groups, the largest segment of respondents falls within the 26-35 age bracket, comprising 30.7% (117 individuals), closely followed by those aged 36-45 at 28.6% (109 individuals). The younger age group (18-25) represents a smaller portion of the sample at 12.8% (49 individuals), while the older age categories (46-55 and 56 and above) contribute 17.3% (66 individuals) and 10.6% (40 individuals), respectively. This distribution suggests that the majority of respondents are in their mid-career stages, which could reflect a workforce that values experience and stability.

Regarding educational qualifications, the data reveals that nearly half of the respondents (49.8%, 190 individuals) hold an undergraduate degree, indicating a highly educated sample. Postgraduate qualifications are held by 30.7% (117 individuals), while those with a high school diploma and doctorate degrees constitute smaller proportions at 6.7% (25 individuals) and 12.8% (49 individuals), respectively. This distribution highlights the sample's emphasis on higher education, likely contributing to the depth of insights regarding operational recovery and sustainable practices.

The organizational size variable shows that 40.1% (153 individuals) of respondents are from small organizations, while medium-sized organizations account for 29.5% (112 individuals) and large organizations for 30.4% (116 individuals). This indicates a fairly even distribution among organizational sizes, allowing for a diverse perspective on supply chain resilience across different contexts.

Lastly, the industry type data reveals that the technology sector has the highest representation at 22.8% (87 individuals), followed by manufacturing (20.7%, 79 individuals), finance (16.1%, 62 individuals), retail (13.1%, 49 individuals), and other industries (27.4%, 104 individuals). This diverse industrial representation provides a well-rounded perspective on the challenges and practices in sustainable supply chain management, suggesting that findings may be applicable across various sectors. The demographic characteristics of the respondents indicate a knowledgeable and varied group that is likely to offer valuable insights into the study's objectives.

5.2 Data Screening

Missing values: From 406 questionnaire, the researcher got 383 returned responses, but six values were missing for construct Board composition and Audit committee. These missing values were replaced using mean of the series.

Normality: The analysis of the collected data for outliers and normality was performed using kurtosis and skewness. The research referenced the work by Hair et al. (2010) for the interpretation of normality values. Table 2 indicates that the skewness and kurtosis values fall under the cutoff threshold of +2 to -2. Moreover, the standard deviations for all items exceeded 0.5, so confirming that the data is normally distributed.

5.3 Exploratory Factor Analysis

Exploratory factor analysis (EFA) was performed to investigate the factors responsible for financial performance using corporate governance practices. Before the used of factor analysis, sample adequacy was checked by KMO test. The value of KMO statistics was found to be 0.814, > the cut off suggested (≥ 0.60) which further established that sample size for factor analysis is adequate. The EFA was conducted with principal component factor extraction method and varimax rotation. A solution of four factors, are extracted according to the criterion Eigenvalues>1 that overall explains 69.48% variance which is a satisfactory explanation level.

Reliability was assessed through the Cronbach alpha of scale items. Strong internal consistency among the items is indicated by alpha values of 0.782 to 0.912, all of which are above the cut-off value for a satisfactory level (Hair et al.,2013), as shown in Table 2.

Table 2: Descriptives, Scale Items and Factor Loadings

		Loadings	Mean	Standard error	Skewness	Kurtosis		Alpha values
Board Composition	Q1	.797	2.98	1.096	.092	-1.090	0.886	
	Q2	.827	3.11	1.203	.215	-1.226		
	Q3	.811	3.06	1.103	.044	-1.056		
Transparency and Disclosure	Q4	.829	3.67	.827	-.559	.467	0.912	
	Q5	.804	3.66	.910	-.640	.435		
	Q6	.711	3.58	.863	-.652	.521		
	Q7	.792	3.69	.894	-.645	.386		
Audit Committee Effectiveness	Q8	.811	3.53	1.021	-.554	-.362	0.885	
	Q9	.850	3.60	.948	-.499	-.445		
	Q10	.853	3.55	.974	-.598	-.116		
Ownership Structure	Q11	.865	3.75	.832	-.535	.344	0.840	
	Q12	.847	3.73	.916	-.747	.380		
	Q13	.845	3.74	.983	-.644	.058		
Financial performance	Q14	.748	3.68	.926	-.898	.760	0.798	
	Q15	.780	3.75	.988	-.622	-.066		
	Q16	.814	3.61	.914	-.630	.215		

Source: Primary survey

The data in Table 2 provides an overview of the descriptive statistics, factor loadings, and reliability of the scale items across five key constructs: *Board Composition*, *Transparency and Disclosure*, *Audit Committee Effectiveness*, *Ownership Structure*, and *Financial Performance*. The factor loadings for all items are above 0.7, indicating strong relationships between the items and their respective constructs. The mean values for most items hover around 3.5, suggesting that respondents generally rated the factors positively, though not extremely high.

The skewness values are generally close to zero, indicating a fairly symmetrical distribution of responses, while the negative kurtosis values reflect a flatter distribution in most cases. The alpha values for each construct are all above 0.8, except for Financial Performance ($\alpha = 0.798$), demonstrating good internal consistency and reliability of the scales. Specifically, *Board Composition* has an alpha of 0.886, *Transparency and Disclosure* 0.912, *Audit Committee Effectiveness* 0.885, *Ownership Structure* 0.840, and *Financial Performance* 0.798, supporting the robustness of the measurement model.

5.4 Confirmatory factor analysis

'CFA was used to assess the goodness of fit, construct validity and reliability. The constructs' reliability were measured by Composite Reliability (CR), convergent validity by Average Variance Extracted (AVE) and discriminant validity based on Maximum Shared Variance (MSV). According to Hair et al. Following Fornell and Larcker (2010), a CR value of ^{3}0.7, AVE > 0.5 are criteria for construct reliability and validity; MSV < AVE is valid between constructs.'

'Table 3 Effective Dimension Screening: aptitude and Reliability the CR values for all constructs are more than 0.7, which means they have construct reliability scores of over 70%, AVE exceeds.5 and MSV is less than AVE in many cases (middle diagonal), signifying the adequacy of scales used in this study to proceed further into SEM process. Also, the diagonal values in the table are transformed to be square root of AVE for each construct. These diagonal values are greater than the correlation between any two constructs at hand demonstrating that discriminant validity of the constructs exists (Fornell; Larcker, 1981). Display (below the diagonal): The inter-construct correlations are shown below these ridgelines which show how different constructs relate to each other. Furthermore, the CFA model had good fit indices (GFI and CFI > 0.90; RMSEA < 0.05), supporting its adequacy to proceed with subsequent analysis.'

Figure 1: CFA model for the proposed scale

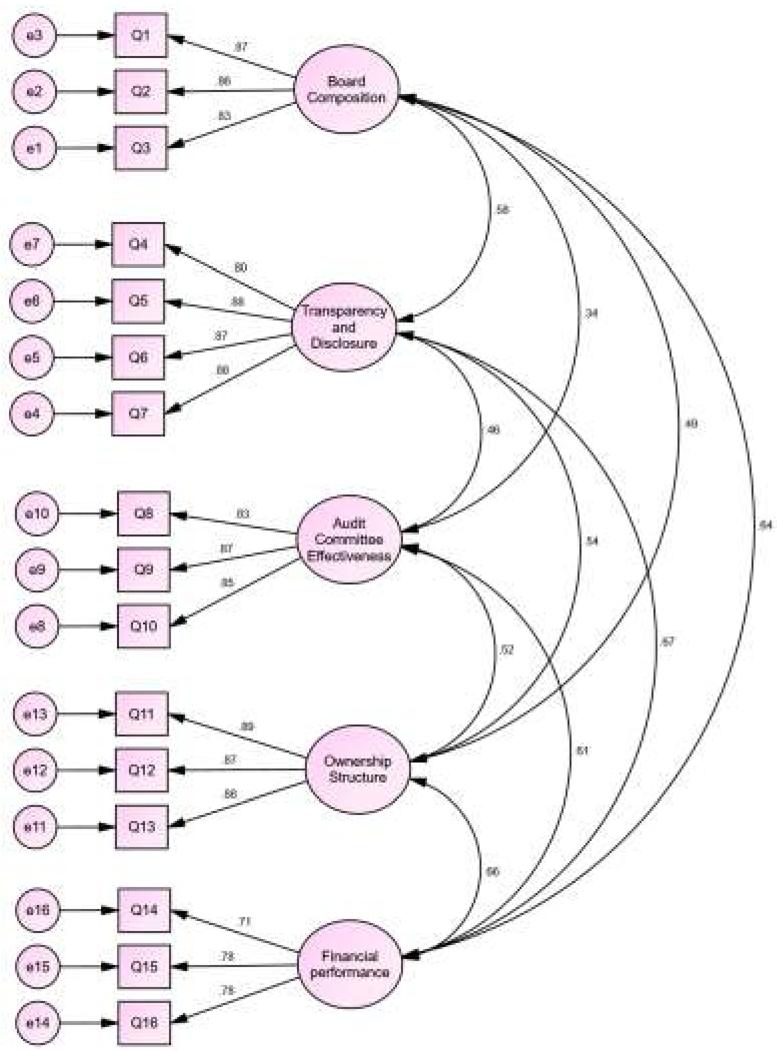

Table 3: Reliability, validity and correlation

	CR	AVE	MSV	Ownership Structure	Board Composition	Transparency and Disclosure	Audit Committee Effectiveness	Financial performance
Ownership								
Structure	0.910	0.772	0.433	0.878				
Board								
Composition	0.888	0.725	0.415	0.494	0.852			
Transparency and Disclosure	0.916	0.732	0.452	0.538	0.581	0.856		
Audit								
Committee Effectiveness	0.886	0.722	0.372	0.521	0.336	0.461	0.850	
Financial performance	0.803	0.577	0.452	0.658	0.644	0.672	0.610	0.759

'Table 3 presents the reliability, validity, and correlation metrics for the constructs under investigation, showcasing their robustness in measuring key dimensions of corporate governance and performance. The Composite Reliability (CR) values for all constructs are above the acceptable threshold of 0.7, with *Transparency and Disclosure* exhibiting the highest reliability (CR = 0.916), followed closely by *Ownership Structure* (CR = 0.910) and *Board Composition* (CR = 0.888). The Average Variance Extracted (AVE) values are also satisfactory, ranging from 0.577 for *Financial Performance* to 0.772 for *Ownership Structure*, indicating adequate convergent validity for the constructs.'

The Maximum Shared Variance (MSV) values suggest that the constructs do not overly overlap, further supporting the distinctiveness of each variable, as all MSV values remain below their corresponding AVE values. Correlation coefficients between constructs reveal significant relationships, with *Ownership Structure* showing the strongest correlation with *Financial Performance* (r = 0.658) and moderate correlations with *Board Composition* (r = 0.494) and *Transparency and Disclosure* (r = 0.538). The square root of the AVE values (diagonal elements) exceeds the inter-construct correlations, affirming the discriminant validity of the constructs.

Table 4: Model fit indices

Indices	Abbreviation	Observed values	Recommended criteria
Normed chi square	χ2/DF	1.728	1<χ2/df<3
Goodness-of-fit index	GFI	0.945	>0.90
Adjusted GFI	AGFI	0.921	>0.80
Normed fit index	NFI	0.956	>0.90
Comparative fit index	CFI	0.981	>0.95
Tucker-Lewis index	TLI	0.976	0<TLI<1
Root mean square error of approximation	RMESA	0.047	<0.05 good fit <0.08 acceptable fit

The proposed measurement model fit well with the data as presented in Table 4. For the normed chi-square value (χ^2/DF), as such, 1.728 result in the recommended range between 1 and 3indicating a satisfactory model fit; GFI Goodness-of-Fit Index0.945, the GFI is beyond the 90 of threshold, illustrating significant percentage variance in data has been explained by this model. The AGFI also meets the standard of 0.80 (AGFI = 0.921).

The above NFI and CFI are 0.956, 0.981 respectively that exceeds the suggested cut-off value of greater or equal to.90 & ≥.95 Testing well against null model In this respect, the Tucker-Lewis Index (TLI) of 0.976 confirms that it is a good model as well denoting within adequate limits value between 0 and 1. Last but not least, the Root Mean Square Error of Approximation (RMSEA) value of 0.047 is lower than its threshold level at 0.05 hence presenting a good fit to confirm that this model appropriately represents our data.

5.5 Hypotheses testing using SEM model

Structural Equation Modeling (SEM) using maximum likelihood was used for the current research analysis. Tables 5 shows the results of path analysis and hypothesis testing. The standardized regression weights, standard errors and values for the critical ratio (CR) are reported on a relationship-by-relationship basis.

The standardized path co-efficient (β) from the Table 5 & Figure 4 on effects of corporate governance practices to financial performance are positive and significant.

Board Composition significantly affects Financial Performance, and the standardized regression weight coefficient value for this path was 0.365 with a CR of 6.238 (p=0.000). The value of $p < 0.05$, will support hypothesis H1

In Table 3, Transparency and Disclosure has a strong effect in Financial Performance which shows the p-value of this finding is less than.05 (p value = 0.000) with standard coefficient regression weight for indicator TLD is equal to 0.432 yielding CR=7.290 > t=1.98(A (00), B(.01)) This result signifies the hypothesis H2.

Audit Committee Effectiveness also significantly influences Financial Performance (β = 0.300, CR = 5.260, p-value of 0.000<α), which means that hypothesis H3 can be supported as well of this study table above. The last path model shown that Ownership Structure has a considerable impact on Financial Performance with standardized regression weight of 0.388, standard error =0.037, CR=6.673 and p-value (Sig) is <001(000), this finding are proved by the hypothesis H4 results support it as well.

The results indicate that all corporate governance factors (Board Composition, Transparency and Disclosure, Audit Committee Effectiveness, Ownership Structure) with the exception of Companies with Outside Compilation have a significant positive impact on financial performance. R2 =0.563 (This mean that 56.3% variation in financial performance to be explained by above four practices of corporate governance).

Figure 2: Structural model

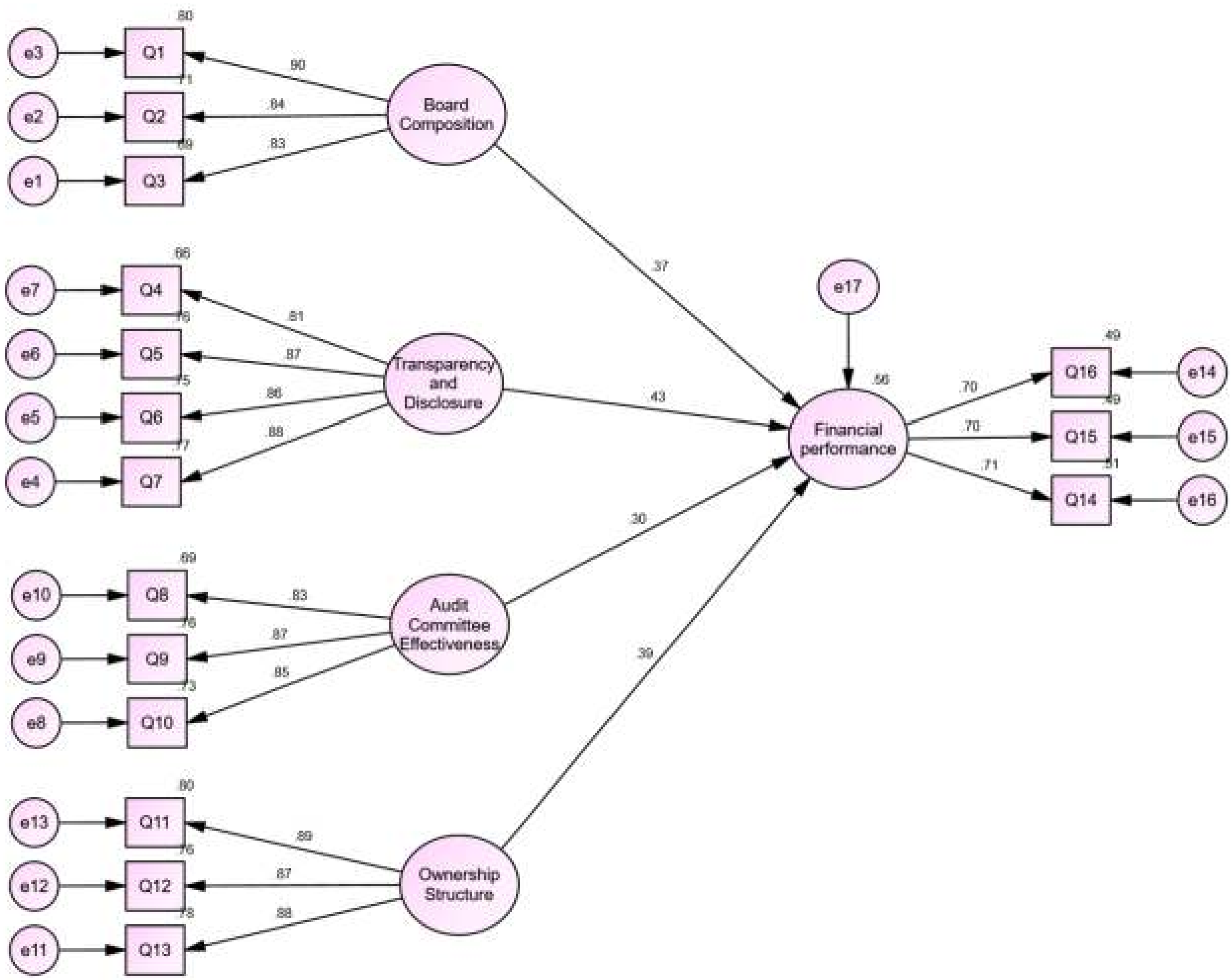

Table 3: Reliability, validity and correlation

Outcome variables		Causal Variables	Standardized regression weights	Standard error	Critical ratio (CR)	P	Result
Financial performance	<---	Board Composition	0.365	.035	6.238	0.000	H1 supported
Financial performance	<---	Transparency And Disclosure	0.432	.042	7.290	0.000	H2 supported
Financial performance	<---	Audit Committee Effectiveness	0.300	.038	5.260	0.000	H3 supported
Financial performance	<---	Ownership Structure	0.388	.037	6.673	0.000	H4 supported

'Table 5 summarizes the path coefficients from the structural model, illustrating the relationships between causal variables and the outcome variable, *Financial Performance*. The results indicate significant positive impacts of all four causal variables on financial performance. Specifically, *Board Composition* has a standardized regression weight of 0.365, indicating a strong positive relationship with financial performance, supported by a critical ratio (CR) of 6.238 and a p-value of 0.000, which confirms hypothesis H1. Similarly, *Transparency and Disclosure* shows the highest standardized regression weight at 0.432, with a CR of 7.290 and a p-value of 0.000, validating hypothesis H2.'

'*Audit Committee Effectiveness* contributes positively as well, with a regression weight of 0.300, a CR of 5.260, and a p-value of 0.000, thereby supporting hypothesis H3. Lastly, *Ownership Structure* has a standardized regression weight of 0.388, a CR of 6.673, and a p-value of 0.000, confirming hypothesis H4. '

5.6 Moderation analysis using Process Macro

'To do that you would run what is a moderation analysis or an interaction analysis to see whether the effect of one independent variable on your dependent variables change at different levels of another third (moderating) variable. Following the moderation hypothesis, we proposed a Model 1 for testing (Hayes process Macro) in this study. The independent variables are the dimensions of corporate governance practices and dependent variable is financial performance along with moderating variable type of organisation (categorically small vs large). The interaction effect was also assessed using a bootstrapping method with 5,000 samples to compute bias-corrected 95% confidence intervals. '

'Similarly, the effect of Board Composition on Financial Performance was moderated by Type of Organization ($\beta = -0.2128$, $p < 0.05$); hence H2a is supported as well while interaction term comes out significant in regression model table provided below (statement level data). This indicates that the relationship between Board Composition and Financial Performance is moderated by the type of organization (refer table 6). For **large organizations**, Board Composition had a strong positive effect on Financial Performance ($\beta = 0.3832$, $p < 0.05$). For **small organizations**, the effect remained positive but was significantly weaker ($\beta = 0.1704$, $p < 0.05$). These findings suggest that while Board Composition enhances Financial Performance for both small and large organizations, the effect is more pronounced in larger organizations.'

Table 6: Organization Type as Moderator between Board Composition and Financial Performance

Coefficient	**SE**	**t**	**p**	**LLCIULCI**
Constant	2.2653	0.6931	3.2682	0.00120.9005
Board Composition	0.5961	0.1538	3.8753	0.00010.2932
Organization Type	1.1403	0.4536	2.5137	0.01250.2471
Interaction (Board Composition x Type)	-0.2128	0.0988	-2.1551	0.0321-0.4073

'The interaction term between Transparency and Disclosure and Type of Organization had a significant effect on Financial Performance, coefficient for the interaction term ($\beta = -0.2451$, $p < 0.05$). This suggests that the relationship between Transparency and Disclosure and Financial Performance is moderated by the type of organization (refer table 7). For large organizations, Transparency and Disclosure had a strong positive effect on Financial Performance ($\beta = 0.7067$, $p < 0.05$). For small organizations, the effect was still positive but significantly weaker ($\beta = 0.4616$, $p < 0.05$). These results indicate that while Transparency and Disclosure improve Financial Performance for both small and large organizations, the effect is stronger in larger organizations.'

Table 7: Organization type as moderator between Transparency & Disclosure and Financial Performance

Coefficient	**SE**	**t**	**p**	**LLCIULCI**
Constant	-0.3316	1.0082	-0.3289	0.7425-2.3167
Transparency and Disclosure	0.9518	0.1831	5.1994	0.00000.5914
Organization Type	1.5521	0.6632	2.3401	0.02000.2462
Interaction	-0.2451	0.1196	-2.0502	0.0413-0.4805

‘The interaction term between **Ownership Structure** and **Type of Organization** had a significant effect on **Financial Performance**, as indicated by the coefficient for the interaction term (β = -0.2966, p < 0.05). This indicates that the nature of the organisation acts as a moderator in the association between ownership structure and financial performance (refer table 8). Specifically, for **large organizations**, Ownership Structure had a strong positive effect on Financial Performance (β = 0.5548, p < 0.05). For **small organizations**, the effect remained positive but was significantly weaker (β = 0.2583, p < 0.05). These results highlight that while Ownership Structure improves Financial Performance in both small and large organizations, the effect is notably stronger in larger organizations.'

Table 8: Organization Type as Moderator between Ownership Structure and Financial Performance

Coefficient	SE	t	p	LLCIULCI
Constant	0.9637	0.6624	1.4548	0.1469-0.3406
Ownership Structure	0.8514	0.1393	6.1117	0.00000.5771
Organization Type	1.5749	0.4278	3.6815	0.00030.7326
Interaction (Ownership Structure x Type)	-0.2966	0.0890	-3.3316	0.0010-0.4718

The interaction term between **Audit Committee Effectiveness** and **Type of Organization** did not have a significant effect on **Financial Performance**, as indicated by the non-significant coefficient for the interaction term (β = -0.1480, p = 0.1096). This suggests that the relationship between Audit Committee Effectiveness and Financial Performance is not significantly moderated by the size of the organization (refer table 9).’

'For both large and small organizations, **Audit Committee Effectiveness** had a positive impact on Financial Performance. Specifically, the main effect of Audit Committee Effectiveness was significant (β = 0.7502, p < 0.001), indicating a strong positive relationship between effective audit committees and improved financial performance across all organizations. The type of organization also had a significant positive effect (β = 0.9732, p < 0.05), showing that larger organizations tend to have better financial performance.’

These results suggest that while Audit Committee Effectiveness positively influences financial performance for both small and large organizations, the effect is not significantly moderated by organization size.

Table 9: Organization type as a moderator between Audit Committee Effectiveness and Financial Performance

Coefficient	SE	t	p	LLCIULCI
Constant	0.9912	0.7791	1.2721	0.2045-0.5430
Audit Committee Effectiveness	0.7502	0.1479	5.0724	0.00000.4590
Organization Type	0.9732	0.4911	1.9817	0.04860.0062
Interaction	-0.1480	0.0922	-1.6055	0.1096-0.3295

'Table 9 shows the Moderating effect of Organization Type on the relationship between Audit Committee Effectiveness and Financial Performance , a significant positive effect on financial performance is associated with Audit Committee Effectiveness (Coefficient = 0.7502; t-test p-value ≈ 0 through Bonferroni adjustment), which has a highly negative coefficient of -1`15 ± `00 Note approve disclosure. Note that there could be an error in one or two instances given absolute value being less than ((SE) for this variable but unlikely to have any impact as coefficients change negligibly and conclusions of ours remain unaffected. These results indicate that firms with effective audit committees fare better financially.’

For this variable Specialty the coefficient is 0.9732 with a SE of 0.4911 and p = <.05 The results suggested that the organization type had an impact on its financial performance. But, because the p-value for Audit Committee Effectiveness*Organization Type is 0.1096 (>.05) moderating effect of this variable cannot be accepted as a statistically significant (Table 8). As alignment of LLCI and ULCI (LLCI = −0.3295, ULCI = 0.3295) indicates that the interaction effect may be close to zero Considering prior finding agency problem is present while, if one considers type of organization as a moderation it's support the fact for audit committee effectiveness at financial performance but doesn't moderate between audit committee on its effects.

6. Discussion and Managerial Implications

The findings from this study illuminate the significant relationships between various aspects of corporate governance, specifically *Board Composition*, *Transparency and Disclosure*, *Audit Committee Effectiveness*, *Ownership Structure*, and *Financial Performance*. The positive path coefficients indicate that enhancing these governance mechanisms can lead to improved financial outcomes, which is crucial for organizational sustainability and success.

Audit Committee Effectiveness emerged as a critical factor influencing financial performance, reaffirming its role in overseeing financial reporting, compliance, and risk management. Given the coefficient of 0.7502, organizations should prioritize strengthening their audit committees through ongoing training, diversified expertise, and the inclusion of independent members. This not only enhances the committee's oversight capabilities but also fosters transparency and accountability within the organization.

The significant positive relationship between *Transparency and Disclosure* and financial performance suggests that organizations that communicate openly about their operations, risks, and financial health are likely to enjoy better financial outcomes. Companies should implement robust reporting frameworks and ensure timely disclosures to stakeholders. This transparency builds trust, enhances reputation, and can attract investment, ultimately driving performance.

Board Composition is another essential aspect, with a notable path coefficient indicating that diverse and skilled boards contribute positively to financial performance. Organizations should strive for diversity in their board composition, not just in terms of gender and ethnicity but also in experience and perspectives. This diversity can lead to more comprehensive decision-making and improved strategic direction.

While *Ownership Structure* also significantly influences financial performance, the interaction effects with other variables indicate that the type of ownership (e.g., public vs. private, family-owned vs. non-family-owned) can moderate the dynamics of governance effectiveness. Management should evaluate their ownership structure's implications on governance practices and consider adjustments that align with their strategic goals.

The findings regarding the moderating role of *Organization Type* suggest that different organizational contexts may impact the effectiveness of governance mechanisms. Managers should be aware of their specific organizational environment and adapt their governance strategies accordingly. Customizing governance practices to fit the organization's unique needs and culture can enhance their effectiveness and lead to better financial performance.

In summary, the managerial implications of this study advocate for a proactive approach to enhancing corporate governance. By focusing on audit committee effectiveness, fostering transparency, diversifying board composition, and understanding ownership structures, organizations can significantly improve their financial performance and resilience in an increasingly complex business environment.

7. Conclusion and Future Research Scope

This study provides empirical evidence of the critical role that corporate governance mechanisms play in enhancing financial performance. The significant relationships identified among *Board Composition*, *Transparency and Disclosure*, *Audit Committee Effectiveness*, *Ownership Structure*, and financial outcomes underscore the necessity for organizations to implement robust governance frameworks. The positive impacts of these governance factors highlight that effective management practices not only drive better financial results but also contribute to organizational reputation and stakeholder trust.

This research opens several avenues for future studies, particularly in exploring the effects of cultural context on the relationship between governance mechanisms and financial performance, as understanding how cultural differences influence governance practices could offer valuable insights for multinational organizations operating in diverse environments. Additionally, longitudinal studies that examine the long-term effects of governance changes on financial performance could provide critical data on whether governance improvements yield sustained financial benefits over time. In addition, studying the impact of technology on corporate governance is a must to conduct research considering rapid adoption and further reliance some knowledge-advancing institutions well as digital platforms i.a. for reporting and communication may reveal more about transparency or elimination in disclosure practice that ultimately leads new paths in processing modern mean of business jsonify practices [14]. Finally, investigating how factors beyond an organization's control--like reforms in regulation and overall economic conditions may determine the efficacy of governance would add to a richer picture of what organizations deal with given different contexts or environments. Addressing these specifics areas will increase our understanding of corporate governance and its impact on financial performance going forward.

In conclusion, while this study has highlighted critical factors and relationships within corporate governance, ongoing research is essential to adapt and refine these frameworks to ensure their relevance and effectiveness in a rapidly evolving business landscape.

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Day of The Week Effect in Indian Mutual Fund Industry: An Empirical Analysis During Pre- & Post- Covid 19

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Abstract

This study investigates the day-of-the-week (DOW) effect in the Indian mutual fund industry, analyzing data from 353 mutual fund schemes over six years from 2017 to 2022, encompassing both pre-COVID-19 and post-COVID-19 periods. The sample includes equity, debt, and hybrid schemes, categorized into large and small-size schemes based on Asset Under Management (AUM). Using a panel regression model, the study explores the impact of different weekdays on fund returns. Results reveal evidence of DOW effects across all mutual fund categories and periods. Tuesdays consistently exhibit the highest positive effect on returns, while Fridays consistently demonstrate the lowest effect. The effects vary depending on the mutual fund category and period analyzed. Understanding these patterns may aid investors and fund managers in enhancing investment strategies and making informed decisions. Strategic timing of investments based on DOW effects could potentially boost returns, although caution is warranted as this strategy may not be reliable in the long run.

Keywords: *Day-of-the-week effect, COVID-19, Indian mutual fund industry, Panel regression model.*

Introduction

An investment is a financial commitment to one or more assets that will be retained in the future (Choudhary & Chawla, 2014). One sort of professionally managed collective investment plan is a mutual fund. A mutual fund is a type of budgetary tool that consists of a collection of funds from different financial professionals that are used to allocate assets to different insurances, such as stocks, bonds, cash market instruments, and other assets (Tripathi & Japee, 2020). Investing directly in the stock market requires significant time and effort to research companies' performance, prospects, promoter track records, dividends, and other details. Many investors find this process overwhelming. Rather, they choose mutual funds. Purchasing a mutual fund allows investors to hand off the responsibility of managing and choosing stocks to qualified fund managers. As a result, investors may rely on the mutual fund team's experience instead of having to bear the load of researching multiple stocks. Due to their low costs and ease of usage, mutual funds rank among the best investing options. Thus, investors can buy stocks or bonds with significantly low trading expenses by pooling their money in a mutual fund rather than trying to do it alone (Pal & Chandani, 2014). Based on the nature of Mutual Funds based on asset classes are categorized as, Equity Funds, Debt Funds, and Hybrid Funds (Balanced Funds). Equity funds seek long-term financial appreciation by investing largely in stocks or other equities. Debt funds invest in fixed-income assets, including corporate and government bonds, money market instruments, and other debt instruments. To balance growth potential with income production and risk avoidance, hybrid funds invest in a combination of equities and bonds.

Anomalies related to a specific period are known as calendar anomalies. According to EMH, the daily, monthly, and annual returns distribution should be uniform. However, several studies have shown daily, monthly, and annual return patterns against the EMH theory. The trends in stock prices are referred to as calendar effects or seasonal effects. The calendar or seasonal anomalies are the DOW effect, Weekend Effect, TOM, SME, MOY Effect, January Effect, and Holiday Effect. The "day-of-the-week anomaly," common in weak-form efficient markets, is one of the most well-known anomalies and has been discussed in various ways in the literature (Tosunoğlu et al., 2023). Kelly (1930) states that returns on Mondays are lower than returns on other days of the week, which provides first recorded evidence of the DOW effect (henceforth effect) (Zilca, 2017). Significant

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return changes have been observed in the Indian mutual fund industry throughout time, and these fluctuations have been linked to several reasons, including investor behavior, market dynamics, and economic situations. The DOW Effect is a phenomenon observed in financial markets worldwide, wherein stock market returns exhibit variations depending on the DOW. This study is the empirical analysis of the DOW Effect in the Indian mutual fund industry, both before and after the onset of COVID-19. Fund managers and investors both can enhance their investment strategies and make better judgments by having a better knowledge of these dynamics.

II. Review of Literature

Many authors examined the seasonal pattern, especially the DOW effect in the stock market, cryptocurrency market, Mutual Funds, etc. Most of the studies revealed the existence of the DOW effects.

Kristjanpoller Rodriguez (2012), focuses on the DOW Effect for the major Latin American stock markets and found evidence of the Monday and Friday effects in many cases. Olugbenga Adaramola & Oladeji Adekanmbi (2020) found Monday, Tuesday, and Friday DOW effect in the Nigerian stock market, and the whole sample is a time-varying subsample that is influenced by the market condition. Al-Barrak (2008) investigated the DOW effect in GCC Stock markets and the findings show that the DOW effect is significantly present on the Kuwaiti Stock Exchange (KSE), with Saturday showing the highest return and Sunday showing the lowest. Derbali & Hallara (2016) discovered that Tuesday's return and volatility of the TUNINDEX had a significant and negative effect on the Tunisian stock market return. Brooks & Persand (2001) examined the evidence DOW effect in the five South Asian Stock Markets. The findings of the study indicate evidence of the DOW effect in the three stock markets. Meek & Hoelscher (2023) studied the DOW effect in the return of petroleum and Petroleum products via the future market and found a significant positive Monday and Friday effect for WTI contracts.

Choi (2015) examined the seasonality in the domestic mutual funds in the United States and found that January has the largest net cash flows for equities funds, and December has the lowest. Miller et al., (2003) examined DOW effects by analyzing the return patterns of eleven open-end mutual fund asset classes to see whether or not mutual fund asset-class returns are consistent with previously noted stock return predictabilities. The tests reveal there are daily dynamic trading strategies that can lower risk and boost profits, improving the Sharpe and Treynor measures. Kim et al., (2017) investigated an anomaly in the Korean mutual funds and discovered that the top 10% of mutual funds, referred to as "low accruals strategy funds," have a noticeably higher exposure to low-accrual stocks. However, since the lower level of accruals is not sustained in succeeding years, it does not appear that this low-accruals approach is the consequence of a deliberate selection of stocks with low accruals. Grossi & Malaquias (2020) examined how the net flow of equity funds in Brazil and the seasonality shown by the January effect relate to each other and found that there is a seasonal pattern in the net flows of equity mutual funds, January has a higher average net inflow than the other months of the year.

During the time of the financial crisis as well as the COVID-19 outbreak, there was a statistically significant TOM effect for 23 out of 40 global mutual funds and suggested to mutual fund investors a staggered entrance and exit strategy to take advantage of the TOM effect and increase returns (Shah & Baser, 2022). Matallín-Sáez (2006) found that Positive seasonality enhances performance at the beginning of the year and in July. Still, it also suggests a potential window-dressing tactic in mutual fund management at other times. Białkowski et al., (2013) examined the Ramadan anomaly among mutual fund managers in Turkey and found that as compared to the rest of the year, the risk-adjusted performance of foreign Turkish equity funds, hybrid funds, and domestic institutional funds is significantly greater during Ramadan. Vidal-García & Vidal (2014) examined the idiosyncratic risk and seasonality in the mutual fund performance and found idiosyncratic risk can account for the seasonality in April in the mutual fund performance in the UK. Alves (2014) examined the seasonality in the European equity fund performance and found an effect of the summer holiday, making investment funds perform less in August than in the other quarter's intermediate months. In some studies, there was an absence of Seasonality in the mutual fund (Brown et al., 2017; Alda & Vicente, 2021).

Empirical analysis concerning the DOW effect within the Indian mutual fund industry, particularly during pre- and post-COVID-19 periods. While numerous studies have explored DOW effects in various financial markets globally, including stock markets in Latin America, Nigeria, GCC countries, South Asia, and others, there is a notable absence of research specifically focusing on the Indian mutual fund context. An Empirical Analysis During Pre- & Post-COVID-19" aims to address this gap by empirically examining DOW effects on mutual fund returns or other relevant metrics in India, thereby contributing to a deeper understanding of market dynamics and informing investment strategies tailored to the Indian context.

III. Data And Methodology

This study uses a sample of 353 mutual fund schemes of 29 Indian mutual fund companies, further classified as 147 equity, 135 debt, and 71 hybrid schemes. The sample schemes are selected based on their continuous existence during the study period. The study period consists of 6 years i.e. 2017 to 2022. Following Xiong. et al, 2019; Illarreal-Samaniego, & Santillán-Salgado, 2023, the study period is divided into sub-periods of Pre-Covid Period (January 01, 2017, to March 24, 2020) and

Post-Covid Period (March 25, 2020, to December 31, 2022). The selected schemes are also categorized as large-size and small-size schemes based on the median value of Asset Under Management (AUM) for a more comprehensive understanding. Table 1 shows the profile of the selected schemes.

Table 1 Sample Profile of Selected Schemes (AUM in INR Crores and No. of Schemes)

Name of Mutual Fund Company	Equity	Debt	Hybrid	Total
Aditya Birla Sun Life Mutual Fund	61071.37	119079.22	14463.55	194614.14
	10	9	3	22
Axis Mutual fund	115099.6	59712.9	8300.94	183113.47
	5	8	7	20
Baroda BNP PARIBAS Mutual Fund	1739.96	6958.32	-	8698.28
	2	3	-	5
Canara Robeco Mutual Fund	23003.85	5897.90	9351.14	38252.89
	5	8	2	15
DSP Mutual Fund	10922.00	23738.00	4428.00	39088.00
	2	6	2	10
Edelweiss Mutual Fund	5833.58	475.10	14839.55	21148.23
	5	2	4	11
Franklin Templeton Mutual Fund	55105.07	3248.48	2982.67	61336.22
	16	6	4	26
HDFC Mutual Fund	85356.73	58259.96	79411.47	223028.16
	6	5	6	17
HSBC Mutual Fund	180.73	11009.85	-	11190.58
	1	1	-	2
ICICI Mutual Fund	80929.58	170114.58	101291.51	352335.67
	6	13	6	25
IDBI Mutual Fund	619.09	1012.86	188.11	1820.06
	3	5	2	10
IDFC Mutual Fund	20944.21	53213.44	7282.07	81439.72
	8	6	7	21
IIFL Mutual Fund	3429.62	1019.71	-	4449.33
	1	2	-	3
Indiabulls Mutual Fund	110.80	289.31	13.03	413.14
	2	2	1	5
Invesco Mutual Fund	10019.77	9755.47	2750.01	22525.25
	5	5	2	12
JM FINANCIAL Mutual Fund	576.48	20.39	65.01	661.88
	5	1	2	8

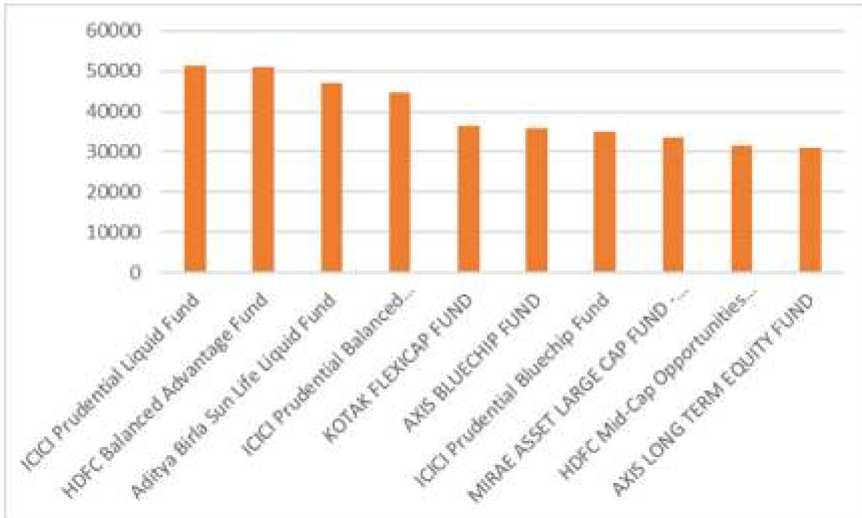
Kotak Mutual Fund	88171.16	91845.72	29559.56	209576.44
	6	11	5	22
LIC Mutual Fund	3208.36	6975.50	-	10183.86
	5	2	-	7
Mahindra Mutual Fund	-	513.51	-	513.51
	-	1	-	1
Mirae Asset Mutual Fund	73202.70	5735.40	7086.69	86024.79
	4	1	1	6
Motilal Oswal Mutual Fund	1705.33	113.56	712.36	2531.25
	1	1	1	3
Nippon India Mutual Fund	94490.99	68199.34	19600.44	182290.77
	12	11	5	28
PGIM Mutual Fund	13326.20	1694.94	313.00	15334.14
	3	8	2	13
Quant Mutual Fund	12683.19	1613.51	994.29	15290.99
	7	1	1	9
QUANTUM Mutual Fund	992.77	655.52	89.61	1737.90
	2	2	1	5
TATA Mutual Fund	15604.96	14507.85	3359.45	33472.26
	7	3	2	12
TAURUS Mutual Fund	371.15	-	-	371.15
	5	-	-	5
Union Bank Mutual Fund	2612.49	1751.67	-	4364.16
	3	2	-	5
UTI Mutual Fund	60393.40	51806.44	15723.67	127923.51
	10	10	5	25
Grand Total	841705.2	769218.5	322806.1	1933729.8
	147	135	71	353

Source: Authors

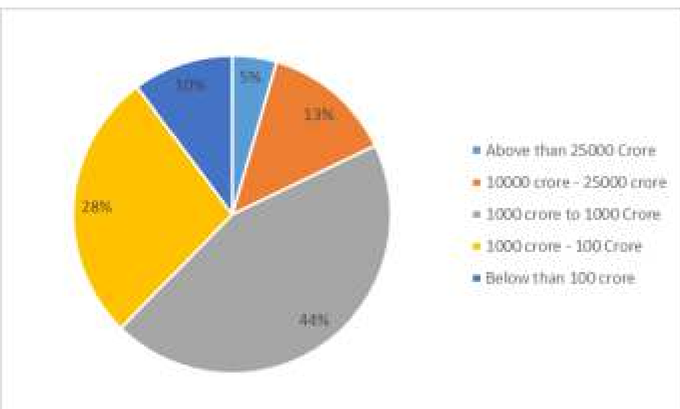
Among the selected sample schemes, ICICI Prudential Liquid Fund had the highest AUM among all the sample schemes. In terms of size, the AUM of 18 schemes was more than INR 25000 crore; 46 schemes were under the category of 10000 crore to 25000 crore. The AUM of 155 schemes were under the category of 1000 to 10000 crore. Similarly, in the age-wise classification, 32 schemes existed for more than 25 years; the age of 145 schemes was under 15 to 25 years. The figure is shows the selected indicators of sample schemes.

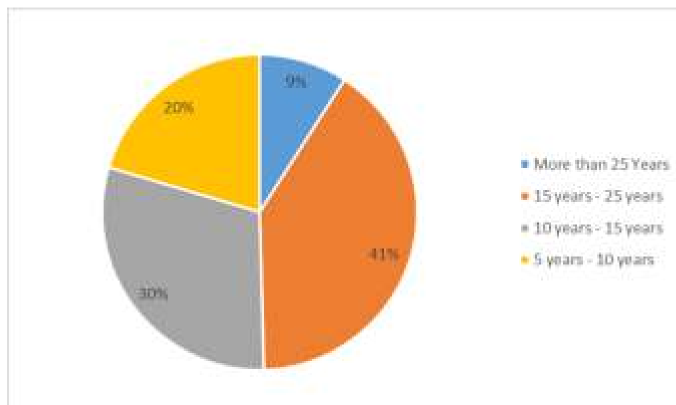
Figure-1 Selected Indicators of Sample Schemes

AUM wise Top 10 Schemes (Amount in INR Crores)



Categorization of Schemes (AUM wise)	Categorization of Schemes (Age wise)





Source: Authors

The study uses the daily closing value of sample schemes and the data is collected from the website of the Association of Mutual Funds of India (AMFI). The daily returns of the schemes are computed as follows:

$R_{it} = (I_{it} / I_{it}-1) * 100$ (1)

where R_{it} is the daily return of the mutual fund scheme I on the day t, and I_{it} and I_{it-1} are the closing values of day t and t-1 of the same scheme.

The following model is employed to examine the DOW effect that exists in sample schemes:

$R_{it} = \alpha_1 iD1 + \alpha_2 iD2 + + \alpha_3 iD3 + \alpha_4 iD4 + \alpha_5 iD5 + \varepsilon_t$ (2)

where R_{it} is the scheme daily return i for the day t and D_1; D_2; D_3; D_4; and D_5 are the daily dummy variables. If t is a Monday then $D_1 = 1$ and $D_1 = 0$ for all other days, if t is a Tuesday then $D_2 = 1$ and $D_2 = 0$ for all other days, and so forth. The αs are the parameters to be using Ordinary Least Square (OLS) and εt is the error term. If a given scheme exhibits a Monday Effect, then the estimated coefficient α_1 is expected to be negative and statistically significant (Ajayi. Et al, 2004).

IV Empirical Results

The study investigates the DOW effect on the Indian mutual fund industries using the panel regression model. The tests' results were covered in this section.

Table 2 Summary Statistics of Day-Wise Average Returns

Pre-Covid Period					
	Monday	Tuesday	Wednesday	Thursday	Friday
		All Scheme			
Equity	0.0004	0.0008	0.0002	0.0005	-0.0005
Debt	0.0002	0.0003	0.0002	0.0002	0.0067
Hybrid	0.0003	0.0006	0.0001	0.0002	0.0000
All Schemes	0.0003	0.0006	0.0002	0.0003	0.0024
	Large Scheme				
Equity	0.0003	0.0008	0.0004	0.0002	-0.0002
Debt	0.0002	0.0003	0.0003	0.0003	0.0003
Hybrid	0.0003	0.0005	0.0002	0.0002	0.0002
All Schemes	0.0002	0.0005	0.0003	0.0002	0.0001
	Small Scheme				
Equity	0.0004	0.0008	0.0000	0.0007	-0.0008
Debt	0.0002	0.0004	0.0001	0.0002	0.0133
Hybrid	0.0002	0.0007	0.0001	0.0003	-0.0002
All Schemes	0.0003	0.0006	0.0001	0.0005	0.0047
Post-Covid Period					
	Monday	Tuesday	Wednesday	Thursday	Friday
		All Scheme			
Equity	0.0015	0.0017	0.0010	0.0011	0.0010
Debt	0.0002	0.0002	0.0003	0.0002	0.0002
Hybrid	0.0008	0.0006	0.0005	0.0006	0.0006
All Schemes	0.0009	0.0009	0.0006	0.0006	0.0006
	Large Scheme				
Equity	0.0013	0.0015	0.0012	0.0009	0.0011
Debt	0.0002	0.0002	0.0003	0.0002	0.0002
Hybrid	0.0006	0.0005	0.0006	0.0005	0.0007
All Schemes	0.0007	0.0008	0.0007	0.0006	0.0007
	Small Scheme				
Equity	0.0016	0.0018	0.0009	0.0013	0.0009
Debt	0.0002	0.0002	0.0003	0.0002	0.0002
Hybrid	0.0009	0.0008	0.0004	0.0008	0.0005
All Schemes	0.0010	0.0010	0.0005	0.0007	0.0006
Complete Study Period					
	Monday	Tuesday	Wednesday	Thursday	Friday
	All Scheme				
Equity	0.0009	0.0012	0.0006	0.0008	0.0002
Debt	0.0002	0.0003	0.0002	0.0002	0.0037
Hybrid	0.0005	0.0006	0.0003	0.0004	0.0003
All Schemes	0.0005	0.0007	0.0004	0.0005	0.0016

	Large Scheme				
Equity	0.0008	0.0011	0.0007	0.0005	0.0004
Debt	0.0002	0.0002	0.0003	0.0002	0.0002
Hybrid	0.0004	0.0005	0.0004	0.0003	0.0004
All Schemes	0.0005	0.0006	0.0005	0.0004	0.0004
	Small Scheme				
Equity	0.0010	0.0012	0.0004	0.0010	0.0000
Debt	0.0002	0.0003	0.0002	0.0002	0.0072
Hybrid	0.0005	0.0007	0.0002	0.0005	0.0001
All Schemes	0.0006	0.0008	0.0003	0.0006	0.0028

Source: Authors

Table 2 presents summary statistics of day-wise average returns for different types of mutual fund schemes (equity, debt, hybrid) during the pre-COVID, post-COVID, and complete study periods, categorized by the DOW (Monday to Friday). The summary statistics include mean returns for each DOW across different types of mutual fund schemes. During the pre-COVID period, for all schemes, the average of all the schemes on Friday was high (0.0024), and the lowest return recorded was on Friday for Equity Scheme (-0.0005). For Equity funds, the highest return was on Friday (0.008), and the lowest was on Friday (-0.0005). For Debt Funds and Hybrid Funds, Friday and Tuesday gave the highest return. For Large Schemes, the highest (0.008) and lowest (-0.0002) average return was noted on Equity Funds. Friday gave the lowest average return (-0.0008) on Equity Funds and the highest average return (0.0133) was on Friday on Debt Fund for the Small Scheme.

During the post-covid period, the average return for all the schemes was high. For all schemes, the Equity Fund gave the highest positive return on Tuesday (0.0017). For Debt and Hybrid Fund, Wednesday (0.0003) and Monday (0.0008) gave the highest return and on other days the average return was similar. For the Large Schemes, the highest average return was noted on Tuesday for the equity fund (0.0015). The equity fund gave a high average return as compared to the other funds during the period. For Small Scheme, Tuesday was the highest average return (0.0018). During the complete study period, for the All scheme, the average return on Friday was higher for the debt scheme (0.0037). For the Equity fund, the highest return (0.0012) was on Tuesday and the lowest (0.0002) was on Friday. Debt fund follows almost the same return except on Friday. For Large Schemes, the highest return was on Tuesday for the Equity Fund (0.0011). For the Small Schemes, Friday gave the highest average return (0.0072) for the Debt fund, and the lowest average return was also noted on Friday for the Equity Fund (0.0000).

Table 3 Results of Day of the Week Effect: Panel Regression Model

	Panel-A Pre-Covid 19 Period		Panel-B Post-Covid 19 Period		Panel-C All Period	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Equity						
MONDAY	0.0002**	0.0416	0.0003***	0.0007	0.0003***	0.0003
TUESDAY	0.0007***	0.0000	0.0006***	0.0000	0.0006***	0.0000
WEDNESDAY	0.0000	0.9363	-0.0002	0.1176	-0.0001	0.2918
THURSDAY	0.0003***	0.0003	-0.0001	0.1939	0.0001*	0.0609
FRIDAY	-0.0008***	0.0000	-0.0002*	0.0652	-0.0005***	0.0000
Debt						
MONDAY	-0.0011	0.6721	0.0000	0.6405	-0.0006	0.6767
TUESDAY	-0.0010	0.7089	0.0000	0.7416	-0.0005	0.7121
WEDNESDAY	-0.0011	0.6661	0.0001***	0.0032	-0.0006	0.6796
THURSDAY	-0.0011	0.6747	0.0000**	0.0137	-0.0006	0.6638
FRIDAY	0.0065**	0.0148	0.0000	0.6057	0.0035**	0.0155

Hybrid						
MONDAY	0.0000	0.5452	0.0002*	0.0542	0.0001*	0.0777
TUESDAY	0.0004***	0.0000	0.0000	0.8803	0.0002***	0.0001
WEDNESDAY	-0.0001	0.2053	-0.0001	0.2644	-0.0001	0.0870
THURSDAY	0.0000	0.9417	0.0001	0.5463	0.0000	0.6056
FRIDAY	-0.0002***	0.0013	0.0000	0.9253	-0.0001	0.0435
All Scheme						
MONDAY	-0.0003	0.7383	0.0002***	0.0001	-0.0001	0.8509
TUESDAY	0.0000	0.9884	0.0002***	0.0000	0.0001	0.8639
WEDNESDAY	-0.0005	0.6550	-0.0001	0.1457	-0.0003	0.6133
THURSDAY	-0.0003	0.7815	-0.0001	0.2094	-0.0002	0.7455
FRIDAY	0.0021**	0.0396	-0.0001	0.1248	0.0011**	0.0469

Source: Authors

Table 3 shows the results of a panel regression model examining the DOW Effect in the Indian mutual fund industry, specifically during the pre-and post-COVID periods, as well as across the entire analyzed period. In Panel A, which focuses on the pre-covid period, the coefficients for different weekdays indicate the magnitude of the effect of each day. The coefficients indicate, while keeping other variables fixed, the change in returns corresponding to a one-unit change in the corresponding weekday. Similarly, Panel B represents the post-covid period and Panel C represents the entire period of the study. Notably, For Equity Funds during the pre-COVID-19 period, the probability value (p-value) on Monday is significant at 5%. Tuesday, Thursday, and Friday the p-value is significant at 1%. But on Friday the Coefficient value is negatively significant. This result indicates the Positive DOW effect on Tuesday and the Negative effect on Friday. For Debt Fund there was a Friday effect. A positive effect on Tuesday and a negative effect on Friday was noted for the Hybrid fund and all schemes there was a positive Friday effect during the period.

The patterns change slightly in Panel B, which examines the post-COVID-19 period. While Mondays and Tuesdays still demonstrate positive effects on equity funds, the significance levels differ. Tuesday exhibits a positive effect, with a coefficient of 0.0006 and a very low p-value of 0.0000. However, Fridays, though negative, show a weaker effect than the pre-COVID-19 period. For Debt funds, the Wednesday and Monday effects were noted for the hybrid funds. Monday and Tuesday were significant at 1% for all schemes and there was a Tuesday effect was found. Panel C represents the entire study period analysis, Tuesday exhibits a statistically significant positive effect on Equity fund returns. Meanwhile, Fridays displayed a significant negative effect with a coefficient of -0.0005 at 1% of significance. Mondays, Tuesdays, Wednesdays, and Thursdays do not show statistically significant effects on debt fund returns. Fridays, however, exhibit a significant positive effect on returns at the 5% significance level. This implies that Fridays consistently have higher returns compared to other weekdays for debt funds throughout the analyzed period. For the hybrid fund, the Tuesday effect, and All schemes there was a Friday effect were noted during the entire period.

Similar studies were conducted in the stock market during the pre-COVID period and found no evidence of the DOW effect from the analysis of the pre-COVID-19 period (Kang & Cho, 2022). The study of Aggarwal & Rivoli (1989) found a strong "Tuesday effect," in U.S. equity markets. The DOW Effect varies depending on the mutual fund category and period. Tuesdays are consistently the days with the highest positive effect on returns in the majority of categories; on the other hand, Fridays show the lowest effect, especially on equities returns.

Table-4 Results of Day of the Week Effect: Panel Regression Model (Large Size Schemes)

	Pre-Covid 19 Period		Pre-Covid 19 Period		All Period	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Equity (Large Size)						
MONDAY	0.0001	0.4529	0.0002	0.2342	0.0001	0.2115
TUESDAY	0.0006***	0.0000	0.0004***	0.0083	0.0005***	0.0000
WEDNESDAY	0.0002	0.1911	0.0000	0.8738	0.0001	0.3043
THURSDAY	0.0000	0.7870	-0.0003**	0.0163	-0.0001	0.1723
FRIDAY	-0.0005***	0.0001	0.0000	0.7691	-0.0003***	0.0022

Debt (Large Size)						
MONDAY	-0.0001***	0.0008	0.0000	0.1342	0.0000*	0.0502
TUESDAY	0.0000	0.8695	0.0000	0.5573	0.0000	0.8983
WEDNESDAY	0.0000	0.4404	0.0000**	0.0333	0.0000*	0.0670
THURSDAY	0.0000	0.6680	0.0000***	0.0086	0.0000	0.2713
FRIDAY	0.0000	0.3790	0.0000	0.6814	0.0000	0.3234
Hybrid (Large Size)						
MONDAY	0.0000	0.7171	0.0001	0.6606	0.0000	0.9699
TUESDAY	0.0002**	0.0228	-0.0001	0.5001	0.0003***	0.0000
WEDNESDAY	-0.0001	0.5377	0.0000	0.9067	0.0001	0.3811
THURSDAY	-0.0001	0.2482	-0.0001	0.6525	-0.0001	0.3757
FRIDAY	-0.0001	0.4324	0.0002	0.2503	-0.0002***	0.0023
All Scheme (Large Size)						
MONDAY	0.0000	0.9699	0.0001	0.4079	0.0000	0.6578
TUESDAY	0.0003***	0.0000	0.0001*	0.0919	0.0002***	0.0000
WEDNESDAY	0.0001	0.3811	0.0001	0.2191	0.0001	0.1548
THURSDAY	-0.0001	0.3757	-0.0001*	0.0516	-0.0001*	0.0506
FRIDAY	-0.0002***	0.0023	0.0000	0.9110	-0.0001**	0.0416

Source: Authors

Table 4 provides the coefficients and associated p-values for the DOW Effect in different categories of large-size mutual funds (Equity, Debt, Hybrid, and All Schemes) during the pre-COVID period, the post-COVID period, and the entire period. Panel A shows the result during the pre-COVID period. Tuesdays exhibit a statistically significant positive effect on equity fund (large size) returns, indicating a coefficient (coeff) of 0.0006 and a very low p-value (p) of 0.0000, and Friday also demonstrates a statistically significant negative effect on equity returns. A negative Monday effect was found on the Debt fund (Large size) and a Positive Tuesday was observed on both the Hybrid Fund and All schemes. But there was a negative Friday effect was found in the return of all schemes during the period. During the post-COVID-19 period, Tuesdays stand out as having a statistically significant positive effect on equity fund (Large-size) returns, with a coeff of 0.0004 and a p-value of 0.0083. Conversely, Thursdays exhibit a statistically significant negative effect on equity returns, implying lower returns on Thursdays compared to other weekdays. Wednesday and Thursday were significant at 5% and 1% for the Debt fund and there was a Thursday effect. For hybrid funds, none of the weekdays show statistically significant effects on returns during the period. Across all mutual fund categories, Thursday exhibited a statistically significant negative effect on returns (coeff of -0.0001, p of 0.0516) and there was a positive effect noted on Tuesday.

Across all periods, Tuesdays consistently demonstrate a statistically significant positive effect on equity fund returns, with a coeff of 0.0005 and very low p-values (p = 0.0000). Furthermore, Fridays exhibit a statistically significant negative effect on equity fund returns. For debt funds, Mondays and Wednesdays exhibit marginally significant effects on returns across all periods. A positive effect on Monday and a negative effect on Friday were observed for the Hybrid fund and all scheme categories, Tuesdays consistently demonstrate a statistically significant positive effect on returns, with a coeff of 0.0002 and very low p-values (p = 0.0000). Fridays also exhibit a statistically significant negative effect on returns, indicating decreased returns at the end of the week. The result from the study of Riyani et al., (2022) reveals that the On the Indonesia Stock Exchange, there was no anomaly on the DOW before and during the COVID-19 pandemic outbreak. A study on the DOW effect on volatility in the stock market using the S&P 500 market index reveals the lowest volatility is observed on Friday (Berument & Kiymaz, 2001). Zhang et al., (2017) found a similar result in some of the stock markets that Tuesday and Friday anomalies are present in some of the stock markets. The Weekday Effect varies for large-size schemes throughout different periods and mutual fund types. Tuesdays are the most consistently profitable DOW when compared to other weekdays. On the other hand, Fridays are the least profitable DOW in most categories.

Table-5 Results of Day of the Week Effect: Panel Regression Model (Small Size Schemes)

	Pre-Covid 19 Period		Pre-Covid 19 Period		All Period	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Equity (Small Size)						
MONDAY	0.0003**	0.0335	0.0005***	0.0003	0.0004***	0.0001
TUESDAY	0.0007***	0.0000	0.0007***	0.0000	0.0007***	0.0000
WEDNESDAY	-0.0002	0.2364	-0.0003**	0.0174	-0.0002**	0.0120
THURSDAY	0.0007***	0.0000	0.0001	0.5682	0.0004***	0.0001
FRIDAY	-0.0011***	0.0000	-0.0003**	0.0204	-0.0007***	0.0000
Debt (Small Size)						
MONDAY	-0.0022	0.6815	0.0000	0.8012	-0.0012	0.6833
TUESDAY	-0.0020	0.7084	0.0000	0.9430	-0.0011	0.7125
WEDNESDAY	-0.0023	0.6640	0.0001**	0.0270	-0.0012	0.6734
THURSDAY	-0.0022	0.6735	0.0000	0.1552	-0.0012	0.6675
FRIDAY	0.0131**	0.0147	0.0000	0.4298	0.0070**	0.0153
Hybrid (Small Size)						
MONDAY	0.0001	0.6207	0.0003***	0.0042	0.0002**	0.0299
TUESDAY	0.0006***	0.0000	0.0001	0.1880	0.0004***	0.0000
WEDNESDAY	-0.0001	0.2372	-0.0002**	0.0256	-0.0002**	0.0172
THURSDAY	0.0001	0.1975	0.0002*	0.0713	0.0002**	0.0299
FRIDAY	-0.0004***	0.0001	-0.0002	0.1095	-0.0003***	0.0001
All Scheme (Small Size)						
MONDAY	-0.0007	0.7390	0.0003***	0.0000	-0.0002	0.8368
TUESDAY	-0.0003	0.8726	0.0004***	0.0000	0.0000	0.9870
WEDNESDAY	-0.0010	0.6366	-0.0002***	0.0007	-0.0006	0.5733
THURSDAY	-0.0005	0.8013	0.0000	0.8337	-0.0003	0.8057
FRIDAY	0.0044**	0.0317	-0.0002**	0.0199	0.0023**	0.0384

Source: Authors

Table 5 displays the results of a panel regression model that looked at the DOW Effect in the context of small-size mutual fund schemes for the pre-COVID, post-COVID, and whole period mutual fund categories (Equity, Debt, Hybrid, and All Scheme). Panel A represents the result during the pre-COVID period, except Wednesdays other days are significant. With a coeff of 0.0007 and a p-value near zero (p-value = 0.0000) on the returns of the Equity Fund, Tuesdays and Thursdays exhibit a positive effect on equity returns, whereas Fridays show a significant negative effect on equity returns. Fridays show the positive effects in the debt fund category. There is a positive effect on hybrid fund returns on Tuesdays and a negative effect on hybrid fund returns on Fridays. The results show that Fridays have a positive, statistically significant effect on All scheme returns (p-value = 0.0317; coefficient = 0.0044). This shows that near the end of the week, returns were higher than on other weekdays in the pre-covid-19 period.

Panel B is the results of a during the post-COVID period. The returns on equities funds are positive on Tuesdays and negative on Wednesdays and Fridays. For debt funds, Wednesdays show a positive effect. Monday exhibits a low p-value (p-value = 0.0042) and a statistically significant positive effect on hybrid fund returns, with a coefficient of 0.0003. Wednesdays have a -0.0002 coefficient and a 0.0256 p-value, which indicates a negative effect on hybrid fund returns. For all schemes (small-sized), Tuesdays display a positive effect on returns and Fridays exhibit a negative effect on returns, with a coeff of -0.0002 and a p-value of 0.0199. Across all periods, Tuesdays show a negative effect on equities returns, while Fridays show a positive effect on equity fund returns, with a coeff of 0.0007 and a low p-value (p-value = 0.0000). Fridays show a positive effect in the debt fund category. The returns of hybrid funds exhibit a positive effect on Tuesdays and a negative effect on Fridays. For all schemes, Fridays exhibit a significant positive effect on returns, with a coeff of 0.0023 and a p of 0.0384. Tuesdays consistently outperform other weekdays when it comes to returns when it comes to small-size mutual fund categories. Fridays generally show lower returns for equities and hybrid funds and higher returns overall, particularly for debt and all scheme categories.

V Conclusion

This study examined the day-of-the-week effect in the mutual fund industry in India. The Pre-Covid Period and Post-Covid Period are the two sub-periods that make up the study period. For a more thorough understanding, selected schemes are further divided into large and small-size schemes based on the median value of Asset Under Management (AUM). The sample of 353 mutual fund schemes from 29 Indian mutual fund companies which are further divided into 147 equity, 135 debt, and 71 hybrid schemes is used in this study. A panel regression model was employed in the study to analyze the data. The result found evidence of the DOW effect in the Indian mutual fund industries before and after COVID-19 in all the mutual fund categories (Large and small size). Tuesdays are consistently the days with the highest positive effect on returns in the majority of categories; on the other hand, Fridays show the lowest effect for all the periods. The Indian mutual fund market has demonstrated tenacity and substantial expansion, and it is aiming for great success. Comprehending patterns such as the day of the week influence may facilitate this trajectory of growth. By strategically timing their investments (buying on days with lower prices and selling on days with better returns), investors may be able to increase their returns if a DOW effect is found. On the other hand, this strategy can be dangerous and may not work in the long run. For risk management plans, it may be useful to find any DOW patterns in the volatility of the market or the performance of funds.

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Evaluating Sustainable Agricultural Practices: Economic and Environmental Viability of Inputs in Wheat Production in Uttar Pradesh, India

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Abstract

The Indian agricultural system depends extensively on fossil fuels, both for operating machinery and for the production of synthetic fertilizers and agrochemicals. Due to the fact that India is a significant importer of fuel, farming in India is more expensive than farming in any other country. This study's primary goal was to quantify the environmental harm caused by wheat production's excessive energy use. When comparing various farming systems and energy inputs, energy determination can provide a detailed image of farms. Therefore, carbon emissions from the use of these farm inputs are quantified and examined in order to comprehend the challenges of the influence of high energy input on environmental deterioration. The Indian agriculture sector depends significantly on fossil fuels, both for operating machinery and for manufacturing synthetic fertilizers and agrochemicals. These high energy inputs not only effect the environment adversely, but are also high and economically unprofitable. Thus, an attempt has been made in this study to forecast the environmental deterioration resulting from large energy inputs and to also comment on its social and economic feasibility in order to define the overall sustainability of farming techniques in India going forward for the production of wheat.

***Keywords:** Energy, wheat production, ANN, Co2 emissions, Uttar Pradesh, sustainable practices*

Introduction

Sustainable agricultural practices have emerged as a critical pathway towards ensuring the long-term viability of food production systems while mitigating environmental degradation and fostering economic resilience. In the context of Uttar Pradesh, where agriculture serves as a cornerstone of the economy, the adoption of sustainable practices holds significant promise for both the agricultural sector and the broader environment. Wheat production stands as one of the primary agricultural activities in Uttar Pradesh, contributing substantially to the state's agricultural output and rural livelihoods. However, the conventional methods of wheat cultivation often rely heavily on intensive use of chemical fertilizers, pesticides, and water resources, posing challenges to the environment, human health, and economic sustainability

The 1960s green revolution brought about a major industrialization of India's agricultural industry. Indian agricultural practices were changed by the green revolution, which was initiated to combat malnutrition in underdeveloped countries. It increased the amount of energy needed for production, increasing crop yield as well as total production. The Indian agricultural sector heavily depends on fossil fuels for operating machinery and manufacturing synthetic fertilizers and agrochemicals. The concept of sustainable agriculture has gained prominence in India as it aligns with the goals of conserving natural resources, reducing environmental impact, and promoting economic prosperity in the agricultural sector. The implementation of sustainable agricultural practices in India is essential for the country's long-term agricultural productivity, environmental conservation, and economic development. India faces challenges in adopting sustainable agricultural practices due to limited resource availability and ignorance among farmers about the benefits of sustainable farming methods. Additionally, there are challenges related to the adoption of new technologies and practices, financial constraints, and policy support for sustainable agriculture. Opportunities for Sustainable Agriculture in India Despite the challenges, there are numerous opportunities for sustainable agriculture in India. These include: - Promotion of organic farming. Organic farming reduces the habit of chemical fertilizers and pesticides, thus minimizing the environmental impact and promoting soil health. (Safa & Samarasinghe, 2012).

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This technological outbreak was a major turn in Indian agriculture systems and was a huge success. But, the benefits from the success of this technology was unequally distributed among different farm sizes and across states. Henceforth, led to a huge disparity in the farmers who could afford the technology and the ones who could not. Hence, the poor farmer became poorer and the wealthier farmer became wealthier. High energy inputs have detrimental effects on the ecosystem, contaminating the air, water, and soil.. Agriculture production effects and is effected by global warming (Sauerbeck 2001). High-energy farming practices significantly emit CO2, primarily due to land use changes, fertilizer and pesticide use, fossil fuel use, and decomposition of plant waste and organic matter (Hillier et al. 2011). The current state of environmental degradation and global warming necessitates an urgent reduction in greenhouse gas emissions. Therefore, it is essential to develop improved agricultural practices to protect the environment and ensure they are economically and socially viable for future sustainability. To reduce CO2 emissions, it's crucial to analyze and control all factors contributing to them, using ANN method and traditional forecasting methods like MLR in wheat production in India. The economic viability of farm inputs used in wheat production is a crucial aspect, as it directly impacts the profitability and financial stability of farmers. Moreover, considering the resource-constrained nature of many farming households, optimizing input usage to achieve maximum yield with minimum input costs becomes imperative for ensuring long-term agricultural prosperity. In parallel, the environmental sustainability of agricultural practices cannot be overlooked. Overuse of chemical pesticides and fertilizers damages soil, contaminates water, and reduces biodiversity. These effects threaten the basic basis of ecosystem health and agricultural output. Hence, there is a pressing need to transition towards more environmentally friendly practices that promote soil fertility, water conservation, and ecosystem resilience. Through a comprehensive analysis of the economic and environmental dimensions, this study seeks to identify opportunities for promoting sustainable agricultural practices in wheat production in Uttar Pradesh. By evaluating the costs and benefits associated with different inputs, such as organic fertilizers, bio pesticides, and water-efficient irrigation techniques, it aims to offer practical recommendations for enhancing the economic and environmental sustainability of wheat cultivation while ensuring the resilience of farming communities.

The importance of the research on sustainable agricultural practices and the economic- environmental sustainability of farm inputs in wheat production in Uttar Pradesh is multi-dimensional and vital for numerous stakeholders, including farmers, policymakers, environmentalists, and the broader community.

The study highlights the importance of sustainable agricultural practices in Uttar Pradesh for long-term wheat production systems, protecting farmers' livelihoods, and reducing environmental degradation. It quantifies environmental impacts and benefits, informs strategies for mitigating degradation, and assesses the economic viability of sustainable farm inputs. This information helps farmers make informed decisions about input usage and resource allocation, enhancing economic prosperity and income stability. With climate change posing increasing risks to agricultural productivity and food security, the study explores adaptive strategies and resilient agricultural practices that mitigate the impacts of climate variability on wheat production. By identifying climate-resilient practices and promoting their adoption, the study strengthens the resilience of farming systems to extreme weather events, changing precipitation patterns, and temperature fluctuations. The study's findings can guide policy development and decision-making for sustainable agriculture and wheat production competitiveness in Uttar Pradesh. By highlighting the barriers and opportunities for scaling up sustainable practices, policymakers can design targeted interventions, provide incentives, and create enabling environments to facilitate the adoption of sustainable agricultural practices by farmers. Overall, the research on sustainable agricultural practices and the economic and environmental feasibility of farm inputs in wheat production in Uttar Pradesh is crucial in tackling the intertwined issues of food security, environmental sustainability, and economic development. This study ultimately aims to enhance the well-being of both current and future generations.

Review of Literature:

Sustainable agricultural practices and the economic-environmental viability of farm inputs used in wheat production have been the subject of extensive research and scholarly inquiry worldwide. In the context of Uttar Pradesh, where agriculture plays a central role in the economy, understanding the existing literature provides valuable insights into the challenges and opportunities for promoting sustainability in wheat cultivation.

Agricultural economists have recognized energy consumption as a vital factor influencing agricultural productivity. Scientists often overlook energy use in agriculture due to data shortages and a lack of interdisciplinary research, resulting in minimal attention to peripheral scientific subjects. However, the adoption of high-energy inputs in agriculture has been rising at a faster rate compared to other sectors. (Vlek et al., 2004) It has been observed that agriculture is closely linked to the rural energy system for energy usage in rural India (Bhalla & Singh, 2001). They identified a direct correlation between crop outputs and inputs. Regression analysis revealed notable linear relationships among energy consumption, cost, yield, and net profit. The study concluded that there was no meaningful relationship between energy use and labor force or bullock power and projected that carbon dioxide emissions would lead to serious problems. (Chand et al., 2009) Energy-related activities significantly contribute to environmental problems such as acid rain, urban air pollution, and global climate change.(Patterson, 1991). Although renewable energy bases are currently more costly than fossil fuels, addressing their environmental impacts and technical challenges could make greater use of bio-energy resources possible in the future. (Baker et al., 2007). Some countries—like Brazil—have been combining biofuels with fossil fuels for the past thirty years. Since agricultural products, especially sugar, are more affordable in these nations, using biofuels in automobiles has become easier (Boyle et al., 2003). To illustrate the connection between energy use and environmental impact, it is clear that the rising consumption of energy inputs is contributing to environmental degradation. It is well-established that air pollution, acid rain, and the increase in global temperatures result from the substantial emissions produced by burning fossil fuels. Despite this, the effective replacement of fossil fuels with renewable energy sources remains a challenge.(Fang et al., 2009) However, the complexity of agricultural production requires modeling techniques capable of handling intricate and nonlinear system dynamics. Neural Networks represent a promising recent advancement with significant potential for influencing energy research. This has been a primary focus of the study.

Objectives:

The current investigation seeks to examine the following goals:

- To analyze energy released from inputs used in wheat production.
- To create an artificial neural network (ANN) model and assess its performance in comparison to the multiple linear regression (MLR) method for predicting the amount of energy consumed per cultivated area in wheat production.
- To determine the relationship between energy input and environmental degradation done through analyzing each input, converted for its carbon equivalents using ANN.

Conceptual Framework:

Wheat production plays a crucial role in global food security and the agricultural sector. It is essential to predict energy use and CO2 emissions associated with wheat production precisely in order to evaluate the crop's environmental impact and pinpoint areas for improvement. Total energy input used in wheat production per hectare was calculated as follows:

$$E = \Sigma (Ki\ Ci)$$

Where, Ki = input factor & Ci = energy conversion coefficient for each factor

Various tables of energy conversion coefficients are available for translating farm inputs and outputs into energy values.

It is possible to create a basic MLR model with a high r2. If the p-value between the actual and predicted data is 0.05, the input variables stay in the best model. First, using r2 as the decision criterion, a basic multiple linear regression is used to validate the relationship between each input variable and CO2 emission. An MLR model is then developed to predict CO2 emissions as follows:

$$Y=a0+a1V1+a2V2+ . . . +anVn+ \epsilon$$

Where, a_0-a_n = the regression coefficients,

V0-V_n = the independent variables,

And ϵ = error.

The relationships between the independent (input) and dependent (output) variables are depicted in the above linear model.

A small number of hidden neurons was adequate to solve basic nonlinear problems and forecast energy use and carbon emissions from these energy inputs. However, in order to make accurate predictions with low error, a significant number of neurons is required to tackle the complicated nonlinear difficulties associated with a high number of input variables. This study established an efficient model structure by optimizing several features of the ANN model through the application of a genetic algorithm-based methodology. An artificial neural network (ANN) can be trained using a variety of techniques, the most popular of which is the feed-forward multilayer perceptron (MLP). The multilayer perceptron (MLP), which is made up of independent variables, hidden layers, and an output layer, is trained using the backpropagation (BP) learning technique. The mean squared error (MSE) between the expected and actual data is decreased by forecasting by modifying the weights appropriately. For a basic network with a single output neuron, the mean squared error can be calculated using the following formula.

$$MSE = \frac{1}{2N}\sum_{i}^{N}(t_i - z_i)^2$$

Where, zi = expected results linked to the ith training pattern
ti = the real results linked to the ith training pattern

N = how many training pattern samples there are.

To quantify the inaccuracies in the units of the actual and anticipated data, the root mean square error is also used.

METHODOLOGY AND DATA:

This research focuses on four Uttar Pradesh regions: Agra, Bareilly, Kanpur, and Lucknow, using in-person interviews with over 800 farmers to gather data using both closed and open-ended questions.

Other significant socioeconomic characteristics of the farming and rural households in the area were also revealed by the location survey, and they are covered in more detail later in the study. Accurately estimating and simulating the energy consumption of wheat production requires a thorough description of the research area, identification of key direct and indirect farm inputs, and detailed methods for data collection. To convert the various qualitative and quantitative data into energy units, selecting the proper conversion factors and formulas was a critical initial step. The creation of a simple, practical survey and determining the most effective means of reaching farmers comprised the second phase, data gathering. Data collection and analysis on the amount of energy utilized in production is the next stage.

Neural networks are used by economists to forecast, predict, manage, and analyze the supply and demand trends for various energy sources. (Ashhab, 2008).Moreover, ANN method is trained and developed to predict energy consumption in wheat production. The energy data is converted into relevant carbon conversion coefficients and then again ANN is used to model and predict Co2 emissions from various farm inputs. A thorough description of the research site, the primary direct and indirect farm inputs, and the techniques utilized to gather pertinent data are necessary in order to estimate and forecast the energy consumption of wheat production with any degree of accuracy. The study uses artificial neural networks to predict energy consumption in agriculture by considering various technical and social elements, resulting in gradual development of techniques for this purpose.

The study aimed to convert diverse data into energy units using appropriate conversion factors and procedures. A user-friendly poll was designed to contact farmers, and data analysis was conducted to determine critical elements and estimate energy use. A neural network model was used to predict the energy required to produce wheat and CO2 emissions from various agricultural inputs. Spreadsheets and MS Excel were used for data analysis, and an appropriate number of variables were selected to build a final model for forecasting energy use in wheat production. The energy required for farm activities such as tillage, drilling, spraying, fertilizer distribution, irrigation, and harvesting was assessed using operational (direct) energy, including human labor, fuel, and power usage. A separate spreadsheet was used to record inputs of direct and indirect energy, and the average per hectare for each input was determined by adding the total amount of each input across all farms. The total energy input (E) was calculated by using the ensuing formula:

$$E = \Sigma (Ai\ Ci)$$

Where, total energy input= E

Input factors= Ai & energy conversion coefficient =Ci

Various energy conversion coefficients are required for converting farm inputs and outputs into energy terms. Table 1 presents the energy equivalents for different inputs and outputs based on key references. Variations in these values arise from differences in technology, estimation methods, and factors such as energy use in seed production. Choosing the appropriate energy conversion coefficient is crucial, as it is challenging to compare results across studies without a standardized basis for energy equivalents (refer to Table 1).

Table 1 Equivalent energy values of various inputs and outputs in wheat production

	Energy Ratios (MJ)				
	Mani 2007 (India)	Saunders 2006 (NZ)	Pellizi 1992 (Italy)	McChesney 1982 (NZ)	OzkanKitani 20071999 (Turkey)(US)
Input					
Human(h)	1.96	#	#	#	2.3#
Diesel(l)	56.31	43.6	#	46.7	56.3147.8
Petrol(l)	#	39.9	#	42.3	##
N (kg)	60	65	73.75	65	64.478.1
Phosphorus (kg)	11.1	15	13.14	15	11.9617.4
Potassium(kg)	6.7	10	9.1	10	6.713.7
Sulphur (kg)	#	5	#	5	##
Herbicide (kg)	#	310	85.95	270	#*
Insecticide (kg)	#	315	50.55	#	#*
Fungicide (kg)	#	210	#	#	#*
Seed(kg)	14.7	#	9.12	2.5	2513
Outputs					
Seed (kg)	14.7	#	9.12	#	14.713
Straw(kg)	12.5	#	10.5		12.5

The analysis of CO_2 emissions from wheat farms took into account several energy sources, including fuel, power, machinery, fertilizers, and pesticides. The total CO_2 emissions (E) were calculated using the following formula:

$$E = \Sigma (A_i C_i)$$

Where Σ = summation, A_i = input factor & C_i = the CO_2 emissions conversion coefficient for each item.
Different conversion factors were used to convert agricultural inputs into emissions of CO_2.
In the subsequent step, sixteen variables with strong correlations to CO_2 production were identified and included in the analysis. The Principal Component Analysis (PCA) procedure was then used to select eight independent variables for inclusion in the ANN model. Some of the variables that affect the farm inputs are the number of plough passages, the percentage of land used for growing wheat on farms, the frequency of irrigation, the number of cows, the age of the fertilizer spreader, the nitrogen input (kg), phosphate input (kg), insecticide input (kg), sprayer age, and tractor power index (hp/ha).

Results & Discussion:

Energy

In various parts of Uttar Pradesh, the average energy used to produce wheat was 22,566 MJ per hectare. Of this, 4,870 MJ/h came from electricity, and 3,121 MJ/ha from direct energy in the form of fuel. Of the total, power accounted for 22% (4,870 MJ/ha) and fertilizer for 47% (10,651 MJ/ha). This is signified in table 2 and 3 below;

Table 2

	Mean	Max	Min	SD	95% confidence interval Lower	Upper
MJ/ha	22,566	36,230	11,497	6,125	20,608	24,524

Table 3

	Human	Seed	Fertilizer	Pesticides	Electricity	Machinery	Fuel	Total
MJ/ha	6	1,266	10,651	911	4,870	1,741	3,121	22,566
%	0.03	6	47	4	22	8	14	100

The study's most striking finding was the substantial positive connection (r=0.47) between wheat production yield and energy use. This suggested that more energy should be used in order to increase yield. The use of fertilizer and irrigation, which improved plant conditions, may be mostly to blame. Thus, attaining the objectives of environmental preservation and increased agricultural output would require striking a balance between energy use and agricultural output. Studying ways to lessen the conflict between income, the environment, and productivity need to be one of the top priorities.

CO_2 Emissions

According to the study, each wheat-growing farm released 1032 kg CO_2/ha on average. Farm inputs were categorized into five groups in order to obtain a broader view: electricity, fertilizers, agrichemicals, machinery, and fuel. With 52% of all CO_2 emissions from the farms under investigation, fertilizer—mostly nitrogen—ranked highest. Total CO_2 generation (kg CO_2/ha) from various agricultural inputs used on a wheat farm

Table 4

	fertilizer	agri chemical	machinery	fuel	electricity
Total	539	55	149	203	86
%	52	5	8	14	20

The Modeling Process for Predicting Energy Use

This study's primary goal was to provide scientists and farmers with fresh insights into farming by comparing various agricultural inputs and farming techniques and helping them identify the best solutions for various farming situations. The capability of the ANN model to forecast energy feasting in wheat production. It was tested by developing and comparing various linear regression and artificial neural network (ANN) models after the relevant variables were chosen.

Nineteen variables were chosen for additional reduction using PCA following the first round of input reduction, which was based on a thorough examination of correlation analysis. Five PC variables with a threshold cumulative variance of roughly 72% were chosen. Cropland area (ha), farmer education, nitrogen intake, machinery use, urea use, phosphate use, and irrigation were the chosen inputs used in the analysis. It was discovered that, in both training and validation, the ANN model's correlation between predicted and actual energy consumption was somewhat higher than the MLR model's. This observation demonstrated the relationship between ANN and MLR. On validation data, the ANN model's RMSE (square root of MSE) was significantly lower than that of the

The model revealed that nitrogen consumption (29%), crop area size (15%), farmers' education (8%), and phosphorus consumption (1.3%) were significant contributors. Among these, irrigation frequency, nitrogen consumption, and crop area size accounted for 77% of the predicted energy consumption, surpassing the contributions of the other variables. This model enables the estimation of energy use per hectare in wheat production. It helps them identify which factors have the greatest potential to reduce energy consumption. Additionally, it aids in understanding which inputs are most influential in wheat production and can guide control measures. For instance, the model can predict the impact of reducing nitrogen use on energy consumption.

Carbon emission modeling:

The developed MLR model was used to estimate the validation data. The MLR model could be used to fit the CO_2 emission data. For the validation data, the estimate MSE and RMSE were 6977 and 84 kg CO_2/ha, respectively. The final output, or CO_2 emissions, was produced by combining the output layer's data. For training and validation, the ANN model predicted r^2 values of 0.82 and 0.89, respectively. With a 95% confidence level, the final model can predict CO_2 emissions with an accuracy of ±113 kg CO_2/ha. This indicates that, with a 5% probability, the expected errors are not expected to be larger than ±113 kg CO_2/ha. For both training and validation data, the ANN model demonstrated a noticeably greater correlation between measured and expected CO_2 emissions than did the MLR model. In addition, the ANN model displayed a significantly lower RMSE than the MLR model in the validation data.

Table 5

	Linear		ANN	
	training	validation	training	validation
MSE	5635	6977	3641	3307
RMSE	79	85	70	57

These investigations produced very intriguing results because CO_2 emissions in agricultural farms could be influenced by a number of unpredictable factors. Wheat farms' CO_2 emissions can be predicted by the suggested model with reasonable error margins. A number of the independent factors, such as the degree of education of the farmer, would also indirectly affect CO_2 emissions. Thus, more investigation is required to determine the precise correlations between the input characteristics and the CO_2 emissions from agricultural activities. Farmers can determine which parts of their farms have the greatest potential to reduce CO_2 emissions by using an ANN model. Additionally, specialists and policymakers can assess Uttar Pradesh's CO_2 emissions.

Discussions:

The study focuses on the importance of energy usage in the agriculture sector due to the lack of data and transdisciplinary studies. The study reveals that the effectiveness of direct inputs like fuel, fertilizers, agrichemicals, electricity, and agricultural equipment can be influenced by indirect factors such as agricultural circumstances, social issues, and technical factors. The study found a complex web of known and unknown linkages between these factors that impact yield and energy usage. The database built for this investigation was used to examine these relationships. Understanding these links could help farmers and decision-makers make better decisions by providing a better understanding of what goes on on farms. Enhancing energy consumption efficiency in agricultural systems can be achieved through various methods, such as replacing fossil fuel energy with other sources or optimizing current protocols and processes. Organic farming, which requires larger energy inputs to achieve yield gains, can be distinguished by its enhanced energy efficiency. A strategy to maximize and reduce energy use is essential as population growth cannot support current lifestyles and food consumption. The study highlights the need for better understanding of the factors affecting energy consumption in agriculture and its potential impact on environmental degradation.

According to the study, there are several noteworthy relationships between technological and social elements that could be helpful for agricultural fuel conservation. For instance, a younger generation of farmers favored using tractors with greater power, and there was a substantial correlation between the age of the farmer and the number of passes made by some machines. The findings suggested that older farmers favored using more traditional tillage techniques over more recent ones. Well-informed farmers had embraced new techniques and equipment to cut down on fuel consumption on their farms. Encouragement of farmers to hire knowledgeable farm managers or consultants would therefore be advantageous. To encourage future farmers to reduce fuel usage, increasing their knowledge and awareness of new technologies is essential. Expanding the sample size and testing additional variables over an extended period, ideally five years, will help analyze trends in energy consumption across various regions and conditions. These kinds of studies require precise data collection techniques. It would be possible to compare the costs of oil, wheat, and other crops, as well as their effects on energy consumption and the adoption of new technologies on farms, with more research. For example, tracking energy consumption on the farms included in this study could identify factors influencing energy use over time. Exploring additional correlations and connections between different parameters —both established and new—would be a valuable direction for future research. Furthermore, a group of specialists should be involved in analyzing the connections between crop rotations, wheat output, and other elements.

The operational methods should be studied further, and managerial staff should be guided accordingly. Farmers need to be aware that various operations, such as soil preparation, can increase fuel consumption and lead to negative environmental impacts, including erosion and soil compaction. Fuel consumption and environmental damage can be considerably decreased by implementing innovative farming techniques and equipment. The average fuel usage for producing wheat was determined by this study to be 65 liters per hectare; farming systems that use irrigation used 65 liters per hectare, while those that use dry land used 66 liters. Wider equipment can be used with newer, more powerful tractors and combines. It is anticipated that the younger generation of farmers, using wider machinery and advanced technologies like precision farming, will help reduce fuel consumption in wheat production. Based on the study, 22,566 MJ per hectare were projected to be used in wheat cultivation. At 10,651 MJ per hectare (or 47% of total energy), fertilizer consumption—especially urea—was the main energy source. Fuel came in third at 14%, after electricity, which was the second-largest contributor at 22%. Fertilizer is the main energy source in both irrigated and dry land farming systems, with an estimated 10,193 MJ per hectare for irrigated farming and 11,430 MJ per hectare for dry land farming. Both systems' estimated energy consumptions were 25,600 and 17,458 MJ per hectare, respectively.

Further, using a Multiple Linear Regression (MLR) model, the study created an Artificial Neural Network (ANN) model to forecast energy use in wheat production. When it came to predicting energy usage, the ANN model fared better than the MLR model. Because this model can yield estimates that are more precise and have fewer errors, it may be useful for agricultural research. Farmers can assess their farm's energy consumption and compare it to that of other farms by using the ANN model, which can forecast energy usage on certain farms or places. Additionally, it gives decision-makers better information. Based on specific farm parameters, such as wheat cultivation area, irrigation frequency, cow count, machinery condition, and inputs on the farm, the ANN model was able to forecast CO_2 emissions from agricultural inputs. Because agricultural production involves unpredictable factors, the margin of error was deemed acceptable. It was shown that the ANN model could use heterogeneous data.

Conclusion:

Sustainable agricultural techniques in Uttar Pradesh's wheat production highlight the connection between environmental sustainability and economic viability. Sustainable inputs, such as organic fertilizers, precision irrigation, and integrated pest management (IPM), have potential to lower long-term environmental damage and enhance soil health. However, financial strain, especially for smallholder farmers, remains a major obstacle. Adopting sustainable practices can result in lower carbon emissions, more efficient water use, and increased biodiversity from an environmental standpoint. Economically, these methods can stabilize agricultural earnings by reducing risks associated with soil degradation, pest infestations, and climate variability. This study emphasizes the need for comprehensive strategies that incorporate environmental and economic sustainability to guarantee wheat production's long-term viability.

The adoption of sustainable farming methods is crucial for India's agriculture industry to address environmental issues and promote economic prosperity. Technology advancements and community involvement can help set the stage for a prosperous and sustainable agriculture sector. Energy usage in agriculture has been overlooked due to a lack of data and insufficient transdisciplinary study. Understanding the detrimental effects of agricultural inputs on environmental degradation requires analyzing the energy consumption of various inputs. Uttar Pradesh has made significant use of direct inputs such as fertilizers, agrichemicals, fuel, energy, and agricultural equipment to increase wheat production. However, the efficiency of these inputs is also influenced by indirect factors like technical features, social issues, and agricultural conditions. The ANN model performed better than the MLR model in energy consumption prediction, suggesting that future agricultural research could use more precise and accurate estimates.

Policy recommendation:

The government can encourage farmers in Uttar Pradesh to adopt economically and environmentally sound sustainable agriculture methods by implementing several policy suggestions. These include providing financial rewards for eco-friendly behaviors, such as subsidies or low-interest loans, for bio pesticides, organic fertilizers, and precision farming technology. Training courses and extension services should be provided to educate farmers about the long-term advantages of sustainable farming methods, raising awareness about soil health, water-saving measures, and the financial benefits of reducing reliance on chemical inputs. Research and development should be invested in enhancing the effectiveness of environmentally friendly agricultural inputs, ensuring they meet local requirements. Market assistance and value chain integration should be created, including certification programs and support for neighborhood cooperatives. Environmental rules and monitoring should be tightened, and monitoring mechanisms should penalize ecologically hazardous activities. Insurance plans for eco-friendly farmers should be provided, such as crop insurance, to protect their income during the transition. These policy ideas aim to create a supportive environment for farmers in Uttar Pradesh to adopt sustainable agriculture practices.

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Comparative Study of Christian and Parsi Women's Property Rights

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Abstract

Right to property is well recognized as an important instrument of freedom and development of human beings in general and women in particular throughout the world. It is not merely a symbol of a dignified living but also significantly affects the life-style of the individual concerned as well as the society as a whole.

Presently, no one can deny the fact that in law women are equal to men, not only in enjoying the property right, but also in all walks of life. But, one can also not deny the fact that in reality, apart from a few exception of the elite class, the women's right to property is still a long lasting dream in the Indian society.

Introduction

At present the most material and controversial issue is regarding women's property rights under succession laws. Whether, the law of succession in India is biased against women or not is a very important aspect of the ongoing debate on their economic equality with man. In the age of gender equality, the debate has laid emphasis on women lacking the economic independence in the area fully dominated by male. The important role played by the laws of succession with regard to facilitating or impeding economic independence is generally ignored. Succession laws deal with the passing of property from one generation to another, if they are biased against woman, they lose a great chance of acquiring property in a manner, which is available to males, and thus their chance of being economically independent is greatly hampered[1].

As the succession matters are governed by personal laws and India is known for the multiplicity of personnel laws, hence succession laws are diverse in their nature, owing to there varied origins. In India the succession laws can be broadly classified into two groups. The first set of laws is religion based and is ancient in time. These laws have either their roots in their respective religion or deeply influenced by them. The other set of laws are passed by various legislative bodies.

The notable difference between these two groups of laws was that wherein the latter group of law, respectable position is attributed to women in comparison with men, the former groups of laws were unanimous in relegating women to background with respect to inheritance and other rights[2]. An analysis of these religion based succession laws show that they stem from a fundamental desire to secure and keep control over property in the hands of men and to assert the superiority of one gender over the other. In the present chapter, the researcher would try to make comparative study of these succession laws prevalent in India.

Comparative Study of Hindu Law and Christian Law

Though the Indian Succession Act is generally applicable to Christians there are various regions in the country where the Act is applied. This legislation seemed to apply mainly to Europeans and other foreigners than to Indian Christians, as large section of the Christian community governed by customary laws were excluded from the application of this Act, by the virtue of Section 29(2) of the Act of 1925.

[1]*Vinay Reddy, Women and Succession Laws in India—A Critical Analysis, Indian Socio-legal Journal, Indian Institute of Comparative Law, Jaipur, Vol. 26 (2000), page No. 19.*
[2]*Poonam Pardhan Sexana, Property Rights of Women under the Indian Succession Act, 1925 in Dr. Shamsuddin Shams, Women Law and Social Change, Ashish Publishing House, (1991), page no. 103-104.*

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The general scheme of the succession applies to the property of Jews, Christians, all Indian, who marry under the special Marriage Act, 1954 or get their marriage registered under this Act, and the issue of such marriages.

The Act incorporates the Roman and English Principles of inheritance. A uniform scheme is provided, irrespective of the sex of the intestate. Consanguinity is the determining factor for title to succession and relations by affinity are not included among the list of heirs. Adoption does not confer any right of inheritance. In nature a secular Act, it does not make difference of religion as between the intestate and the heirs, a disqualification.

The preference of succession is determined in the terms of nearness in relation to the deceased, accordingly surviving spouse and lineal descendants are made primary heir. Principles of representation among lineal descendants applies without any reservations and with some restrictions, it also applies to the brothers-sisters of the deceased and their descendants. In all other cases, the general rule of nearer in degree excluding the remoter applies. The Act does not prefer agnates over cognates or male over females in general.

Proprietary Position of Females Under Hindu Law and Christian Law:

Daughter:

Indian Succession Act, 1925 (hereinafter referred to as Act of 1925):
The daughter of an intestate inherits as his child along with his son and other lineal descendants, taking a share which is absolutely equal to that of the son in all respects; (whatever may be the character of the property) out of the total of two-thirds of the property, the other one-third going to the widow of the intestate. In absence of widow, the children and the lineal descendants do not have to share the property with any of his other relations and they succeed to the whole of the estate (section 34). Thus, it is only within this Act, till 2005 which did not discriminate between the rights of the daughter and the son.

Hindu Law: Before the Amendment of 2005 there was discrimination in Hindu law between son and daughter. Though by virtue of section 6 daughter was given right to have a share even in coparcenary property of father but her share is less as compared to son because son took one share as coparcener and one as Class I heir where as daughter takes only as Class I heir, but after Amendment now the daughter under Hindu law also shares equally property in all types of property.

Widow: Act of 1925: The widow of an intestate succeeds to his property along with his children and other lineal descendants taking a fixed one-third share (Sec. 33 (a)). Her share in absence of the lineal descendants with all other kindred is a fixed one half.

Where none of the heirs is present she takes the whole of the estate (Sec.33 (b)). Where the total value of the property is less than Rs. 5,000, the widow succeeds to the whole of the property in absence of the lineal descendants.

Where the value exceeds Rs. 5,000 she takes, in the first instance Rs. 5,000 out of it (in case of its nonpayment has a charge over the whole property with an interest of 4 per cent per annum from the date the succession opens till its actual payment) and the rest devolves by succession in which the widow has her usual rights (Sec.33-A (2)).

The provision for the widow made by this section shall be in addition and without prejudice to her interest and share in the residue of the estate of such intestate remaining after payment of the said sum of five thousand rupees with interest as aforesaid, and such residue shall be distributed in accordance with the provisions of Sec.33 as if it were the whole of such intestate's property (sec.33-A (3)).

The net value of the property shall be ascertained by deducting from the gross value thereof all debts, and all funeral and administrative expenses of the intestate and all other lawful liabilities and charges to which the property shall be subject (sec.33-A (4)).

The Law commission of India, in working paper, in which it has documented sections of the Indian Succession Act which are in need to reform, has suggested that a widow's share in her husband's estate should be increased from Rs. 5,000 to Rs. 20,000. At the same time it has observed that under the English Intestates. Estates Act, 1925, where the husband leaves no children, the widow inherits all his property.

But inexplicably even this limited benefit of Rs. 5.000 denied to the following categories of persons:

a) Indian Christian;
b) Any child or grandchild of any male person who is or was at the time an Indian Christian.
c) Any Hindu, Buddhist, or Jain, Succession to whose property is governed by the Indian Succession Act [sec.33 (a)].

Since this provision seeks to give better rights to widow without lineal descendants, the denial of the benefit to the above mentioned groups cannot be justified on the grounds of policy.
Hindu Law: Under Hindu law, widow of the deceased is a Class 1 heir and she inherits the property of the intestate in equal shares with all other Class1 category heirs. There is no difference between widow having children and childless widow. Widow always has a right to inherit the property that too as Class 1 heir i.e., the preferential heirs.

Mother:

Act of 1925: The term mother has reference to the natural mother of an intestate and not his adoptive mother. The mother of an intestate is not primary heir and is, therefore, completely excluded in presence of his lineal descendants and also his father.

When she co-exists with the spouse, the spouse takes one half and the other half is shared by the mother, brothers, sisters and the children of deceased brother's sisters of the intestate. The mother and each of the living brothers-sisters taking the property per capita, while the children of pre-deceased brothers-sisters inherit per stripes.

This is laid down in Sec.44, which lays down, if the intestate's father is dead, but the intestate's mother is living and if any brother or sister and the child or children of any brother or sister who may have died in the intestate's life-time are also living, then the mother and each living brother or sister and the living child or children of each deceased brother or sister shall be entitled to the property in equal shares, such children (if more than one) taking in equal shares only the shares which their respective parents would have taken if living at the intestate's death.

The quantum of the share of the mother thus depends upon the number of the brothers and sisters of the deceased. In contrast, the father does not share the property with anyone else beside the widow. Where only the parents of an intestate are the present, the father is preferred and succeeds to the property to the complete exclusion of the mothers.

This unequal placement can cause tremendous hardship in cases of separated parents. Where the parents were separated from each other, either under a decree of divorce, or even otherwise and the custody of their children was with one parents, but due to the operation of the Act, the property of any of these children on their death goes to the other parent.

For example, a Christian couple is separated from each other, under a decree of divorce and the custody of their child is given to the mother. The fallen re-marriage and entirely engrossed in the new family. The mother brings up the child, educates him and sees him, well settled in the job. The child now dies as bachelor, with both the parents living. Now due to the operation of this Act, the complete property will devolve on the father to the exclusion of the mother[3].

Hindu Law:

Under the Hindu law mother is again Class 1 category heir. Her position is far better even as compared to father because father is Class II Entry I category heir where as the position of mother is Class I category heir and she inherit equally along with over Class I heirs. In case of female intestate, the position of mother is as under-

Firstly, if the female intestates inherit the property from any other source except from her father or mother or husband or father-in-law, then both mother and father are Entry I category heir and thus mother inherit the property in equal share along with father.

Secondly, if female inherits the property from her father or mother, then mother is excluded from inheritance because in this case, if she died issueless then property devolve upon heirs of father and if father is alive, mother will not be able to get anything.

Proprietary Position of Females among Christians of Goa and Pondicherry:

The Christians of Goa were governed by the Portuguese Civil code and continue to be so even today. The result is not only an addition to the multiplicity of laws but the prevalence of a legal system which is totally different from the ones prevailing in the rest of the country.

While the Portuguese Civil Code makes no differentiation on the basis of sex, it relegates the widow to a very low position. The orders of the legal heirs of a person are first sons and daughters who get property in equal shares. Failing them the parents inherit, followed by the brothers and descendants.

The widow will inherit only if there is no heir in the above Classes. But the widow will become the owner of "the agricultural commodities and fruits, called or pending, meant and necessary for the consumption of the conjugal couple." She will however lose even this right if she is divorced or separated from her husband[4].

Unlike the Christians in other parts of India, a person cannot will or gift away his entire property to the exclusion of his legal heirs. The portion over which a person has no control is known as legitimate and usually consists of half of the property.

But even this legitimacy can be denied to an heir under certain conditions e.g. if a child lodges a complaint against his parents for an offence which is not against his person or against his spouse. In the case of a child he can be disinherited in the following cases-

a) if he comments against their person any offence punishable with term of imprisonment over 6- months,

[3] *Portuguese Civil Code, 1966.*

[4] *Ibid., Art. 1784.*

b) if he judicially charged or lodges a complaint against his parents for offence which is not against the child' person or against his consort, ascendants or brethren,
c) if the child, without just cause, denies ti his parents due maintenance,
d) The other grounds by which the remaining classes of heirs can be disinherited are given in the Articles.

But even a disinherited heir is entitled to maintenance by the person who gets the property in place of the disinherited heir, but his liability to maintain disinherited heir is only up to the extent of the property he has inherited.

The recognition of equal rights for sons and daughters is undoubtedly to be welcomed but to relegate the widow to the fourth position and leave her with only the fruits and agricultural commodities needs to be remedied immediately.

The legal system for the Christians prevailing in Pondicherry is extremely anomalous. During the French rule both Hindus and Indian Christians were governed by Hindu Law. After Pondicherry became a part of India, the Hindu succession Act was extended to the States but as that Act only applies to certain categories of persons who come under the term 'Hindu', the Indian Christians in Pondicherry can no longer be governed by it.

The Indian succession Act has not been extended to the State, so the Christians there continue to be governed by the pre-codified Hindu Law, which relegates a woman to an inferior position and does not even regard her as being full owner even in the few cases where she can inherit property. The resultant position is anachronistic and should be remedied immediately.

Thus, the Law Commission of India in its 174th Report recommended the extension of Indian Succession Act to Goa and Pondicherry.

Proprietary Position of Christian Females in Kerala-

To add the diversity of laws, the Travancore High Court held that the Indian Succession Act did not apply to the Christians of the State. The result of the decision was that Christians in Kerala those outside are governed by different laws. The decision also continues the multiplicity of laws which govern Christians even with the State.

The Travancore Christian Succession Act governs the Succession rights of Christians in Travancore, but the Act is not applicable to those following the “Marumakkavazhi System” of inheritance.

To add to this certain sections of the Act are not applicable to certain classes of the Roman Catholic Christians of the Latin Rite and to Protestant Christians living in the five taluks mentioned therein among whom male and female heirs of the intestate share equally.

The Cochin Christian Succession Act, generally governs the succession to the properties of Christians in former territory of the Cochin State. The Cochin Act exempts members belonging to the European, Anglo-Indian and Parangi communities, and the Tamil Christians of the Chitttur Taluk who follow the Hindu Law.

This was confirmed by the Supreme Court in the case of Anthonyswamy vs. Chinnaswamy[5]. A characteristic feature of the Tarvancore and Cochin Christian Succession legislations was that they are based on the former notions of the Hindu Law of Inheritance which discriminated against women.

Therefore, a widow or mother inheriting immovable property takes only a life-interest terminable on the death or remarriage. A daughter's right is limited to “ Streedhanam”. Even in cases where she is entitled to succeed she takes a much lesser share.
In this Act, the position of female was as under:

Widow-
Under the Travancore Act if the intestate has died leaving a widow and lineal descendants the widow is entitled to a share equal to that of a son. If on the other hand, the intestate dies leaving a widow and daughter (or the descendants of a daughter) her share will be equal to that of a daughter. The nature of her interest (i.e. life interest) is the same when she takes the property in the absence of any lineal descendants.

The widow's share is half when the intestate dies without leaving any lineal descendants but has left behind his father or mother.

According to the Cochin Act, when there is a son or the lineal descendants of a son, the share of a widow is equal to two-thirds that of a son. If the intestate has left no son or the lineal descendant of a son, she entitled to a share equal to that of a daughter.

Daughter-
Even though she is mentioned as an heir along with a son in Group-I of sec.25 of the Travancore Christian Succession Act, a daughter is entitled to “Streedhanam” only. The Streedhananam of a daughter, for the purpose of the Act, is fixed at one-fourth of the value of the share of a son or Rs. 5,000/-- whichever is less.

[5]*S.C.C (1969) page no. 18.*

The Cochin Act provides that where an intestate lefts sons and daughters, each daughter shall take one-third share of a son. But like the Travancore Act an important limitation in regard to a daughter's share is laid down in Sec.22.

This in effect makes the right of a daughter to receive streedhanam only. But the Cochin Act does not specify a limit on the amount of streedhanam. Both legislations, however, provide that streedhanam which has not been paid, but promised by the intestate, will be charge on his estate. It is therefore, apparent that the rights of inheritance of Christian women under the Travancore and Cochin Acts are meager. Even these rights may be defeated as the testator has the absolute power of willing away his entire property.

Now after the coming into force of Indian Succession Act, 1925 as per the provisions of sec.29 (2)[6], the question is that whether the Travancore Christian Succession Act, 1792 is saved or not? This question came for consideration before the Supreme Court in Mrs. Mary Roy vs. State of Kerala, overruling Kurian Augusty vs. Devassy Aley, the Supreme Court said it was not saved. The Travancore Act was promulgated by the erstwhile Princely State of Travancore to regulate succession among the Indian Christians living in the State. It had several provisions discriminatory against women.

This was a writ petition under article 32 of the Constitution challenging the discriminatory provisions of the Act being violative of article 14 of the Constitution.

Further, it was contended that in view of part B States (Laws) Act, 1951 the Indian succession Act has been extended to these areas and the Travancore Succession Act stood repealed. Under the Indian Succession Act, a widow is entitled to one-third share in the property of the intestate and sons and daughters share equally in the remainder.

It should be noticed that the Part B States (Laws) Act with a view to provide for uniformity of legislation in the country. This Act provided for extension of some statutes to Part B States and the Indian Succession Act, 1925 is one of those Acts.

However, the supreme Court in this case did not go into the issue of violation of the right of equality in the matter of succession and inheritance, but provided for equality by holding that the Travancore Succession Act was repealed by the Indian Succession Act, 1925, when under section 3 of the Part B States (Laws) Act, the same was extended to Part B States.
The Supreme Court considered the following two issues:

a) Whether after the coming into force of the Part B States (Laws) Act, the Travancore Christians Act continues to govern intestate succession to the property of a member of the Indian Christian community in the territories originally forming part of the erstwhile State of Travancore or in such intestate succession governed by the Indian Succession Act, and if it continues to be governed by the Travancore Christian succession Act, whether sections 24, 28 and 29 of the Act are Constitutional and void as being violate of article 14 of the Constitution.

b) Whether the Travancore Christian succession Act comes within the ambit of "such other law" in sec.29(2) of the Indian succession Act and is saved. The respondents contended that sec.29(2) of the Indian succession Act saved the provisions of the Travancore Christian succession Act and therefore, despite the extension of the former Act to part B State of Travancore-Cochin, the Travancore Act continued to apply to the Christians in those territories.

The Supreme Court held that the Travancore Act stood repealed and was not saved by sec.29(2) of the Indian Succession Act. The Indian Succession Act is applicable throughout the State of Kerala and in Kanyakumari district of Tamil Nadu. This is so with effect from 1st April 1951.

This is a landmark judgment inasmuch as it removes discrimination against the Christian women in Kerala.

Now daughters have been given equal right of succession with son. Before this judgment, even the 174th Report of Law Commission also recommended that immediately legislative measures be taken to bring Christian women of Kerala under the Indian Succession Act as a first step to unify the law and restrictive power be placed on the unfettered right of a person to will away his entire property. Similarly for the Christians of Goa and Pondicherry, the Indian Succession Act has not been extended to the State, so the Christians there continue to be governed by the pre-codified Hindu Law, which relegates a woman to an inferior position and does not even regard here as being full owner even, in the few cases where she can inherit property.

The resultant position is anachronistic and should be remedied immediately. Here also Law Commission recommends the extension of Indian succession Act to Goa and Pondicherry, but unfortunately nothing has been done so far.

Thus, under Indian succession Act, 1925 the position of daughter is satisfactory as she inherits equally with any brothers and sisters to her father's estate or her mother's. She is entitled

[6] *S.C.C (1969) page no. 18.*

to shelter, maintenance before marriage but not after marriage from her parents. She has full rights over her personal property, upon attaining majority. Until then, her natural guardian is her father. But so far, rights of widow and mother are concerned like under the Muslim law they inherit a fixed portion of share which is not equal as compare to other heirs.

The widow upon the death of her husband is entitled to 1/3 share of his estate, the rest being divided among the children equally. She must inherit a minimum of Rs. 5,000/- from her husband's estate. If the total value of the estate is less than Rs. 5.000/- she may inherit the whole. Similarly, the mother is entitled to maintenance. In case, her only children die without leaving any spouse or children, she may inherit 1/4th of estate.
Under Hindu law the position of these females is much better. But again one common feature is that both the Acts confer no restrictions on the power of a person to will away his property. Therefore the protection enjoyed by a Muslim females to a share of the estate, is denied to females under these laws.

Therefore, there is a need to incorporate some restrictions, on testation similar to that prevailing under Muslim, law to prevent the females from being left completely destitute.

Comparative Study Between Parsi Intestate Succession and Hindu Succession Act

The Parsi community in India initially had no law of their own. While preserving their separate identity, they had adopted the customs of the residents of the area where they had first taken shelter. In 1925, when the Indian Succession Act was enacted, the Parsi Intestate Succession Act was verbatim incorporated in Chapter III of this Act. Interestingly, during the years 1870 to 1925, considerable progress was made in the realm of married women's property rights under the English statutes and the concept of equality between men and women regarding inheritance had been accepted.

Based on these developments, the Indian Succession Act did not discriminate between male and female heirs. But before the Amendment of Parsi intestate Act in 1991, the Paris inheritance laws, continued to maintain the discrimination and females continued to inherit half the share of their male counterparts. Section 50-56 of Indian Succession Act, 1925 deal with the Parsi.

Before the Amendment in 1991, the main feature of the rules governing the Parsi intestates was that like the Hindu law and unlike the Muslim law, there are separate rules for the devolution of the property of male and female Parsi intestates.

The rules relating to the intestate succession of males have the characteristic of Muslim law, namely, the share of a male heir was double that of a female heir of the same degree. For example, if a male Parsi dies leaving a widow and children, the property will be divided so that the share of each son and widow will be double the share of each daughter.

Further, if a male Parsi dies leaving one or both parents, in addition to a widow and children, the property will be divided so that the father shall receive a share equal to half the share of a son and the mother shall receive a share equal to half the share of a daughter.

The inferior position of a mother in the scheme of succession thus becomes evident and the position was radically different from that which prevails under the Hindu Succession Act, 1956.
This position may be contrasted with the rules applicable to the succession of a female Parsi intestate. If she dies, leaving a widower and children, the property will be divided equally among them and if she dies leaving children only, among the children equally.

Thus, while a son was entitled to an equal share in the mother's property along with the daughter, the daughter is not entitled to the same right when she inherits the property of the father along with the son.

Proprietary Position of Females Under Hindu Law and Parsi Law:

Daughter under Parsi Law-

Before the Amendment: In case of Parsi male dying intestate the position of the daughter was very much inferior as compared to son because

a) where he dies leaving a widow and children, among the widow and children, so that the share of each son and of the widow shall be double the share of each daughter, or
b) where he dies leaving children but no widow, among the children, so that the share of each son shall be double the share of each daughter (section 51).

In case of females dying intestate the position of daughter was better, because she get a share equal to son as where she dies leaving a widower and children among the widower and children so that the widower and each child receive equal shares; or where she dies leaving children but no widower, among the children in equal shares (sec.52).

In the case of Smt. Dhanbhai vs. State of M.P[7], where a Parsi male dies intestate leaving behind him his widow, three sons and two daughters, it was held that under Sec.51, the two daughters together would get a share equal to the share of their mother or brother.

[7] AIR,1979,MP17.

It was further held, that the mere fact that the daughters took no step to get their names mutated or make any demand on other heirs for separation of their shares, cannot defeat their title, or affect it in any way to their disadvantage.

After the Amendment: After the period of 1991, by Act 51 of 1991 Sec.51 have been newly drafted.
Now it runs as-

1) Subject to the provisions of sub-section (2), the property of which a male parsi dies intestate shall be divided-
    a) Where such Parsi dies leaving a widow or widower and children, among the widow or widower, and children so that the widow or widower and each child receive sharers.
    b) Where such Parsi dies leaving children, but no widow or widower, among the children in equal shares.
2) Where a Parsi dies leaving one or both parents in addition to children or widow or widower and children, the property of which such Parsi dies intestate shall be so divided that the parent or each of the parents shall receive a share equal to half the share of each child.

Thus, now the daughter sharers equally with the son and if a Parsi intestate dies leaving behind only one son and one daughter, both the children will inherit equally.

Hindu Law-

Before the Amendment of 2005 there is discrimination in Hindu Law between son and daughter. Though by the virtue of sec.6, daughter was given right to have a share even in coparcenary property of her father but her share was less as compared to son because son takes one share as a coparcener and one as a Class 1 heir where as daughter takes only as Class 1 heir. But after the Amendment, now the daughter under Hindu law also shares equally in all types of property. Thus, her position is far better as compared to the Parsi daughter.

Widow under Parsi Law-

The widow of an intestate is one of his primary heirs and inherits along with his lineal descendents, taking a share which is equal to that of her children. In case where the intestate leaves no lineal descendants but leaves a widow or widower or a widow or widower of any lineal descendents than the position of widow is that:

a) If intestate leaves a widow or widower but no widow or widower of lineal descendants, the widow or widower shall take half of the said property (sec.54(a)).
b) If the intestate leaves a widow or widower and also a widow or widower of any lineal descendants, his widow or her widower shall receive one-third of the said property and the widow or widower of any lineal descendants shall receive another one-third or if there is more than one such widow or widower of lineal descendants, the last-mentioned one-third shall be divided equally among them (sec.54 (b)).
c) If the intestate leaves no widow or widower but one widow or widower of a lineal descendant, such widow or widow of the lineal descendant receive one third of the said property or if the intestate leaves no widow or widower but more than one widow or widower of lineal descendants, two-third of the said property shall be divided among such widow or widower of the lineal descendants in equal share.
d) In absence of all his kindred, she succeeds to the whole of his property (sec.54(c)).

Hindu Law-

Under Hindu law, widow of the deceased is a Class 1 heir and she inherits the property of the intestate in equal shares with all other Class 1 category heirs. There is no difference between widow having children and childless widow. Widow always has a right to inherit the property that too as Class 1 heir i.e., the preferential heirs.

Mother under Parsi Law-

a) Before the Amendment-

In case of male Parsi dying intestate the share of mother is as follows:

1. Where a male Parsi dies leaving one or both parents, in addition to children or a widow and children, the property of which he dies intestate shall be divided so that the father shall receive a share equal to half the share of a son and the mother shall receive a share equal to half the share of a daughter[8].
2. But where Parsi dies leaving no lineal descendants, the presence of mother excludes all other relation from succession, but again she inherits only the half of father and other half goes to the widow. Where the intestate was a female, her mother inherits with her father only in absence of her widower and the lineal descendants. Here also the share of the mother is equal to half of the share of the father.

b) After the Amendment-

1. The mother now shares equally with the father but under the Parsi law the share of the parents is half the share of each child.
2. Now where a Parsi dies leaving one or both parents in addition to children or widow or widower and children, the property of which such Parsi dies intestate shall be so

[8] *Ibid, (Sec. 51 Clause- 2)*

divided that the parent or each of the parents shall receive a share equal to half the share of each child.

Similarly where the Parsi intestate dies leaving neither lineal descendents nor a widow or widower nor (a widow or widower of any lineal descendants) his or her next-of -kin, in the order set forth in Part II of Schedule II, shall be entitled to succeed to whole of the property of which he or she dies intestate.

The next-of-kin standing first in Part II of that Schedule shall be preferred to those standing second, the second of the third, and so on in succession, provided that the property shall be so distributed that each male and female standing in the same degree of propinquity shall receive equal share (Sec.55).

Among the next-of-kins mentioned in Part II of Schedule II, the order of preference will be as listed therein-

1) Father and mother.
2) Brothers and sisters (other than half brothers and sisters) and lineal descendents of such of them as have predeceased the intestate.
3) Paternal and maternal grandparents.
4) Children of the paternal and maternal grandparents and the lineal descendents of such of them as have pre-deceased the intestate.
5) Paternal and maternal grandparents' parents.
6) Paternal and maternal grandparents' children and the lineal descendants of such of them as have predeceased the intestate.
7) Half brothers and sisters and the lineal descendants of such of them as have predeceased the intestate.
8) Widows of brothers or half brothers and widowers of sisters or half sisters.
9) Paternal or maternal grandparents' children's widow or widowers.
10) Widows or widowers or deceased lineal descendants of the intestate, who have not married again before the death of the intestate.

Similarly, where the Parsi intestate dies leaving no lineal descendants but leaves a widow or widower of any lineal descendants then the position of the mother is defined under Sec.54(d), which lays down that the residue after the division specified in clause (a) or clause (b) or clause (c) has been made shall be distributed among the relatives of the intestate in the order specified in Part I of Schedule II; and the next-of-kin standing first in Part I of that Schedule shall be preferred to those standing second, the second to the third and so on in succession, provided that the property shall be so distributed that each male and female standing in the same degree of propinquity shall receive equal shares.

Part I of the Schedule II contains the following heirs-

1) Father and mother
2) Brother and sisters (other than half-brothers and sisters) and lineal descendants of such of them as shall have predeceased the intestate.
3) Paternal and maternal grandparents.
4) Children of the paternal and maternal grandparents and the lineal descendants of such of them as have predeceased the intestate.
5) Paternal and maternal grandparents' parents.
6) Paternal and maternal grandparents' parents' children and the lineal descendants of such of them as have predeceased the intestate.

Thus, after the Amendment the mother and the father among themselves inherit equally and their presence would exclude all other heirs as both of them are in Category I. but here it is also worth mentioning that in the presence of children, widow, widower or lineal descendants, their number comes after exhausting all the other above mentioned heirs.

Parsi intestate succession before the Amendment was one which was categorically mentioned as Act based on gender discrimination. But here, it should be pointed out that the provisions of Parsi Act were enacted in 1939. At that time these rules conferred better rights on women than the then existing Hindu and Muslim laws, because with the colonization of the country by the British, the Supreme Court of Judicature in 1873 made the rule that Muslims should be governed by Muslim law, Hindu by the Shastras and smaller communities like the Parsis should be governed by English Civil Law, as it was assumed the latter's laws had no religious identity and the English law at that time was considered as much more progressive.

But this, however applied only to the three presidency towns of Bombay, Calcutta and Madras. Elsewhere the Diwani Adalats established by Warren Hastings in 1772 as the highest Civil Courts of the districts, continued to apply the personal laws of every community in matters of inheritance, marriage and religion on the basis of “Justice and Equity”.

This sort of quality raised the expected problems and women suffered in both town and country. In the Presidency towns the English statute of distribution meant the Parsi widows got just one-third of the estate and the residue was divided equally among the children and their descendants. The English common law rules prevailing at that time, meant that the married women had no right to hold or dispose of any property during overture.

The mofussil Parsi, following Hindu custom, excluded Parsi women from a share in the estate of the male. They were given only rights to maintenance and adoption. But with the passage of time and later on with the Amendment of 1991, these rules have become out of step with the progressive trends in society.

So, on the whole after going through the comparative study of all the Succession laws applicable in India i.e. Muslim, Christian and Parsi, the proprietary position of females under Hindu law is very much better.

Further, after the Amending Act of 2005, in one stroke all the features under the Act of 1956 which discriminated between male and female heirs got removed and both the sexes were placed on equal footing.

Conclusion

But to conclude, legislation cannot be an end in itself. Publicity of new legislation and educating women about their rights need to go hand in hand. Otherwise, like much other social legislation, the rights remain only on paper.

During its tours the Committee found a large number of women completely ignorant about their rights of inheritance. Even where they know, they have been so conditioned that many of them oppose sisters depriving their brothers' property.

But in the absence of social security and inadequate opportunities for employment, a woman without financial security faces destitution in our country. It is true that in a country where a large section of the people is below the poverty line, measure for ownership of property will benefit only a limited section. However, for this section ownership of property will make women independent and they will undoubtedly gain in status. Besides, this will effectively check "the feeling that women are a burden to the family"[9].

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