

Editorial

We are pleased to present this issue of the International Journal of Research in Business Studies (IJRBS). As businesses today navigate quick technological disruptions, sustainability challenges, and uncertainty, amid which rigorous research plays a significant role in advancing knowledge. This issue showcases quality, peer-reviewed contributions of research articles that offer innovative insights across multidisciplines. We sincerely thank our authors, reviewers, and editorial board for their dedication to maintaining the journal's academic excellence through a robust double-blind review process. We hope this issue inspires meaningful research, encourages scholarly collaboration, and contributes to informed decision-making in academia and industry.

With regards,
Arun Kumar
Editor-in-Chief
IJRBS

Contents

S. No.	Title Name	Page No.
1.	Artificial Intelligence and the Transformation of Retail Marketing: A Critical Examination of Opportunities, Risks, and Emerging Realities Anshuman Khare & Brian Stewart	5-28
2.	An Empirical Study of Behavioural Aspects Affectings Stock Market Awareness and Participation among the Stakeholders of Maharaja Agrasen College (MAC) Arun Julka, Shruti Goel, Nandini Saini & Navya Agrawal	29-44
3.	Assessing the Factor Structure, Reliability, and Validity of Person–Job Fit, Person–Organization Fit, Job Satisfaction, and Employee Performance among School Teachers in Darjeeling District Tanisha Kansal & Palas R. Sengupta	45-58
4.	Digital Brain Rot and Workplace Productivity- The Mediating Role of Cognitive Fatigue among Urban Professionals Ekta Verma	59-90
5.	ESG Integration in Sustainable Finance: Examining its Impact on Investment Decision Efficiency Alka Chaturvedi & Vanshika Malhotra	91-112
6.	Emerging Trend of White-collar Extremism and Radicalism: An Academic Perspective Mohammad Iqbal Zaffar Ansari	113-136
7.	Labour Market in Ghana (1957–2024): Prospects and Challenges David Boohene & Aniewu Joseph Delali	137-154
8.	Impact of Information Technology with the Shift or Change of the World Order Shuchita Gupta	155-174

S. No.	Title Name	Page No.
9.	ESG Mutual Funds in India: Financial Returns, Sustainability and Investor Behaviour Nakul Verma & Madhu Totla	175-206
10.	Interrelationship between Job, Professional and Organizational Commitment: An Empirical Study of the Indian Automotive Industry Samar Raqshin & Monika Bhati	207-226

Artificial Intelligence and the Transformation of Retail Marketing: A Critical Examination of Opportunities, Risks, and Emerging Realities

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Abstract

Artificial intelligence (AI) is transforming retail marketing by fundamentally changing how organizations understand consumers, design experiences, and compete in dynamic markets. This paper critically examines both the benefits and risks of AI adoption in the retail sector, which has seen rapid uptake driven by consumer expectations, omnichannel complexity, and heightened competition. Through a thematic structure, key AI applications—market research, pricing, promotion, customer relationship management, personalization, distribution, and customer engagement—are explored. The analysis highlights AI's primary advantages, including efficiency, personalization, and predictive insights, as well as key risks related to privacy, fairness, transparency, and consumer trust. Special attention is given to dynamic pricing and chatbots, two prominent AI tools that are often contentious. The argument is that AI enables strategic differentiation but also introduces vulnerabilities that require strong governance and ethical oversight. The conclusion emphasizes practical implications for marketers, policymakers, and researchers, stressing the necessity of responsible AI adoption grounded in transparency, accountability, and human-centred design.

Keywords

Artificial intelligence, Retail marketing, Personalization, Dynamic pricing, Chatbots, and Consumer trust.

1. Introduction

Artificial intelligence (AI) has rapidly evolved from specialized technology to a driver of marketing transformation. In retail, AI adoption has accelerated due to rising consumer expectations, intensifying competition, and complex omnichannel environments. Retailers now rely on AI to enhance the customer experience, optimize operations, and support strategic decisions. As Ejjami and Rahim (2024) note, “Retail 5.0” marks a shift toward intelligent, customer-centric ecosystems powered by advanced analytics and automated tools such as predictive analytics, recommendation engines, chatbots, and dynamic pricing systems. These tools have become integral to how retailers understand consumer behaviour and deliver value. These technologies let retailers process large amounts of data, spot patterns, and tailor offerings precisely (Heins, 2022). However, alongside these advantages, AI introduces new challenges. For example, the same algorithms that enable hyper-personalized experiences can also spark concerns about surveillance, manipulation, and fairness (Mahmoud et al., 2020). Similarly, while dynamic pricing optimizes revenue, it may provoke backlash if seen as discriminatory (Fiig et al., 2016). Additionally, chatbots streamline service, yet may frustrate customers when they miss nuance or emotional context (Sidlauskiene et al., 2023).

These tensions highlight the dual nature of AI in marketing: it serves both as a powerful enabler of value and as a source of new vulnerabilities. Building on this, the paper provides a comprehensive and critical analysis of AI’s influence on marketing, with a focus on the retail sector. By synthesizing academic research and industry insights, it examines the opportunities and challenges of AI adoption. Ultimately, by presenting both the positive and negative aspects of AI in marketing, the paper contributes to a balanced understanding of how intelligent technologies are redefining the relationship between retailers and consumers.

2. Research Methodology

This study uses an integrative literature review to synthesize diverse theoretical, empirical, and conceptual perspectives on artificial intelligence (AI) in retail marketing. This approach works well for emerging, multidisciplinary domains in which knowledge is often spread across fields and methodological traditions. Consequently, AI in retail is understood as a complex and evolving

phenomenon that spans marketing strategy, consumer psychology, data governance, ethics, and technological innovation. In alignment with principles from Snyder (2019) and Whittimore and Knafl (2005), the methodology was designed to include heterogeneous evidence and, as a result, to generate new conceptual insights into how AI is reshaping retail marketing practice.

The review followed a structured, multistage process, consistent with Torraco's (2016) guidelines for qualitative synthesis. In the first stage, the scope of inquiry was defined, centring on AI applications in retail marketing. Specifically, areas examined included market research, pricing, promotion, customer relationship management, personalization, distribution, and ethical considerations. This thematic framing ensured the review captured both operational and strategic dimensions of AI adoption. Furthermore, the aim was to examine AI tools—such as dynamic pricing algorithms, chatbots, recommendation engines, and predictive analytics—while also addressing significant risks related to privacy, fairness, transparency, and consumer trust.

A comprehensive search strategy was implemented across major academic databases: Scopus, Web of Science, Emerald Insight, Science Direct, and Google Scholar. Search terms combined keywords such as “artificial intelligence,” “retail,” “marketing,” “dynamic pricing,” “chatbots,” “personalization,” “consumer trust,” and “ethics.” Boolean operators refined results. Inclusion criteria restricted the corpus to peer-reviewed journal articles and scholarly book chapters published between 2016 and 2024. This ensured relevance to contemporary AI developments. Studies were excluded if they lacked conceptual relevance, were non-scholarly, or focused solely on technical AI engineering without marketing implications. This process aligns with contemporary AI developments and filters out sources that do not contribute to marketing-focused insights.

Data extraction and analysis followed a thematic analysis approach (Braun & Clarke, 2006) to identify patterns across diverse sources. Each article was coded for themes: AI tools, consumer perceptions, ethical risks, operational benefits, and strategic implications. Codes were refined to ensure conceptual clarity and alignment with review objectives. The analysis used abductive reasoning, moving between inductive insights from literature and deductive themes from marketing theory. This approach reflects the document's methodological stance, which holds that integrative reviews must generate new conceptual understandings through synthesis.

Quality assurance procedures were employed to ensure rigour. Studies were appraised based on clear research design, methodological transparency, theoretical contribution, and relevance to retail marketing. Cross-comparison of findings helped mitigate bias. This ensured a balanced representation of both the opportunities and risks of AI adoption. This step was essential, given the dual nature of AI described in the document: it is both a powerful enabler of value and a source of new vulnerabilities.

The integrative review methodology provided the flexibility and depth needed to synthesize diverse perspectives while maintaining academic rigour. In particular, by consolidating insights across disciplines and methodological traditions, this approach enabled a holistic, critically informed analysis of how AI is transforming retail marketing—operationally, strategically, and ethically. The methodology supports the paper’s goal of offering a balanced and comprehensive examination of AI’s emerging realities in retail.

3. AI in the Retail Sector: Tools, Trends, and Strategic Value

AI adoption in the retail sector is expanding rapidly. As a result, retailers aim to enhance customer experience, streamline operations, and maintain a competitive advantage. This move toward intelligent retail ecosystems signals a broader transformation in how organizations view value creation. Furthermore, as Ejjami and Rahim (2024) note, retailers increasingly use AI to create resilient, customer-centric environments that blend digital and physical touchpoints.

3.1 Key AI Tools in Retail

Retailers deploy various AI tools for distinct strategic functions. Chatbots and virtual assistants provide real-time customer support. This reduces service costs and improves responsiveness (Mpinganjira et al., 2024). Recommendation systems use behavioural data to personalize product suggestions. This increases conversion rates and loyalty (Fu et al., 2023). Inventory management systems use predictive analytics to optimize stock levels, reduce waste, and automate replenishment (Boussalham & Ejjami, 2024). Predictive analytics tools forecast demand, identify trends, and inform marketing strategy (Wang, 2024). Dynamic pricing algorithms change prices in real time based on demand, competition, and customer behaviour (Fiig et al., 2016).

3.2 Benefits of AI Adoption in Retail

AI offers several strategic advantages. It enhances customer experience through personalization and seamless interactions. It improves operational efficiency by automating routine tasks and optimizing resource allocation. It supports data-driven decision-making, reducing uncertainty and improving forecasting accuracy. Fu et al. (2023) emphasize that AI adoption is most effective when aligned with sector-specific needs and organizational capabilities.

3.3 Challenges and Risks

Despite its benefits, AI adoption in retail faces significant challenges. Data privacy concerns are paramount, as retailers must comply with regulations while managing vast amounts of customer data (Mahmoud et al., 2020). Financial constraints may hinder adoption, particularly for small and medium-sized retailers (Wang, 2024). Ethical and legal uncertainties—including algorithmic bias and liability issues—pose additional challenges. Consumer trust deficits also persist, as many customers remain skeptical of AI-driven interactions (ElSayad & Mamdouh, 2024).

4. Market Research and Consumer Insights

AI has revolutionized market research by enabling real-time, large-scale, and highly granular insights. Traditional methods such as surveys and focus groups are increasingly supplemented—or replaced—by AI-driven tools that analyze vast datasets from social media, transaction logs, and digital interactions.

4.1 Predictive Analytics

Predictive analytics tools such as SAS Viya and IBM Watson Studio analyze historical and real-time data to forecast demand, churn, and market trends. These tools help marketers anticipate consumer needs and allocate resources more effectively. Predictive models also support scenario planning, enabling retailers to simulate the impact of pricing changes, promotional strategies, or supply chain disruptions (Fu et al., 2023).

4.2 Social Listening and Sentiment Analysis

Tools like Brandwatch, Sprinklr, and Talkwalker monitor online conversations to assess brand sentiment. AI-driven sentiment analysis allows marketers to detect emerging issues, track campaign performance,

and understand consumer emotions and attitudes. This enhances responsiveness and strategic agility, particularly in fast-moving markets (Bharathi et al., 2024).

4.3 Customer Segmentation Models

AI enables micro-segmentation based on behavioural, psychographic, and contextual data. Platforms like Salesforce Einstein and Adobe Sensei identify patterns that would be impossible to detect manually. This supports personalized messaging, targeted promotions, and tailored product recommendations. However, hyper-segmentation raises concerns about privacy, discrimination, and the potential reinforcement of social biases (Heins, 2022).

4.4 Critical Evaluation

While AI enhances the depth and accuracy of market insights, it also introduces risks. Algorithmic bias may distort segmentation or sentiment analysis. Data quality issues can lead to inaccurate predictions. Over-reliance on automation may reduce human judgment and contextual understanding. Privacy concerns arise when consumers are unaware of how their data is used (Mahmoud et al., 2020). Thus, AI-driven market research must be complemented by human oversight and ethical data governance.

5. Product and Pricing Strategy

AI has become central to product and pricing strategy in retail, enabling firms to optimize product offerings, tailor recommendations, and adjust prices dynamically in response to market conditions. These capabilities allow retailers to respond more effectively to consumer behaviour, competitive pressures, and inventory constraints.

5.1 Dynamic Pricing Algorithms

Dynamic pricing is one of the most visible and controversial applications of AI in retail. As Fiig et al. (2016) explain, dynamic pricing involves the real-time adjustment of prices based on factors such as demand, customer behaviour, and competitor actions. Retailers increasingly rely on AI-driven pricing engines—such as PROS Pricing and Revionics—to optimize revenue and improve inventory turnover.

The strategic benefits of dynamic pricing are substantial. Retailers can raise prices during peak demand periods, lower prices to clear excess inventory,

and respond instantly to competitor price changes. Wang (2024) notes that dynamic pricing enhances profitability by aligning prices with real-time market conditions. However, the practice also carries risks. Consumers may perceive dynamic pricing as unfair, particularly when prices fluctuate rapidly or differ between customers. This perception can erode trust and damage brand reputation.

5.2 Product Recommendation Engines

AI-powered recommendation engines have become essential tools for enhancing product discovery and increasing conversion rates. These systems analyze customer behaviour, purchase history, and contextual data to suggest relevant products. Heins (2022) highlights that recommendation engines significantly improve customer satisfaction by reducing search effort and presenting personalized options. Platforms such as Amazon Personalize and Google Recommendations AI exemplify how machine learning can tailor product offerings at scale.

Despite their benefits, recommendation engines raise concerns about over-personalization and the creation of “filter bubbles,” where consumers are exposed only to products that reinforce existing preferences. Fu et al. (2023) argue that excessive personalization may limit consumer exploration and reduce exposure to new or diverse products.

5.3 AI-driven Concept Testing

AI also supports product development through concept testing tools such as Zappi and Qualtrics PredictIQ. These platforms simulate consumer reactions to new product ideas, enabling marketers to evaluate concepts quickly and cost-effectively. Ogundipe et al. (2024) note that AI-driven concept testing enhances product management by providing data-driven insights into consumer preferences and potential market performance.

5.4 Critical Evaluation

While AI enhances product and pricing strategy, it also introduces ethical and operational challenges. Dynamic pricing may lead to accusations of price discrimination, particularly if algorithms inadvertently charge higher prices to vulnerable consumers. Recommendation engines may reinforce biases present in training data. AI-driven concept testing may overlook cultural nuances or emotional factors that influence consumer decisions. These risks underscore the need for transparency, fairness, and human oversight in AI-enabled pricing and product development.

6. Promotion and Advertising

AI has transformed promotional strategy by enabling automation, personalization, and real-time optimization of advertising campaigns. Retailers increasingly rely on AI to manage programmatic advertising, generate creative content, and evaluate campaign performance.

6.1 Programmatic Ad Buying

Programmatic advertising uses AI to automate the buying and placement of digital ads. Platforms such as Google DV360 and The Trade Desk analyze user behaviour, contextual signals, and historical performance to determine optimal bidding strategies. As Youwangka (2024) notes, AI enhances advertising efficiency by ensuring that ads reach the right audience at the right time. This reduces waste and improves return on investment.

However, programmatic advertising raises concerns about transparency and data privacy. Bharathi et al. (2024) argue that consumers often lack awareness of how their data is used in targeted advertising, which may lead to discomfort or distrust.

6.2 Creative Generation

AI tools such as Canva AI, Adobe Firefly, and Jasper generate ad copy, images, and creative variations. These tools accelerate content production and enable marketers to test multiple creative options quickly. Logalakshmi et al. (2023) highlight that AI-generated creative assets can enhance campaign performance by enabling rapid experimentation.

Yet the use of AI in creative production raises questions about authenticity and originality. Velez and Zlateva (2023) caution that AI-generated content may lack emotional depth or cultural nuance, potentially reducing its effectiveness in building brand identity.

6.3 Ad Performance Optimization

AI supports real-time optimization of advertising campaigns through tools such as Optimizely and Smartly.io. These platforms conduct A/B testing, evaluate creative performance, and adjust campaigns automatically based on performance metrics. Basha (2023) notes that AI-driven optimization improves campaign effectiveness by identifying high-performing content and reallocating resources accordingly.

6.4 Critical Evaluation

While AI enhances promotional efficiency, it also introduces ethical concerns. Targeted advertising may exploit consumer vulnerabilities, particularly when algorithms identify emotional states or behavioural patterns. Creative automation may reduce the role of human creativity. Programmatic advertising may contribute to “ad fatigue” or perceptions of intrusive tracking. These challenges highlight the need for responsible advertising practices that balance personalization with respect for consumer autonomy.

7. Customer Relationship Management (CRM)

AI has significantly reshaped customer relationship management by enabling automated interactions, predictive insights, and personalized engagement strategies. Retailers increasingly rely on AI to manage customer inquiries, score leads, and predict customer lifetime value.

7.1 Chatbots and Virtual Assistants

Chatbots are among the most widely adopted AI tools in CRM. They provide immediate responses, 24/7 availability, and consistent service quality. Mpinganjira et al. (2024) found that e-retail chatbots enhance experiential value by creating assistive dialogue that supports customers during online shopping. Chatbots reduce labour costs and free human employees to focus on complex or emotionally sensitive interactions.

However, chatbots also have limitations. Sidlauskienė et al. (2023) note that consumers may perceive chatbots as impersonal or lacking empathy, particularly in situations requiring emotional nuance. Misunderstandings or mechanical responses can lead to frustration and reduce satisfaction.

7.2 Lead Scoring Models

AI-driven lead scoring models evaluate the likelihood that a customer will convert based on behavioural and demographic data. Platforms such as Salesforce Einstein and Marketo Predictive Scoring help retailers prioritize high-value leads and allocate resources more efficiently. Anjorin et al. (2024) argue that AI enhances the development of strategic marketing goals by enabling data-driven decision-making.

7.3 Customer Lifetime Value (CLV) Prediction

AI supports CLV prediction by analyzing purchase history, engagement patterns, and customer attributes. Tools such as Klaviyo AI and Optimove identify high-value customers and recommend retention strategies. Noranee and Othman (2023) note that AI-driven insights improve customer relationships by enabling more personalized, relevant engagement.

7.4 Critical Evaluation

While AI enhances CRM efficiency, it also raises concerns about depersonalization and data ethics. Over-reliance on chatbots may reduce human connection. Predictive models may inadvertently reinforce biases present in training data. CLV prediction may lead to differential customer treatment, raising fairness concerns. These risks underscore the need for balanced CRM strategies that integrate AI with human empathy and ethical oversight.

8. Personalization and Sales Enablement

AI-driven personalization has become one of the most influential developments in modern retail marketing. By analyzing behavioural, transactional, and contextual data, AI enables retailers to tailor content, offers, and experiences to individual consumers. This shift toward hyper-personalization reflects a broader trend in which consumers expect brands to anticipate their needs and deliver relevant interactions across channels.

8.1 Personalized Content Engines

Personalized content engines such as Dynamic Yield, Adobe Target, and Mailchimp AI use machine learning to tailor website content, email campaigns, and promotional offers. These systems analyze browsing behaviour, purchase history, and demographic attributes to deliver individualized experiences. According to Heins (2022), personalization significantly enhances customer satisfaction by reducing search effort and increasing perceived relevance. Bharathi et al. (2024) further argue that AI-driven personalization strengthens brand loyalty by fostering a sense of recognition and value.

However, personalization also raises concerns about privacy and autonomy. Excessive personalization may trigger discomfort or perceptions of surveillance, particularly when consumers feel that brands “know too

much” about them. Noranee and Othman (2023) note that consumers may react negatively when personalization crosses psychological boundaries, thereby reducing trust.

8.2 Sales Forecasting Models

AI enhances sales forecasting by analyzing historical sales data, market trends, and external variables such as seasonality or economic indicators. Tools like Salesforce Einstein Forecasting and Zoho Zia provide real-time predictions that support inventory planning, resource allocation, and strategic decision-making. Anjorin et al. (2024) highlight that AI-driven forecasting improves accuracy and reduces uncertainty, enabling retailers to respond more effectively to market fluctuations.

8.3 Conversational Sales Assistants

Conversational sales assistants such as Gong AI and Outreach Kaia support sales teams by analyzing customer interactions, identifying opportunities, and recommending next steps. These tools enhance sales performance by providing insights into customer sentiment, objections, and preferences. Basha (2023) notes that conversational AI improves sales productivity by automating routine tasks and enabling more informed decision-making.

8.4 Critical Evaluation

While AI enhances personalization and sales enablement, it also introduces risks. Over-personalization may lead to the “creepiness effect,” where consumers feel uncomfortable with the level of data used to tailor experiences. Sales forecasting models may be vulnerable to data quality issues or algorithmic bias. Conversational assistants may reduce human judgment or create over-reliance on automated insights. These challenges underscore the need for balanced personalization strategies that respect consumer autonomy and ensure transparency.

9. Distribution and Omnichannel Integration

AI has become essential in optimizing distribution and enabling seamless omnichannel experiences. As retail channels proliferate, consumers expect consistent, personalized interactions across physical stores, websites, mobile apps, and social platforms. AI supports this integration by analyzing cross-channel behaviour, predicting demand, and optimizing logistics.

9.1 Supply Chain Optimization

AI enhances supply chain efficiency by predicting stock needs, optimizing logistics routes, and automating replenishment. Tools such as Blue Yonder, SAP IBP, and Llamasoft (Coupa) use machine learning to forecast demand and identify bottlenecks. Boussalham and Ejjami (2024) emphasize that AI improves inventory accuracy and reduces waste by aligning stock levels with real-time demand patterns.

9.2 Geotargeting and Location Intelligence

Geotargeting tools such as Foursquare and Esri ArcGIS analyze location data to deliver localized offers and inform retail expansion decisions. Wang (2024) notes that AI-driven location intelligence enhances marketing effectiveness by tailoring promotions to regional preferences and foot-traffic patterns. However, the use of location data raises privacy concerns, particularly when consumers are unaware of how their movements are tracked.

9.3 Omnichannel Journey Mapping

AI tools such as Adobe Experience Platform and Tealium map customer journeys across channels, enabling retailers to understand cross-channel behaviour and identify friction points. Heins (2022) argues that omnichannel journey mapping enhances customer experience by ensuring consistency and personalization across touchpoints.

9.4 Critical Evaluation

While AI enhances distribution and omnichannel integration, it also introduces risks related to data governance and surveillance. The use of location data may be perceived as intrusive. Supply chain algorithms may prioritize efficiency over resilience, as seen during global disruptions. Omnichannel tracking may raise ethical concerns about the extent of consumer monitoring. These challenges highlight the need for transparent data practices and responsible AI governance.

10. Dynamic Pricing: A Deep Critical Examination

Dynamic pricing represents one of the most strategically powerful yet ethically contentious applications of AI in retail. While widely used in industries such as airlines and ride-sharing, its adoption in retail has been slower due to concerns about fairness, transparency, and consumer trust.

10.1 Strategic Advantages

Dynamic pricing enables retailers to adjust prices in real time based on demand, competition, inventory levels, and customer behaviour. Fiig et al. (2016) argue that dynamic pricing optimizes revenue by aligning prices with market conditions. Retailers can raise prices during peak demand, lower prices to clear excess inventory, and respond instantly to competitor actions. Wang (2024) notes that dynamic pricing enhances profitability and supports more efficient inventory management.

10.2 Consumer Perceptions and Fairness

Despite its strategic benefits, dynamic pricing often triggers negative consumer reactions. Consumers may perceive price fluctuations as unfair, particularly when prices differ between customers or change rapidly. ElSayad and Mamdouh (2024) highlight that trust is a critical factor in consumer acceptance of AI-driven pricing. Perceived unfairness can lead to dissatisfaction, negative word-of-mouth, and long-term damage to brand reputation.

10.3 Ethical and Regulatory Concerns

Dynamic pricing raises several ethical concerns. Price discrimination may occur when algorithms charge different prices to different consumers based on personal data. Mahmoud et al. (2020) warn that AI-driven pricing may exploit vulnerable consumers or reinforce socioeconomic inequalities. Regulatory scrutiny is increasing as governments examine algorithmic pricing for potential anticompetitive effects or discriminatory outcomes.

10.4 Psychological Responses

Dynamic pricing can also trigger psychological discomfort. Consumers may feel manipulated when prices change unexpectedly or when they suspect that algorithms are exploiting their behaviour. This discomfort is amplified when pricing decisions lack transparency. As Fiig et al. (2016) note, the opacity of algorithmic pricing can undermine trust and reduce willingness to engage with AI-driven services.

10.5 Critical Evaluation

Dynamic pricing offers significant strategic value but must be implemented carefully to avoid negative consumer reactions. Transparency, fairness, and clear communication are essential. Retailers should consider providing explanations for price changes or offering price

guarantees to mitigate perceptions of unfairness. Ultimately, dynamic pricing must balance profitability with ethical responsibility and consumer trust.

11. Chatbots in Retail: Value, Limitations, and Future Trajectories

Chatbots have become one of the most widely adopted AI applications in retail, offering scalable, efficient, and personalized customer engagement. Their integration spans both digital and physical retail environments, supporting tasks such as product search, navigation, order tracking, and customer service. As Mpinganjira et al. (2024) argue, chatbots enhance experiential value by providing assistive dialogue that helps customers feel supported during online shopping. This experiential value is particularly important in digital environments where human interaction is limited.

11.1 Operational and Strategic Benefits

Chatbots deliver several operational advantages. They provide immediate responses, 24/7 availability, and consistent service quality. Retailers benefit from reduced labour costs and improved efficiency, as chatbots automate routine inquiries, freeing human employees to focus on complex or emotionally sensitive interactions. Sidlauskiene et al. (2023) note that chatbots can influence customer perceptions of products and prices by shaping how information is presented during conversational commerce. In physical stores, chatbots embedded in mobile apps or kiosks help customers locate products, check inventory, and receive personalized recommendations.

11.2 Consumer Acceptance and Resistance

Despite their benefits, chatbots face challenges related to consumer acceptance. Some customers perceive chatbots as impersonal or lacking human warmth, particularly in emotionally charged or complex service situations. Sidlauskiene et al. (2023) found that consumers often resist chatbots when interactions feel mechanical or when the chatbot fails to understand nuanced queries. Privacy concerns also influence acceptance, as customers may be uncomfortable with the data collection required to personalize chatbot interactions.

11.3 Future Trajectories

As natural language processing and generative AI continue to advance, chatbots are expected to become more empathetic, context-aware, and

capable of handling complex interactions. Mpinganjira et al. (2024) suggest that future chatbots may integrate emotional intelligence to better interpret tone, sentiment, and intent. However, human employees will remain essential for high-stakes, emotionally sensitive, or complex service encounters. The future of retail service will likely involve hybrid models that combine AI efficiency with human empathy.

11.4 Critical Evaluation

While chatbots enhance operational efficiency and customer experience, they also introduce risks. Over-reliance on chatbots may reduce human connection and create frustration when automated systems fail. Privacy concerns may deter engagement. Chatbots may inadvertently reinforce biases present in training data. These challenges highlight the need for thoughtful design that balances efficiency with empathy, transparency, and consumer trust.

12. The Creepiness Factor in AI-driven Marketing

As AI becomes more deeply embedded in retail marketing, consumers increasingly encounter experiences that feel intrusive, overly personalized, or unsettling. This psychological discomfort—often called the “creepiness factor”—is a critical barrier to consumer acceptance of AI technologies. The creepiness factor emerges when AI crosses perceived boundaries of privacy, autonomy, or human-technology interaction.

12.1 Sources of Creepiness

Several factors contribute to the creepiness effect. Excessive personalization can trigger discomfort when consumers feel that brands know too much about them. Noranee and Othman (2023) note that consumers may react negatively when AI systems infer sensitive information or make predictions that feel overly intimate. Perceived surveillance is another source of discomfort, particularly when AI uses location data, browsing history, or behavioural signals without explicit consent. Uncanny human-like behaviour—such as chatbots mimicking human emotions—can also create unease.

12.2 Boundary Violations and Consumer Autonomy

Creepiness often arises when AI violates psychological boundaries. For example, dynamic pricing may feel manipulative if consumers believe that algorithms exploit their behaviour. Hyper-personalized recommen-

dations may feel intrusive if they reveal insights consumers did not explicitly share. Bharathi et al. (2024) argue that AI must respect consumer autonomy by avoiding manipulative tactics and ensuring transparency in data use.

12.3 Implications for Brand Trust

The creepiness factor has significant implications for brand trust. When consumers feel uncomfortable or manipulated, they may disengage from AI-driven services, reduce brand loyalty, or avoid certain retailers altogether. ElSayad and Mamdouh (2024) highlight that trust is a critical determinant of consumer acceptance of AI technologies. Retailers must therefore design AI systems that balance personalization with respect for privacy and autonomy.

12.4 Mitigating the Creepiness Effect

Retailers can mitigate creepiness by adopting transparent data practices, offering consumers control over personalization settings, and ensuring that AI interactions remain within acceptable boundaries. Clear communication about how data is collected and used can reduce uncertainty and build trust. Human oversight and ethical guidelines can help ensure that AI systems respect consumer preferences and psychological comfort.

13. AI and Creativity in Marketing

AI has increasingly become a partner in creative marketing tasks, generating content, designing visuals, and supporting ideation. This shift raises important questions about the role of human creativity, the authenticity of AI-generated content, and the ethical implications of using AI in creative processes.

13.1 AI as a Creative Partner

AI tools such as Adobe Firefly, Canva AI, and Jasper help marketers generate ad copy, images, and creative variations. Logalakshmi et al. (2023) argue that AI enhances creative productivity by enabling rapid experimentation and reducing the time required to produce marketing assets. These tools support ideation by offering alternative concepts, styles, and formats that marketers may not have considered.

13.2 Risks to Authenticity and Originality

Despite its benefits, AI-generated content raises concerns about authenticity and originality. Velev and Zlateva (2023) caution that AI

may homogenize creative output by relying on patterns learned from existing data. This may diminish the uniqueness of brand identity or result in content that lacks emotional depth. Ethical concerns also arise when AI is trained on copyrighted or culturally sensitive material without proper attribution.

13.3 Human–AI Collaboration

The future of creative marketing will likely involve hybrid models in which AI augments human creativity rather than replacing it. Basha (2023) notes that AI excels at generating variations and optimizing performance but lacks the emotional intelligence, cultural awareness, and strategic intuition that human creators bring. Effective collaboration requires marketers to use AI as a tool for inspiration and efficiency while retaining human oversight and creative direction.

13.4 Critical Evaluation

AI enhances creative efficiency but must be used responsibly to preserve authenticity and avoid ethical pitfalls. Marketers should ensure transparency in AI-generated content, respect intellectual property rights, and maintain human involvement in creative decision-making. The goal should be to leverage AI as a creative partner that enhances—not replaces—human imagination.

14. Ethical Considerations in AI-driven Marketing

As AI becomes increasingly embedded in retail marketing, ethical considerations have moved to the forefront of academic and industry discussions. Ethical concerns arise from how AI systems collect, analyze, and act on consumer data, as well as how they influence consumer behaviour. These concerns span privacy, bias, transparency, manipulation, and accountability.

14.1 Data Privacy

Data privacy is one of the most significant ethical challenges in AI marketing. Retailers collect vast amounts of personal data, including browsing behaviour, purchase history, location data, and even biometric information. Mahmoud et al. (2020) warn that improper data handling can lead to privacy violations and erode consumer trust. Wang (2024) emphasizes that retailers must comply with data protection regulations such as the GDPR and the CCPA while ensuring transparent communication about their data practices.

14.2 Algorithmic Bias

AI systems may inadvertently reinforce biases present in training data. For example, recommendation engines may favour products associated with certain demographic groups, while predictive models may misinterpret behavioural signals. Velev and Zlateva (2023) argue that algorithmic bias can lead to discriminatory outcomes, undermining fairness and inclusivity. Bias in dynamic pricing algorithms may result in higher prices for vulnerable consumers, raising ethical concerns about equity.

14.3 Transparency and Explainability

Transparency is essential for building consumer trust in AI-driven marketing. Consumers increasingly demand to know how their data is used and how AI systems make decisions. Bharathi et al. (2024) note that opaque algorithms can create uncertainty and discomfort, particularly when AI influences pricing or personalization. Explainability tools can help retailers clarify how AI systems operate, but achieving full transparency remains challenging due to the complexity of machine-learning models.

14.4 Manipulation and Autonomy

AI-driven personalization can influence consumer behaviour in ways that challenge autonomy. Hyper-targeted advertising may exploit emotional vulnerabilities or behavioural patterns. Noranee and Othman (2023) caution that AI must avoid manipulative tactics that compromise consumer agency. Ethical marketing requires balancing personalization with respect for consumer autonomy and informed consent.

14.5 Accountability and Governance

As AI systems become more autonomous, questions arise about who is responsible for their decisions. Retailers must establish governance frameworks that ensure accountability for AI-driven actions. Logalakshmi et al. (2023) argue that ethical AI requires clear guidelines, human oversight, and continuous monitoring to prevent unintended consequences.

15. The Future of Data: Ownership, Control, and Consumer Rights

As AI becomes more pervasive in retail marketing, questions about data ownership, control, and consumer rights have become increasingly important. The future of data will shape how retailers design AI systems, how consumers interact with brands, and how regulators govern digital markets.

15.1 Data Ownership and Sovereignty

Consumers are becoming more aware of the value of their data and increasingly demand control over how it is collected and used. Bharathi et al. (2024) argue that data sovereignty—where individuals retain ownership of their personal data—will become a defining issue in the digital economy. Retailers must adapt to a future in which consumers expect transparency, consent, and the ability to revoke data access.

15.2 Zero-party Data and Consumer Participation

Zero-party data refers to information that consumers voluntarily share with brands in exchange for personalized experiences. This model reduces reliance on third-party tracking and enhances trust. Heins (2022) notes that zero-party data aligns with ethical marketing principles by giving consumers agency over their information. Retailers that adopt transparent data practices may gain a competitive advantage by fostering stronger consumer relationships.

15.3 Data Governance and Regulation

Regulatory frameworks such as GDPR and CCPA have already reshaped data practices in retail. Future regulations may impose stricter requirements on AI transparency, algorithmic fairness, and data minimization. Mahmoud et al. (2020) emphasize that retailers must adopt robust data governance frameworks to ensure compliance and mitigate legal risks.

15.4 Ethical Data Practices

Ethical data practices involve more than compliance. They require retailers to consider the broader implications of data collection and use. Noranee and Othman (2023) argue that ethical data governance must prioritize consumer autonomy, fairness, and transparency. Retailers must ensure that data is used responsibly and that AI systems do not exploit consumer vulnerabilities.

15.5 Critical Evaluation

The future of data will require retailers to balance innovation with responsibility. As AI becomes more sophisticated, data governance must evolve to protect consumer rights and ensure ethical use. Retailers that adopt transparent, consumer-centric data practices will be better positioned to build trust and sustain long-term relationships.

16. Toward Responsible AI-enabled Marketing

As AI becomes integral to retail marketing, responsible implementation is essential to ensure that technological innovation aligns with ethical principles and consumer expectations. Responsible AI involves fairness, transparency, accountability, and human oversight.

16.1 Principles for Responsible AI

Responsible AI frameworks emphasize fairness, transparency, accountability, privacy protection, and human oversight. Velev and Zlateva (2023) argue that responsible AI requires clear guidelines and continuous monitoring to prevent unintended consequences. Retailers must ensure that AI systems do not discriminate, manipulate, or exploit consumers.

16.2 Balancing Automation and Humanity

AI should enhance—not replace—human judgment, empathy, and creativity. Basha (2023) notes that while AI excels at automating routine tasks and optimizing performance, human employees remain essential for complex, emotional, or strategic interactions. Hybrid models that combine AI efficiency with human empathy offer the most effective approach.

16.3 Building Consumer Trust

Trust is essential for consumer acceptance of AI-driven marketing. ElSayad and Mamdouh (2024) highlight that transparency, fairness, and respect for autonomy are critical determinants of trust. Retailers can build trust by clearly communicating how AI systems operate, offering consumers control over personalization settings, and ensuring that data practices are transparent and ethical.

16.4 Organizational Readiness and Culture

Responsible AI requires organizational readiness, including employee training, cross-functional collaboration, and a culture of ethical innovation. Anjorin et al. (2024) emphasize that AI adoption must align with strategic goals and organizational values. Retailers must invest in training employees to understand AI tools and their ethical implications.

16.5 Critical Evaluation

Responsible AI is not merely a technical challenge but a strategic and ethical imperative. Retailers must adopt governance frameworks that

ensure fairness, transparency, and accountability. By prioritizing responsible AI, retailers can harness its benefits while mitigating risks and building long-term consumer trust.

17. Conclusion

The findings of this integrative review demonstrate that artificial intelligence is not merely an operational enhancement in retail marketing but a structural force reshaping how value is created, delivered, and governed. By synthesizing insights from market research, pricing, promotion, CRM, personalization, distribution, and ethical governance, this paper offers a holistic, critically balanced understanding of AI's role in retail—an understanding that has been largely fragmented in prior literature. The review shows that AI simultaneously expands strategic possibilities and amplifies vulnerabilities, a duality reflected throughout the paper. AI tools such as dynamic pricing algorithms, chatbots, recommendation engines, and predictive analytics have become essential components of modern retail strategy, yet they also introduce significant risks to privacy, fairness, transparency, and consumer trust. This tension is the paper's central theoretical contribution: *AI in retail marketing must be understood not as a linear technological upgrade but as a socio-technical transformation that reconfigures consumer relationships, ethical boundaries, and organizational responsibilities.*

Another major contribution of this paper is its integration of operational, psychological, and ethical dimensions of AI adoption—domains that are often examined separately. By bringing these strands together, the review clarifies *how AI's value-creating mechanisms (e.g., personalization, automation, predictive insight) are inseparable from the risks they generate (e.g., creepiness, surveillance concerns, algorithmic bias, depersonalization).* The deep examinations of dynamic pricing and chatbots further advance scholarly understanding by illustrating how these tools embody the broader paradoxes of AI-enabled marketing. Dynamic pricing, for example, offers revenue optimization but simultaneously threatens perceptions of fairness and trust, while chatbots enhance efficiency yet risk emotional disconnect and consumer resistance. These sections move beyond descriptive accounts to provide conceptual clarity on why certain AI applications provoke stronger ethical and psychological reactions than others, thereby enriching theoretical discussions on consumer trust, perceived autonomy, and technology acceptance.

Methodologically, the paper contributes by applying an integrative review to a rapidly evolving domain in which empirical findings are dispersed across

disciplines. This synthesis generates a consolidated framework of themes—market insight generation, strategic optimization, experiential personalization, omnichannel integration, and ethical governance—that can guide future empirical research. The review also highlights underexplored areas, such as the psychological boundaries of personalization, the long-term implications of algorithmic decision-making for consumer autonomy, and the organizational readiness required for responsible AI adoption. These identified gaps provide a roadmap for scholars seeking to deepen theoretical and empirical inquiry into AI’s marketing implications.

Finally, the paper advances the discourse on responsible AI by articulating the principles and organizational conditions necessary for ethical implementation. It argues that the future of AI-enabled retail marketing depends on balancing automation with humanity, innovation with accountability, and personalization with respect for consumer autonomy. By foregrounding transparency, fairness, and human oversight as strategic imperatives—not optional add-ons—the paper reframes responsible AI as a competitive necessity in an era where trust is as valuable as technology. In doing so, it contributes to the emerging body of knowledge that positions ethical governance as integral to the sustainable evolution of AI in marketing.

Collectively, these contributions establish the paper as a broad, critically informed foundation for understanding how AI is transforming retail marketing and how retailers, policymakers, and researchers must respond to ensure that this transformation remains both innovative and human-centred.

18. References

1. Anjorin, K. F., Raji, M. A., Olodo, H. B., & Oyeyemi, O. P. (2024). Harnessing Artificial Intelligence to Develop Strategic Marketing Goals. *International Journal of Management & Entrepreneurship Research*, 6(5), 1625–1650. <https://doi.org/10.51594/ijmer.v6i5.1127>
2. Basha, M. (2023). Impact of Artificial Intelligence on Marketing. *East Asian Journal of Multidisciplinary Research*, 2(3), 993-1004. <https://doi.org/10.55927/eajmr.v2i3.3112>
3. Bharathi, N. S., Manjunath, S. R., Hemantha, M. S., & Praveen, H. A. (2024). Role of Artificial Intelligence in Marketing: A Paradigm Shift. *International Journal for Multidisciplinary Research*, 6(1). <https://doi.org/10.36948/ijfmr.2024.v06i01.11924>

4. Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic Approaches to a Successful Literature Review* (2nd ed.). Sage. https://uk.sagepub.com/sites/default/files/upm-assets/78595_book_item_78595.pdf
5. Boussalham, K., & Ejjami, R. (2024). Optimizing in-store Logistics: How AI Enhances Inventory Management and Space Utilization. *Journal of Next-Generation Research* 5.0. <https://doi.org/10.70792/jngr5.0.v1i1.10>
6. Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
7. Ejjami, R., & Rahim, N. (2024). Retail 5.0: Creating Resilient and Customer-centric Shopping Experiences through Advanced Technologies. *International Journal for Multidisciplinary Research*, 6(4). <https://jngr5.com/public/blog/Retail%205.0.pdf>
8. ElSayad, G., & Mamdouh, H. (2024). Are Young Adult Consumers Ready to be Intelligent Shoppers? The Importance of Perceived Trust and the Usefulness of AI-powered Retail Platforms in Shaping Purchase Intention. *Young Consumers*, 25(6), 969-989. <https://doi.org/10.1108/YC-02-2024-1991>
9. Fiig, T., Goyons, O., Adelving, R., & Smith, B. (2016). Dynamic Pricing – the Next Revolution in RM? *Journal of Revenue and Pricing Management*, 15(5), 360–379. <https://doi.org/10.1057/rpm.2016.28>
10. Fu, H., Chang, T., Lin, S., Teng, Y., & Huang, Y. (2023). Evaluation and Adoption of Artificial Intelligence in the Retail Industry. *International Journal of Retail & Distribution Management*, 51(6), 773–790. <https://doi.org/10.1108/IJRDM-12-2021-0610>
11. Heins, C. (2022). Artificial Intelligence in Retail – A Systematic Literature Review. *Foresight*, 25(2), 264–286. <https://doi.org/10.1108/FS-10-2021-0210>
12. Logalakshmi, S., Krishnan, M. D., & Maheswari, D. P. L. (2023). Carving a Brighter Path with Synergy of Digital Marketing & AI. *International Journal of Trendy Research in Engineering and Technology*, 07(05), 18–24. <https://doi.org/10.54473/IJTRET.2023.7505>
13. Mahmoud, A. B., Tehseen, S., & Fuxman, L. (2020). The Dark Side of Artificial Intelligence in Retail Innovation. In *Retail Futures*, 165–180. Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83867-663-620201019>
14. Mpinganjira, M., Dlodlo, N., & Idemudia, E. C. (2024). Perceived Experiential Value and Continued use Intention of E-retail Chatbots.

- International Journal of Retail & Distribution Management*, 52(13), 121–135. <https://doi.org/10.1108/IJRDM-04-2023-0237>
15. Noranee, S., & Othman, A. K. (2023). Understanding Consumer Sentiments: Exploring the Role of Artificial Intelligence in Marketing. *JMM17: Jurnal Ilmu Ekonomi dan Manajemen*, 10(1), 15–23. <https://doi.org/10.30996/jmm17.v10i1.8690>
 16. Ogundipe, D. O., Babatunde, S. O., & Abaku, E. A. (2024). AI and Product Management: A theoretical Overview from Idea to Market. *International Journal of Management & Entrepreneurship Research*, 6(3), 950–969. <https://doi.org/10.51594/ijmer.v6i3.965>
 17. Sidlauskiene, J., Joye, Y., & Auruskeviciene, V. (2023). AI-based Chatbots in Conversational Commerce and their Effects on Product and Price Perceptions. *Electronic Markets*, 33(1), 24. <https://doi.org/10.1007/s12525-023-00633-8>
 18. Snyder, H. (2019). Literature Review as a Research Methodology: An Overview and Guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
 19. Torraco, R. J. (2016). Writing Integrative Literature Reviews: Using the Past and Present to Explore the Future. *Human Resource Development Review*, 15(4), 404–428. <https://doi.org/10.1177/1534484316671606>
 22. Velez, D., & Zlateva, P. (2023). Issues of Artificial Intelligence Application in Digital Marketing. In *Digitalization and Management Innovation II* (pp. 52–59). IOS Press. <https://doi.org/10.3233/FAIA230716>
 21. Wang, Z. (2024). The Influence of Artificial Intelligence on Retail Marketing. *Advances in Economics, Management and Political Sciences*, 71(1), 106–111. <https://doi.org/10.54254/2754-1169/71/20241443>
 22. Whittemore, R., & Knafl, K. (2005). The Integrative Review: Updated Methodology. *Journal of Advanced Nursing*, 52(5), 546–553. <https://doi.org/10.1111/j.1365-2648.2005.03621.x>
 23. Youwangka, R. (2024). Digital Marketing Strategies: Leveraging AI Technology to Enhance Effectiveness in Addressing Global Crises. *Journal of Social and Economics Research*, 6(2), 169–194. <https://doi.org/10.54783/jsr.v6i2.658>

An Empirical Study of Behavioural Aspects Affectings Stock Market Awareness and Participation among the Stakeholders of Maharaja Agrasen College (MAC)

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Abstract

In an era where the returns on savings are not enough to beat inflation, the concept of the shift from financial literacy to active trading is an important tool in the development of the economy.

The purpose of this study is to examine the gap that exists between the awareness of finance and the active participation in retail trading in the stock market among the students, teaching, and non-teaching faculty members of Maharaja Agrasen College (MAC), University of Delhi. The research will adopt a descriptive and analytical research design, by using a structured questionnaire as a tool for obtaining primary research data from a diverse student population on campus. The research will also examine the changing environment of financial information, with a focus on the relative impact of traditional media versus the emergence of digital ecosystems, such as social media influencers.

The results of this study will provide means through which universities can bridge the literacy gap and promote informed and responsible investing. This research aims to bring to the forefront the ways through which emerging technologies and various media platforms can be utilised for the promotion of financial inclusion and security among young students and working professionals.

Keywords

Financial literacy, Stock market participation, Fintech, Behavioural finance, Digital media, and Investment behaviour.

1. Introduction

The stock market is an "economic mirror" that reflects the financial health and working of a nation while offering a sophisticated platform for long-term wealth creation (K & K, 2025). In today's evolving economic climate, financial literacy is no longer merely an academic concept but an essential survival tool for individuals across all demographics.

Although the growth of multiple financial products has made the market more accessible, it has also increased the complications required to make decisions. Thus, understanding the trends in stock market awareness and contribution among college students and working professionals becomes essential for multiple reasons (Kevat & Pastagiya, 2026).

Students represent potential long-term investors whose financial decisions will influence the stability and depth of India's capital markets, and an early exposure to responsible investing can create a financially informed population that contributes to economic growth (Kevat & Pastagiya, 2026).

Similarly, for working professionals and employees, the stock market serves as a critical component of comprehensive retirement planning by offering a diversified portfolio that can generate supplemental income for their later years.

Thus, this study examines the stakeholders of Maharaja Agrasen College (MAC), specifically students and teachers, to evaluate the current state of financial awareness and engagement. By exploring the role of media as a primary information source, and assessing the specific needs of both students and employees, this research aims to identify how academic environments can better support financial inclusion.

2. The Research Gap

Most available studies about the stock market focus only on professional investors or business students. However, there is a major gap in our

understanding of the "campus community" as a whole. In this study, the college level is analyzed through three distinct lenses to ensure a comprehensive mapping of the awareness landscape:

Students: Their awareness is majorly driven by social media trends or peer influence rather than formal education. The gap here is to understand if their enthusiasm for the market is backed by actual literacy (risk management, fundamental analysis) or not.

Teaching Faculty: To ascertain whether sophisticated investment behavior is correlated with academic expertise in a particular field or whether intellectual overconfidence prevents sound market participation.

Non-teaching Faculty/Staff: This is often the most under-reached group. The study aims to identify if they have access to institutional financial resources and whether their awareness levels are sufficient for long-term wealth creation and retirement planning.

3. Objectives of the Study

The primary goals of this research work includes:

- 3.1.** To assess the current level of awareness and participation in the stock market among the students and employees of Maharaja Agrasen College (MAC).
- 3.2.** To explore and identify the various roles media play as sources of information regarding the stock market for these stakeholders.
- 3.3.** To provide actionable recommendations and strategies to enhance stock market literacy and participation within the college community.
- 3.4.** To evaluate how variables such as age, education, income, and the nature of employment influence stock market participation.

4. The Questions that the Research Seeks to Answer

The research aims to address the following key inquiries:

- 4.1.** What is the current level of stock market awareness and active participation among the students and faculty of Maharaja Agrasen College?
- 4.2.** How do traditional news channels and financial newspapers compare with social media influencers in terms of trustworthiness and influence on investment decisions?

- 4.3. What are the primary demographic and behavioral factors (e.g., age, gender, or risk aversion) that act as barriers to stock market participation?
- 4.4. How do social media trends and "peer influence" impact the risk-taking behavior of young student investors compared to more experienced employees?

5. Review of the Literature

- 5.1 **Perception of youth about stock market and investments (2025):** A study by Dr. Sanesh, P. V., & Rawat, R., emphasises that while digital accessibility and mobile trading platforms have significantly boosted awareness and interest among college students, actual participation remains inconsistent. A critical gap exists between theoretical knowledge and practical application; students often rely on social media and peer influence rather than structured financial literacy, leading to a skewed perception of risk and reward.
- 5.2 **Behaviour of Youth on Investment:** A study published by Mishra, M. Mishra, S. & Shabaz, S. M. A. (2023) reveal that while approximately 86 percent of young respondents possess awareness of capital markets, their actual participation is constrained by a "moderate" risk appetite and a reliance on the internet for financial guidance. Key barriers identified include a lack of formal financial education, short-term financial priorities, such as debt, and a lingering distrust of the financial system.
- 5.3 **Impact of Social Media on Stock Market Participation among Young Investors:** A study by Sathish, K., & Aishwarya, N. (2025) reveals platforms like YouTube (62 percent), Instagram, and Twitter have become the primary sources of financial information, significantly boosting market participation and investor confidence. While social media serves as a catalyst for financial awareness, the study emphasizes a critical gap in long-term strategic planning, concluding that 53 percent of young investors have faced financial losses due to misleading or "hype-driven" digital content.
- 5.4 **Impact of Social Media and News on Investment Decisions:** Recent study by Pallavi, G. P. & Dsa, K. T. (2025) contrasts traditional financial news with user-generated social media content, finding that while

traditional media provides structured and reliable insights, social media platforms accelerate the spread of information, often at the cost of accuracy. The research emphasizes that the modern, information-rich environment necessitates higher levels of media literacy among investors to navigate the psychological traps intensified by digital financial discourse.

5.5 Trends in Stock Market Awareness and Participation among Indian College Students: A Secondary Data Analysis:- The research by Kevat, M. K. N., & Pastagiya, D. P. K. (2026, January) highlight that college students are increasingly moving away from traditional saving mindsets toward equity-based investments, yet they are often held back by a lack of formal financial education and a high perceived risk of capital loss.

6. Background of the Study

The rise of digital infrastructure is causing a rapid change in the global financial landscape. The study examines the "participation puzzle", i.e., the gap between high market awareness and actual retail participation by focusing on the stakeholders of Maharaja Agrasen College. We are investigating how modern information sources and emerging technologies shape the investment behavior of individuals, specifically looking at:

6.1 The Role of New Media and Traditional Outlets: We look at how sources like business news channels, such as CNBC-TV18 and ET Now, and financial newspapers like The Economic Times and Mint help people make investment decisions. These sources do an analysis of things, and that gives investors' confidence. They are reliable, and people trust them because they have been around for a long time.

6.2 Role of Social Media and Influencers: Today, social media is very important for people who want to learn about money, and investing. People known as Finfluencers on YouTube, Instagram, and X who talk about money and investing have an influence on young people and how they think about money. We want to know how things like that go viral in the media, and pictures or videos about stocks can affect how people invest their money. Sometimes these things can be very helpful, but they can also be very risky for new investors. Social media can be a tool for people who want to learn about investing, but it can also be dangerous if people are not careful.

6.3 Role of Demographics & Individual Behavior: There is no universal solution when it comes to investing. For the purpose of this research paper, we shall look at how demographics and behaviors work together in order to come up with certain investment strategies. Demographics such as age, gender, income, and educational background are analyzed.

7. Research Methodology

This study employs a descriptive and analytical research design to investigate the stock market awareness, perception, and participation levels among the stakeholders of the college.

- **Population and Sampling:** The target population for this research consists of the diverse stakeholders of Maharaja Agrasen College, including undergraduate students across various disciplines and teaching/non-teaching staff.
- **Data Collection:** Primary data will be gathered through a structured questionnaire designed to capture data on several key dimensions.
- **Statistical Analysis and Tools:** Statistical tools like descriptive analysis, Cochran's Q test, chi-square test, independent samples t-test, percentage analysis, mean, and standard deviation.
- **Hypotheses:**
 - H₀₁ :** There is no difference in the mean risk appetite between Commerce and Non-commerce students.
 - H₀₂ :** There is no significant correlation between the level of financial literacy and the frequency of stock market trading/news engagement.
 - H₀₃ :** Gender and Stock Market Participation are independent (Gender does not affect whether someone invests).
 - H₀₄ :** A stakeholder's role (Student, Teaching, or Non-teaching) does not significantly influence their perception of risk.
 - H₀₅ :** A stakeholder's role (Student, Teaching, or Non-teaching) does not significantly influence their level of investment experience.

H₀₆ : There is no significant difference in the reliance on social media for stock market information across different stakeholder categories (Students, Teaching Faculty, and Non-teaching Staff).

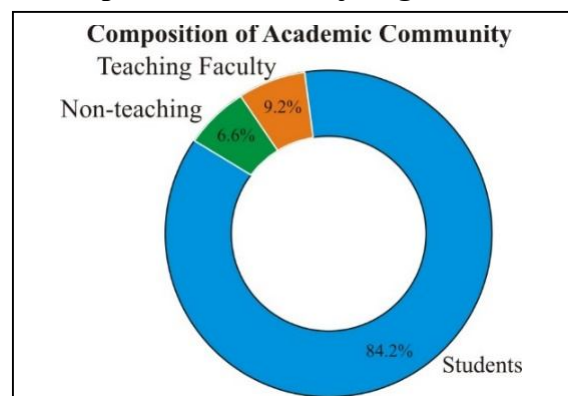
H₀₇ : There is no significant difference in the popularity (usage frequency) of different information sources (social media, Financial News Websites, Investment Apps, and Print/Traditional Media) among stakeholders at Maharaja Agrasen College.

8. Limitations of the Study

As a specific institutional case study (MAC), the findings may not be fully generalised to the entire Indian population. Furthermore, the rapid evolution of AI tools and social media algorithms mean that the study captures a "snapshot" of a highly dynamic environment.

Analysis

8.1 Stakeholder Composition: Maharaja Agrasen College



Source:- Author's Compilation.

Figure 1:- Stakeholders of Maharaja Agrasen College

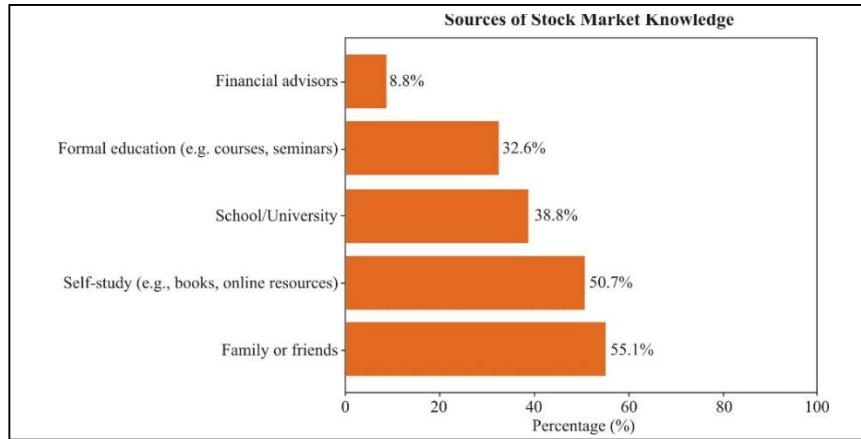
The above chart represents the following composition of the Academic Community.

Students: 255 (84.2 percent) - Large blue ring

Teaching Faculty: 28 (9.2 percent) - Orange ring segment

Non-teaching: 20 (6.6 percent) - Green ring segment

8.2 How Did you Know about the Stock Market?

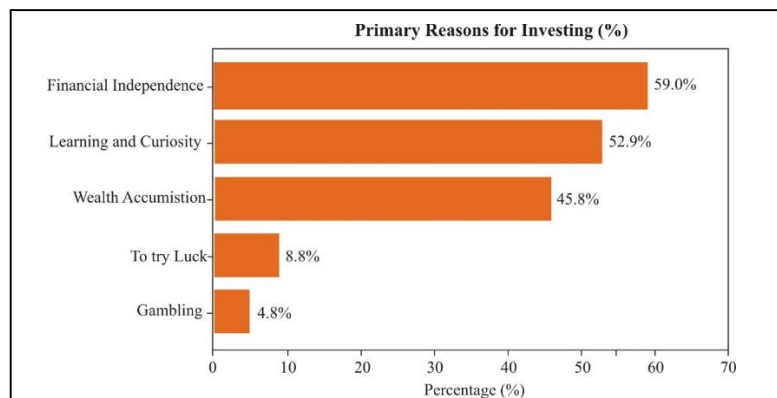


Source:- Author's Compilation.

Figure 2:- Sources to Know about the Stock Market

Family and friends are the major sources, which account for 55.1 percent of the answers, while the other category is self-study, which accounts for 50.7 percent of the answers. It can be noticed that schools/universities, which account for 38.8 percent, and formal education, which accounts for 32.6 percent, are significant sources; however, these sources are less than family and friends. The financial advisors are considered the least used source, which accounts for 8.8 percent.

8.3. What is the Primary Reason for your Interest in the Stock Market?

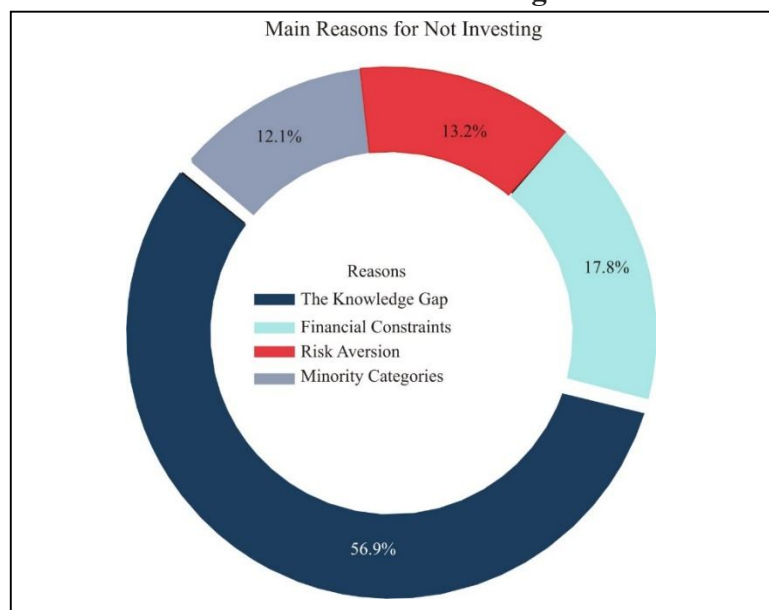


Source:- Author's Compilation.

Figure 3:- Primary Reason for your Interest in the Stock Market

The investment behavior is greatly influenced by the strategic and growth attitude. Financial freedom is the top reason, mentioned by 59 percent of the participants. Learning and curiosity come second, with 52.9 percent. Accumulating wealth is important to 45.8 percent of the investors. It should be noted that high-risk investments, like playing with luck (8.8 percent) and gambling (4.8 percent), makes up the smallest groups. Most people consider the stock exchange is a legal means to secure their future financially, not just speculate.

8.4. What is the Main Reason for Not Investing?



Source:- Author's Compilation.

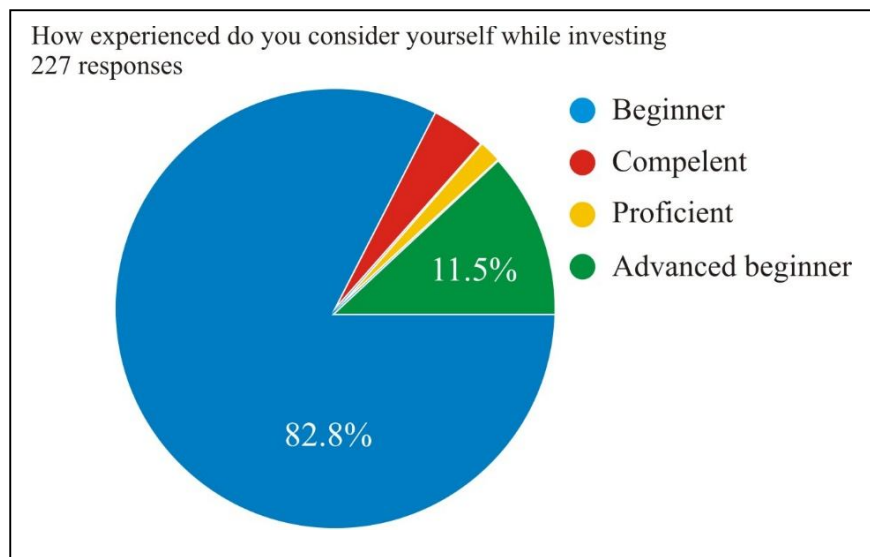
Figure 4:- Main Reason for Not Investing

- **Knowledge Gap (56.9 percent):** The largest category, with almost more than 50 percent of the respondents citing their primary factor as lack of knowledge.
- **Money Issues (17.8 percent):** Almost one-sixth of the individuals cite lack of money as a major reason.
- **Risk Issues (13.2 percent):** Fear of losing money is an emotion-related problem that keeps many of them from participating despite

understanding the functioning of the same and having the necessary cash.

- **Other Minor Factors:** Some respondents belong to categories of either being uninterested or those who have made investments previously.

8.5. How Experienced Do you Consider yourself while Investing?

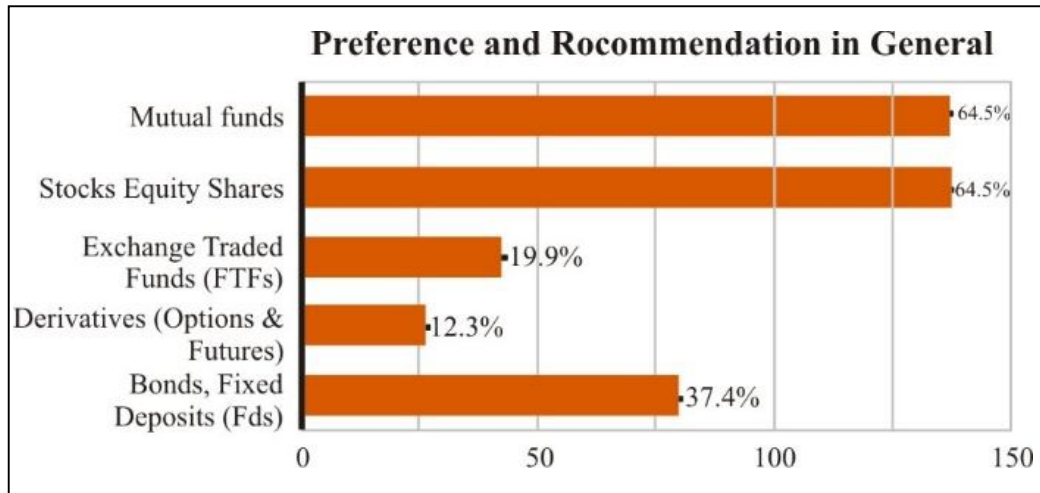


Source:- Author's Compilation.

Figure 5:- How Experienced do you Consider yourself while Investing?

- **Beginner Level (82.8 percent):** Almost all participants classify themselves at the beginner level.
- **Advanced Beginner Level (11.5 percent):** Some have progressed from being at the very start to being at a more advanced stage of beginnerhood.
- **Competent & Proficient (A Small Number):** That is how the rest 5.7 percent of the chart will be constituted. There are not many participants who consider themselves competent enough in their investing skills.

8.6. What Do you Prefer for Yourself or Recommend Others in General?



Source:- Author's Compilation.

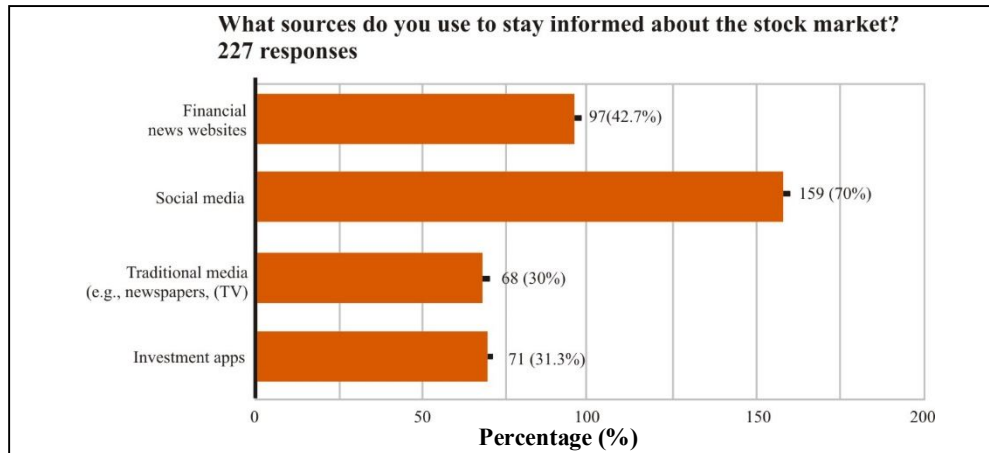
Figure 6:- Preference for Yourself or Recommending Others in General

The biggest domination is occupied by Mutual Funds & Stocks/Equity Shares which have equal weightage of 64.5 percent. It means that about two-thirds people in the sample prefer investing their money where there is a scope for generating returns through equity investments.

Bonds and Fixed Deposits (FDs) form a 37.4 percent share among all investments made by the people included in the sample. People still have the inclination towards capital preservation and earning regular interest income on their investments.

Lastly, we have Exchange Traded Funds (ETFs) forming just 19.9 percent among all investment vehicles. They cannot compete with conventional mutual funds when it comes to popularity and acceptance among the people in the sample. At last, Derivatives (Options & Futures) form only 12.3 percent and that was obvious owing to their high risk nature.

8.7. What Sources Do you Use to Stay Informed about the Stock Market?



Source:- Author's Compilation.

Figure 7:- What Sources Do you Use to Stay Informed about the Stock Market?

Results and Analysis:

- Results and Analysis of H₀₁ using t-test analysis:** The mean risk score of commerce students is 2.88 and that of non-commerce students is 2.47. Since the p-value (0.0072) is less than 0.05, we reject the null hypothesis. There is a significant difference, indicating that Commerce students at MAC are more inclined towards high-risk, high-return assets than their non-commerce peers.
- Result and Analysis of H₀₂ using Spearman Rank Correlation:**

Table 1:- Result and Analysis of H₀₂ using Spearman Rank Correlation

Statistical Metric	Value	Interpretation
Sample Size (N)	226	High representative power
Spearman's Rho	0.4400	Moderate positive correlation
p-Value	$4.07 * 10^{-12}$	Highly Significant ($p < 0.001$)

Source:- Author's Compilation.

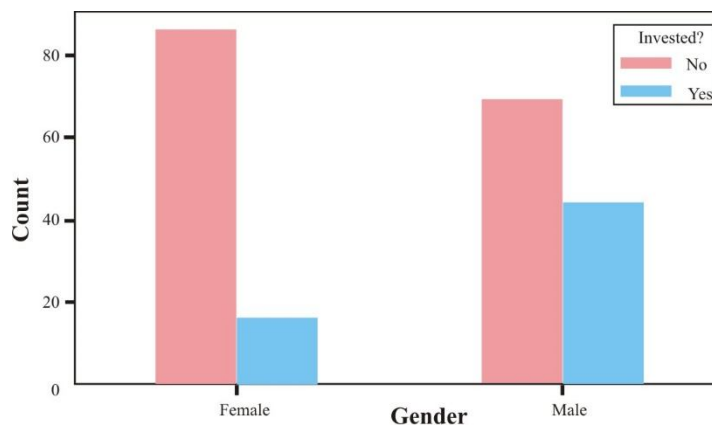
The result is highly significant. Since $p < 0.001$, we reject the Null Hypothesis with a 99.9 percent confidence level. The analysis confirms that Knowledge = Engagement. To move Maharaja Agrasen College from passive observers to active participants, the focus must be on increasing the "Literacy Score" through modules, workshops and seminars.

3. Result and Analysis of H₀₃ using Chi-square Test:

Table 2:- Result and Analysis of H₀₃ using Chi-square Test

Gender	Has Never Invested (No)	Has Invested (Yes)	Total
Female	86	16	102
Male	69	44	113
Total	155	60	215

Source:- Author's Compilation.



Source:- Author's Compilation.

Figure 8:- Stock Market Participation by Gender (Student)

Since the Chi-square Statistic (χ^2) is 13.25 and the p-value (0.0003) is significantly lower than the standard alpha level (0.05), we reject the null hypothesis. There is a statistically highly significant relationship between gender and stock market participation at Maharaja Agrasen College.

The show reveals a stark gender disparity in financial market engagement. While awareness might be high across the campus, the transition from "knowing" to "investing" is much lower among female stakeholders.

4. Results and Analysis of H₀₄ using Chi-square test: Since the Chi-square Statistic (χ^2) is 19.28 and the p-value (0.0369) is significantly lower than the standard alpha level (0.05), we reject the null hypothesis. There is a highly significant relationship between stakeholder's role and their perception of risk.

The data shows a high frequency of "Agree" and "Strongly Agree" responses among students regarding the inherent risks of the stock market. In contrast, the responses of teaching and non-teaching staff tend to cluster at the extremes either highly comfortable with market volatility or extremely cautious.

5. Results and Analysis of H₀₅ using Chi-square test:

The Variables taken are Stakeholder Role vs. Self-reported Experience (Beginner, Competent, Proficient, etc.). Since $\chi^2 = 37.30$, $p < 0.0001$, this is highly significant. The extremely low p-value ($p < 0.0001$) indicates that self-perceived expertise is not randomly distributed; it is strongly dependent on one's role. This confirms that age and career stage are the primary drivers of market experience. There is a strong dependency between one's role and their self-perceived expertise. While the vast majority of students identify as "Beginners," the Teaching staff group shows a much higher proportion of "Competent" and "Proficient" individuals.

6. Results and Analysis of H₀₆ :

Table 3:- Result and Analysis of H₀₆ using Chi-square test

Media Type	Statistical Significance (p-value)	Key Finding (Usage is driven by Stakeholder Roles)
Social Media	0.0030 (Highly Significant)	Students are primary users
Print Media	0.1232 (Not Significant)	No specific group favors print significantly more than others

Source:- Author's Compilation.

The data reveals a highly significant difference in social media consumption patterns across the stakeholder categories ($p = 0.0030$). 72 percent of students utilise social media as their primary source of information. In stark contrast, only 14 percent of Teaching Faculty report using social media for this purpose. This indicates a significant "digital-generational divide" in how financial knowledge is gathered. Unlike social media, the usage of Print Media (Traditional Media) does not show a statistically significant difference between groups ($p = 0.1232$). Because $p > 0.05$, we fail to reject the null hypothesis. This suggests that the preference for (or move away from) print media is a universal trend across the college, independent of professional role or age bracket.

7. Results and Analysis of H₀₇ using Cochran's Q Test :

This test compares the "popularity" or frequency of multiple sources (Social Media, Print, Websites, Apps) used by the same group of respondents.

Since p-value is highly significant ($p < 0.0001$). There is a definitive hierarchy in how information is consumed at MAC. Social Media is statistically the dominant source, significantly outperforming traditional print media.

9. Conclusion

The results of this study show a significant difference between how important people think the stock market is for making money and how many stakeholders at Maharaja Agrasen College actually know what they are doing.

Though the majority of the students at Maharaja Agrasen College are getting interested in being financially independent and making their money grow over time, this interest is often hampered because people do not know much about money and how it works.

When we looked at the MAC community, we saw that whether someone starts investing in the stock market or not depends a lot on their economic situation and whether they have reliable information. For students, the main problem is that they are scared because they do not know how to approach investing. For the teachers and staff at Maharaja Agrasen College, the problems are that they are busy and do not want to take risks. This study shows that just having access to the stock market is not enough; there is a critical need to be taught in a way that helps them understand how to use the things they learn in school to make investments in the stock market.

Furthermore, the study shows that institutions like Maharaja Agrasen College play a very important role in the future of the next generation. These institutions need to teach students about the stock market in a way that they understand it is not just gambling. The students and faculty must be taught how to invest by doing research and being careful, rather than just trying to make quick money. This will help them secure a financial future.

To get more people within the MAC community interested in the stock market, the school needs to do a few things. We can build a stock market awareness course for the students to get started with, and can also conduct workshops and seminars, maybe even include real-world stock market examples in the classes. As India's economy grows, it is very important for the academic stakeholders to learn about the stock market so they can make decisions. This will not only help the individuals but also help India as a whole by making the economy stronger and more stable.

10. References

1. Acharya, A., & Hamal, J. B. (2022). Relationship between Financial Literacy and Student's Stock Market Participation. *Nepalese Journal of*

- Business and Management Studies*, 1(1), 1–16. <https://doi.org/10.3126/njbms.v1i1.66167>
2. Blay, M. W., Musah, A., Ayariga, C., & Okyere, D. O. (2024). Determinants of Financial Literacy and its Effect on Stock Market Participation among University Students in Ghana. *International Journal of Economics and Financial Issues*, 14(2), 15–25. <https://doi.org/10.32479/ijefi.15613>
 3. Dr. Sanesh, P. V., & Rawat, R. (2025). A Study on the Perception of Youth about Stock Market and Investments. *International Journal of Research Publication and Reviews*, 6(5), 1-8. <https://doi.org/10.55248/gengpi.6.0525.1951>
 4. Kevat, M. K. N., & Pastagiya, D. P. K. (2026, January). A Study on Trends in Stock Market Awareness and Participation among Indian College Students: A Secondary Data Analysis. *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, 14(1), 10. <https://doi.org/10.22214/ijraset.2026.77170>
 5. K, S., & K, D. P. (2025, November-December). Perception and Participation of College Students in Stock Market Investments - A Study with Emphasis on Financial Literacy and Digital Influence. *International Journal for Multidisciplinary Research (IJFMR)*, 7(6), 12. <https://www.ijfmr.com/papers/2025/6/62478.pdf>
 6. Mishra, M., Mishra, S., & Shabaz, S. M. A. (2023). Study on the Behaviour of Youth on Investment. *TIJER – International Research Journal*, 10(1), 159–168. <https://tjier.org/tjier/papers/TIJER2301020.pdf>
 7. Nag, A. K., & Shah, J. (2022). An Empirical Study on the Impact of Gen Z Investors' Financial Literacy to Invest in the Indian Stock Market. *Indian Journal of Finance*, 16(10), 43–59. <https://doi.org/10.17010/ijf/2022/v16i10/172387>
 8. Pallavi, G. P. & Dsa, K. T. (2025). A Literature Review on the Impact of Social Media and News on Investment Decisions. *International Journal of Case Studies in Business, IT, and Education (IJCSBE)*, 9(1), 104-118. <https://doi.org/10.5281/zenodo.15876246>
 9. Riha Parvin, S. M., & Panakaje, N., (2022). Factors Influencing Stock Market Participation: A Review. *International Journal of Case Studies in Business, IT, and Education (IJCSBE)*, 6(2), 831-861. DOI: <https://doi.org/10.5281/zenodo.7499643>
 10. Sathish, K., & Aishwarya, N. (2025). A Study on Impact of Social Media on Stock Market Participation Among Young Investors. *TIJER – International Research Journal*, 12(7), a207– 214. <https://tjier.org/tjier/papers/TIJER2507020.pdf>

Assessing the Factor Structure, Reliability, and Validity of Person–Job Fit, Person–Organization Fit, Job Satisfaction, and Employee Performance among School Teachers in Darjeeling District

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Abstract

Education plays a vital role in shaping society, and teachers are at the core of this process. Understanding the factors that influence the effectiveness of teachers is therefore essential. The present study explores the factor structure, reliability, and validity of four important constructs—Person–Job Fit (PJF), Person–Organization Fit (POF), Job Satisfaction (JS), and Employee Performance (EP)—among the school teachers in the Darjeeling district of West Bengal. The research is based on primary data collected from 100 teachers through a structured questionnaire using a Likert scale. Exploratory Factor Analysis (EFA) is used to understand the underlying dimensions of these constructs, along with tests to examine their reliability and validity. The findings suggest that all four constructs are well-defined and show a clear factor structure with acceptable loadings. The results also indicate good internal consistency and establish both convergent and discriminant validity. These outcomes confirm that the measurement scales used in the study are reliable and appropriate for the context. The study highlights how a good match between teachers’ skills, values, and job requirements, along with organizational alignment, can positively influence their satisfaction and performance. It offers useful insights for educational institutions, especially in improving hiring and training practices. Overall, the research adds to the understanding of teacher-related dynamics in the Darjeeling region provides a base for future studies.

Keywords

Person Job fit (PJF), Person Organization Fit (POF), Job satisfaction, Employee performance, Reliability, and Validity.

1. Introduction

Education is the key factor in the social and economic development of the country. Teachers are the pillars of the educational domain. The performance of the teachers directly impacts the learning outcomes of the students, thereby shaping the future of society. In recent years, job satisfaction, motivation and performance have been highlighted as important factors that help in efficiency and effectiveness of employees in various sectors including education.

In the context of the Darjeeling district, West Bengal, the complex and challenging environment leads to the need to understanding the factors that affect the performance of the school teachers. There are several challenges faced by the Darjeeling district schools to multilingual diversity, inadequate infrastructure, and hilly terrain, which affects not only the satisfaction level of the teachers but also their performance level.

In view of the above scenario, the concept of organizational fit becomes highly relevant to understand the alignment between the teacher and his teaching role and the school. Two fits have emerged in this context-Person Job Fit (PJF) and Person Organization Fit (POF).

PJF is the alignment between an individual's knowledge, skills and abilities and the demands, tasks, and duties of his job. A strong PJF is expected to have improved job satisfaction and thereby enhanced performance by the school teachers. PJF has two components, including Need Supplies Fit and Demand Abilities Fit. Need Supplies Fit refers to the requirement of the employees matching the supplies by the job. Demand abilities fit refers to the abilities of the individual to meet the requirements of the job. Both the need for supplies and demand abilities fit need to match, or else it will lead to negative consequences such as job dissatisfaction, and overburdened employees.

POF, on the other hand, is the fit between the goals, values, and belief of an individual with these of the organization. A high sense of POF is expected to lead to improved commitment and satisfaction, which is crucial for the challenging environment of the Darjeeling district.

Job Satisfaction (JS) is considered another important factor which enhances the performance of the school teachers. It is the degree of positive emotional feeling that an individual experiences about a job. Job performance is directly linked to better teachers' performance, reduced absenteeism, and low turnover rates. It leads to better student outcomes.

Employee Performance (EP) refers to how well an employee carries out their tasks and duties in an organization. The good performance of the teacher leads

to the accomplishment of the goals of the schools and help the students achieve quality education in schools.

These factors—PJF, POF, JS, and EP, together play a critical role in analyzing the role of quality education among the school teachers in Darjeeling district.

2. Review of the Literature

The interplay of the fits has gained significant importance in understanding the performance of the employees, particularly in the educational domain. The concept of fits has emerged from the broader concept of Person environment Fit by Kristof (1996). PJF is the degree of match between the knowledge, abilities and skill of the employees to the tasks, demands and duties of the job. A poor PJF will lead to low motivation, reduced satisfaction, turnover, and also poor performance of the employees (Lauver & Kristof-Brown, 2001; Cable & DeRue, 2002). Rajper et al. (2020) found that both PJF and POF have a significant correlation with the EP. The study by Marianne et al. (2024) shows that the importance of strength-based leadership enhances the PJF. Trysantika et al (2023) also analysed the relationship between PJF and EP with JS as the mediator. PJF showed a positive relationship with EP as well as JS. Also, PJF was positively related to EP through JS. Kansal T. and Sengupta P.R. (2023) highlights that the fits are crucial for organizational success, as they reduce absenteeism, lower turnover intentions, and enhance employee productivity. It further emphasizes that in the education sector, a positive fit between teachers and their job and organization leads to higher teaching satisfaction and improved learning outcomes.

POF explains the degree of fit between the belief, value and culture of an individual to the values, culture, and belief system of the organization. POF is defined as the compatibility between the employees and their organizations to meet each other's needs and share a common goal (Karakurum, 2005). As the values and beliefs of an employee are directly aligned with those of the organization, there is a marked improvement in the performance of the employees (Johnson and Zimmerman, 2005).

Studies by Kansal T. and Sengupta P.R. (2024) indicate that PJF and POF significantly influence employee performance by enhancing job satisfaction and alignment with organizational values. Prior research also highlights that higher job satisfaction leads to improved attendance, reduced turnover intention, and increased productivity among employees. Safia (2015) examined the role of POF in job satisfaction and EP. The study found that there is a strong correlation between POF and JS. It also highlighted that impact of POF on

commitment and employee performance are strong. Ohlson (2018) also found that both the fits-PJF and POF are strongly related to the performance of the employees. Miller et al. (2021) revealed that if there is a strong fit between the school teachers and the institution, there will be a low intention to leave the institution. This suggests that during the recruitment and selection process, the schools should consider POF to retain good teachers in the institutions. High PJF and POF leads to greater job satisfaction (Cable & DeRue,2002).

The study by Kansal and Sengupta (2026) validates the measurement scales of PJF, POF, JS, and EP are using CFA, confirming strong reliability and validity among teachers in Darjeeling. It highlights the importance of aligning teacher skills and values with organizational needs and provides a basis for future SEM analysis. The study by Kim et al. (2025) assessed the importance of POF's significance in the presence of strong Diversity, Equity and Inclusion (DEI) practices. The study by Ellis et al. (2017) highlighted that a high degree of PJF and POF leads to JS among school teachers. It also emphasized the importance of job satisfaction, which is critical to employee performance. The study by Kansal and Sengupta (2026) identify four distinct factors— PJF, POF, JS, and EP—among government school teachers in Darjeeling, with strong reliability and valid factor structure through EFA. It also reveals that demographic variables influence teachers' perception of fit, providing a foundation for further analysis using CFA and SEM.

Though substantial studies have been done in the PJF, POF, JS, and EP, most of them have been conducted in corporate settings. There is limited research conducted in the educational domain, especially in the complex and challenging area like the Darjeeling district. The study aims to fill the gap by analyzing the psychometric properties of the four constructs-PJF, POF, JS, and employee performance among the school teachers in the Darjeeling district.

3. Objectives of the Study

- 3.1** To explore the factor structure of PJF, POF, JS, and EP using Exploratory Factor Analysis (EFA).
- 3.2** To assess the reliability of the measurement scale using Cronbach's alpha and Composite Reliability (CR).
- 3.3** To evaluate the validity of the constructs (PJF, POF, JS, and EP) through psychometric analysis.
- 3.4** To explore the correlations between the extracted factors.

4. Research Methodology

This research adopts a quantitative research design for the study. The population for this study comprises government school teachers in the Darjeeling district, West Bengal. A total of 100 teachers were selected through simple random sampling. Data was collected using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. PJF was assessed using Person-Job fit scale (Brkich, Jeff, and Carless, 2002), POF was explored using Person Organization fit Scale (Netemeyer et al. 1997), Job Satisfaction was assessed using the Job Satisfaction index (Thompson and Phua (2012) and Employee Performance was explored using Van Scotter and Motowildo (1996). The questionnaire consisted of 29 questions, which was distributed both online and offline (through personal visits). The anonymity of the responses were maintained.

Data was evaluated using Exploratory Factor Analysis in order to extract the underlying factors and reduce the dimensionality of factors. The Kaiser Meyer Olkin measure and Bartlett's Test of Sphericity were assessed to understand the suitability of the factors. Further, the reliability and validity, including both convergent and divergent validity, were assessed in the study.

5. Results

Demographic results showed that out of 100, 60 teachers were female and 40 were male. 78 were married, whereas 22 were single. All the teachers have completed their B.Ed course, with none enrolled for Ph.D studies. About 60 percent of the teachers were in the age group of above 45 years of age, 25 percent of them were between 35-45 years of age, whereas only 15 percent of the teachers were of the age below 35 years. Also, the years of service showed that about 48 percent teachers had a service of above 16 years with 30 percent showing service between 10-15 years, and 10 percent showing the service of between 5-10 years, and 12 percent showing below 5 years of service.

Exploratory factor Analysis was conducted among the constructs using SPSS Statistics. A total of 22 variables were taken into consideration with PJF-6 variables, POF- 6 variables, JS-5 variables, and EP-5 variables. The result of KMO and Bartlett's Test are shown in Table 1.

Table 1:- KMO and Bartlett's Test of Sphericity

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.877
Bartlett's Test of Sphericity – Approx. Chi-Square	1091.307
Bartlett's Test of Sphericity – df	171
Bartlett's Test of Sphericity – Sig.	p < .001

Source:- Author's Compilation.

Table 1 shows that that KMO value is 0.877, which is above 0.5. This shows that the sample is adequate for factor analysis. Also, the chi-square is 1091.307 with df 171 and significance (p<0.001) confirms the test is statistically significant and the matrix is not an identity matrix. The data is suitable for factor analysis.

Table 2:- Total Variance Explained

Component	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.847	41.298	41.298	7.847	41.298	41.298	3.669	19.308	19.308
2	2.044	10.760	52.058	2.044	10.760	52.058	3.391	17.846	37.154
3	1.759	9.260	61.318	1.759	9.260	61.318	3.356	17.666	54.820
4	1.334	7.022	68.340	1.334	7.022	68.340	2.569	13.520	68.340
5	0.752	3.960	72.300	–	–	–	–	–	–
6	0.673	3.541	75.841	–	–	–	–	–	–
7	0.610	3.211	79.052	–	–	–	–	–	–
8	0.569	2.995	82.047	–	–	–	–	–	–
9	0.549	2.891	84.938	–	–	–	–	–	–
10	0.457	2.406	87.344	–	–	–	–	–	–
11	0.408	2.149	89.492	–	–	–	–	–	–
12	0.381	2.003	91.495	–	–	–	–	–	–
13	0.340	1.787	93.282	–	–	–	–	–	–
14	0.288	1.513	94.796	–	–	–	–	–	–
15	0.253	1.333	96.129	–	–	–	–	–	–

Component	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	16	0.211	1.110	97.239	-	-	-	-	-
17	0.200	1.052	98.291	-	-	-	-	-	-
18	0.189	0.995	99.286	-	-	-	-	-	-
19	0.136	0.714	100.000	-	-	-	-	-	-

Source:- Author's Compilation.

Table 2 shows the Total Variance explained. Out of 22 factors taken into consideration, there were 19 factors that loaded in the Factor Structure which included PJF-5 factors, POF-5 factors, JS-4 factors, and EP- 5 factors. Four factors were extracted with a total variance of 68.340 percent. Employee Performance showed the eigenvalue of 7.847, Person Job Fit showed 2.044 as the eigenvalue, Person Organization Fit showed 1.759 as eigenvalue and Job Satisfaction showed 1.334 as its eigenvalue.

5.1 Rotated Component Matrix

Table 3:- Rotated Component Matrix

Components	1	2	3	4
EP1		0.749		
EP2		0.736		
EP3		0.759		
EP4		0.713		
EP5		0.774		
PJ1	0.793			
PJ2	0.714			
PJ3	0.796			
PJ4	0.740			
PJ5	0.806			
PO1			0.845	
PO2			0.703	
PO3			0.715	
PO4			0.837	
PO5			0.765	
JS1				0.611
JS3				0.626

Components	1	2	3	4
JS4				0.827
JS5				0.739

Source:- Author's Compilation.

Table 3 showed the factor loadings of 19 items extracted. To retain the relevant factors, the variables with poor loading have been discarded from the study. All items having a loading of above 0.60 have been retained. In the process of relevant factors, PJ6, PO6, and JS2 with poor factor loadings have been discarded (Hoang et al., 2006; Sit et al., 2009).

The results show that four factors have emerged with eigenvalue more than one and also the items have significantly loaded in the respective construct. In addition, the KMO measure of sample adequacy as well as Bartlett's test of Sphericity was also found to be significant. Therefore, it is inferred that the factor loadings are robust. (Churchill, 1979; Xie, 2011)

Table 4:- Cronbach's Alpha

Construct	Cronbach's Alpha
PJF	0.887
POF	0.881
JS	0.815
EP	0.863

Source:- Author's Compilation.

Table 4 shows the internal consistency of the measures for the construct. The value of Cronbach's alpha should be greater than 0.7 as recommended by the researchers. The present study has 0.887 for Person Job Fit, 0.881 for Person Organization Fit, 0.815 for Job Satisfaction and 0.863 for Employee Performance which are more than the threshold limit.

5.2 Assessment of Normality

Table 5:- Univariate and Multivariate Normality

Variable	Min	Max	Skew	C.r.	Kurtosis	C.r.
EP1	1.000	5.000	-.324	-1.323	.076	.155
EP2	2.000	5.000	.053	.216	-.391	-.798
EP3	1.000	5.000	-.216	-.881	.066	.135
EP4	1.000	5.000	.033	.133	.309	.631
EP5	2.000	5.000	.028	.113	-.323	-.658
JS1	2.000	5.000	.214	.874	-.471	-.961

Variable	Min	Max	Skew	C.r.	Kurtosis	C.r.
JS3	1.000	5.000	-.230	-.940	-.122	-.249
JS4	2.000	5.000	-.049	-.199	-.439	-.895
JS5	1.000	5.000	-.087	-.354	.017	.035
PO1	2.000	5.000	-.087	-.357	-.884	-1.805
PO2	1.000	5.000	-.182	-.743	-.223	-.455
PO3	2.000	5.000	-.326	-1.332	-.549	-1.121
PO4	1.000	5.000	-.091	-.370	-.762	-1.555
PO5	2.000	5.000	.264	1.079	-.740	-1.510
PJ1	1.000	5.000	.013	.055	.252	.515
PJ2	1.000	5.000	-.238	-.973	-.003	-.006
PJ3	1.000	5.000	-.099	-.406	-.195	-.398
PJ4	2.000	5.000	-.028	-.114	-.779	-1.590
PJ5	2.000	5.000	.126	.516	-.434	-.885
Multivariate					-8.010	-1.418

Source:- Author's Compilation.

It can be seen from Table 5 that the skewness range between -0.326 to 0.264 which fall within the acceptable range of -2 to +2. Similarly, the kurtosis value ranges between -1.332 to +1.079, which is within the acceptable range of -7 to +7. The C.R. values for skewness and kurtosis for all items are within the ± 1.96 threshold, indicating no significant departure from normality. The multivariate skewness (-8.010) and kurtosis (-1.418) indicate a reasonably normal multivariate distribution and within the threshold of less than 10 and for $cr \pm 1.96$.

5.3 Standard Loadings (SFL), Squared Multiple Correlations (SMC), Average Variance Extracted (AVE), Composite Reliability (CR)

Table 6:- Standard Loading, Squared Multiple Correlations, AVE and CR

Construct	Items	Item Reliability		AVE	CR
		SFL	SMC		
Person Job Fit	PJ1	0.798	0.637	0.617	0.889
	PJ2	0.712	0.507		
	PJ3	0.814	0.662		
	PJ4	0.764	0.583		
	PJ5	0.833	0.694		

Construct	Items	Item Reliability		AVE	CR
		SFL	SMC		
Person Organization Fit	PO1	0.946	0.895	0.606	0.883
	PO2	0.629	0.400		
	PO3	0.783	0.613		
	PO4	0.722	0.521		
	PO5	0.776	0.602		
Job Satisfaction	JS1	0.838	0.702	0.563	0.825
	JS3	0.682	0.656		
	JS4	0.695	0.465		
	JS5	0.654	0.428		
Employee Performance	EP1	0.891	0.793	0.554	0.861
	EP2	0.617	0.380		
	EP3	0.798	0.636		
	EP4	0.698	0.487		
	EP5	0.703	0.476		

Source:- Author’s Compilation.

6. Convergent Validity

There are three conditions given by Fornell and Larcker (1981) to establish the convergent validity. The first condition includes that all the factor loadings must be significant. The second condition is that the Composite Reliability (CR) must be above 0.70 (Bagozzi & Yi, 1998) were the Average Variance Extracted (AVE) of each construct should be above 0.50 (Kline 1998). As seen from Table 6, the value of CR ranges from 0.825 to 0.889 which is above the threshold limit of 0.70. Also, the AVE for POF, JS, and EP are 0.606, 0.563, 0.554 respectively which are above 0.50. It is also shown in the Table 6 shows that the CR of each construct is more than the AVE in respective constructs (Hair et al. 2013). The results supported the convergent validity of the scale.

7. Discriminant Validity

Byrne (1994) suggested that if the AVE of the construct is more than the square of its correlation, then the discriminant validity is said to be established. Table 7 shows the AVE value for each construct greater than the estimate of the corresponding inter-construct correlation. Therefore, it can be seen that the discriminant validity is established.

Table 7:- Discriminant Validity

Construct	PJF	POF	JS	EP
PJF	0.806			
POF	0.482	0.787		
JS	0.685	0.502	0.824	
EP	0.552	0.522	0.700	0.837

Source:- Author's Compilation.

8. Results and Discussion

The present study aimed to examine the psychometric properties of four constructs: Person Job Fit (PJF), Person Organization Fit (POF), Job Satisfaction (JS), Employee Performance (EP), and explore their interrelationships. Firstly, a demographic study was conducted in terms of age, gender, educational qualification, and year of service. Secondly, the Exploratory Factor Analysis was conducted, which showed that out of 22, 19 factors were taken into consideration and 3 were discarded due to irrelevant loading. KMO and Bartlett's test showed a significant result, and data was suitable for further analysis. The total variable explained was 68.34 percent which was above the threshold of 60 percent. Four factors –Person Job Fit, Person Organization Fit, Job Satisfaction and Employee Performance were taken into consideration with eigenvalue more than 1. EP accounted for highest eigenvalue 7.847, PJF accounted for 2.044 as eigenvalue, POF accounted for 1.759 eigenvalue, and JS as 1.334 eigenvalue. Further Reliability test was done, which accounted for Cronbach's alpha for PJF (0.887), POF (0.881), JS (0.815), EP (0.863). All values for Cronbach's alpha was above 0.70 indicating a good consistency. Convergent validity included AVE ranging from 0.508 to 0.617, which was above 0.50. Also, the Composite Reliability ranged from 0.825 to 0.889 confirming the convergent validity. Using the Fornell Larcker criterion, the discriminant validity was established as the inter-correlation was less than the square root of AVE of each construct. The normality test, including univariate normality as well as multivariate normality, was assessed, and the results of both univariate skewness ranged from -0.326 to +0.264, and kurtosis ranged from -1.332 to +1.079, both well within acceptable limits of -2 to +2 (skewness) and -7 to +7 (kurtosis). Multivariate skewness (-8.010) and kurtosis (-1.418) were also within acceptable limits. Thus, the data met normality assumptions.

The findings confirm the extraction of meaningful constructs—Person Job Fit, Person Organization Fit, Job Satisfaction, and Employee Performance in the context of government school teachers in the Darjeeling district. The high KMO value and test of sample adequacy suggested that the items were sufficiently correlated. The reliability test and validity test both supported that the items measured the construct effectively and the constructs are distinct from each other. The normality of data shows strong reliability of the factor extraction process. The study is instrumental to understand the importance of the interrelationship among the constructs.

9. Conclusion, Limitations, and Future Recommendations

The study examined the psychometric properties of the four constructs, including Person Job Fit, Person Organization Fit, Job Satisfaction and Employee Performance among the school teachers in the Darjeeling district. The findings showed that the model has a good factor structure, high internal consistency and strong convergent and discriminant validity.

The present study validated the importance of good fit between a teacher's knowledge, skill, and abilities with the demands of the job. It also highlighted the significance of the match of values, the belief of the teacher to that of the organization. This will lead to a high satisfaction level among the teachers and also enhanced performance.

Despite the valuable insights, there are certain limitations of the study. The study included a small sample size of 100 teachers from the Darjeeling district. The research applied a cross-sectional data. Longitudinal data may be applied in the future studies. The research focused on only government school teachers. For further studies, private school teachers may also be included. Also, other factors influencing employee performance, like work-life balance, have not been considered in the present study. This could be incorporated into the future studies.

10. References

1. Bagozzi, R. P., & Yi, Y. (1988). On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
2. Brkich, M., Jeffs, D. & Carless, S. A. (2002). A Global Self-report Measure of Person-Job Fit. *European Journal of Psychological Assessment*
3. Byrne, B. M. (1994). *Structural Equation Modeling with EQS and EQS /Windows: Basic Concepts, Applications, and Programming*. Sage.

4. Cable, D. M., & DeRue, D. S. (2002). The Convergent and Discriminant Validity of Subjective fit Perceptions. *Journal of Applied Psychology*, 87(5), 875.
5. Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.
6. Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate Data Analysis: A global Perspective* (Vol. 7).
7. Kansal, T., & Sengupta, P. R. (2024). Impact of Person Job Fit, Person Organisation Fit and Job Satisfaction on Employee Performance. *Journal of Organisation & Human Behaviour*, 13(1).
8. Karakurum, M. (2005). *The Effects of Person-organization Fit on Employee Attitudes and Behaviors: The Mediating Role of Psychological Needs* [Unpublished master's thesis]. Middle East Technical University, Ankara, Turkey.
9. Kim, H. J., Zhang, L., Seong, J. Y., & Hong, D. S. (2025). Does Person-organization Fit Facilitate or Suppress Positive Deviance? Exploring the Moderating Effect of Employees' DEI (diversity, equity and inclusion). *Management Decision*, 1-16.
10. Hoang, D. T., Igel, B., & Laosirihongthong, T. (2006). The Impact of Total Quality Management on Innovation. *International Journal of Quality & Reliability Management*.
11. Kline, R. B. (1998). Software Review: Software Programs for Structural Equation Modeling: Amos, EQS, and LISREL. *Journal of Psycho-educational Assessment*, 16(4), 343-364.
12. Kristof, A. L. (1996). Person-organization Fit: An Integrative Review of its Conceptualizations, Measurement, and Implications. *Personnel Psychology*, 49 (1), 1-49.
13. Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of Individuals' Fit at Work: A Meta-analysis of Person-job, Person-organization, Person-group, and Person-supervisor Fit. *Personnel Psychology*, 58(2), 281-342.
14. Lauver, K. J., & Kristof-Brown, A. (2001). Distinguishing between Employees' Perceptions of Person-job and Person-organization Fit. *Journal of Vocational Behavior*, 59(3), 454-470.

15. Miller, J. M., & Youngs, P. (2021). *Person-organization Fit and First-year Teacher Retention in the United States*. *Teaching and Teacher Education*, 97, 103226.
16. Netemeyer, R. G., Boles, J. S., MacKee, D. O., & MacMurrian, R. (1997). An Investigation into the Antecedents of Organizational Citizenship Behaviors in a Personal Selling Context. *Journal of Marketing*, 61, 85-98.
17. Ohlsson, S. (2018). *Person-job Fit and Person-organization Fit among Start-up Employees and their Relation to Job Satisfaction and Intention to Leave*, Master's Dissertation , Lund University.
18. Rajper, Z. A., Ghumro, I. A., & Mangi, R. A. (2020). The Impact of Person Job Fit and Person Organization Fit on Employee Job Performance: A Study among Employee of Services Sector. *Abasyn University Journal of Social Sciences*, 13(1).
19. Sit, W. Y., Ooi, K. B., Lin, B., & Chong, A. Y. L. (2009). *TQM and Customer Satisfaction in Malaysia's Service Sector*. *Industrial Management & Data Systems*.
20. Tanisha Kansal, Prof. Palas R. Sengupta (2026). An Exploratory Factor Analysis of Person Job Fit, Person Organization Fit, Job Satisfaction and Employee Performance among School Teachers in the Darjeeling district of West Bengal, 10(1), <https://doi.org/10.47772/IJRIS.2026.10100610>.
21. Tanisha Kansal and Palas R Sengupta. Confirmatory Factor Analysis of Standardized Scales Measuring Person–Organization Fit, Person–Job Fit, Job Satisfaction, and Employee Performance: An Empirical Study Among the School Teachers in Darjeeling District of West Bengal. *Int. J. Res. Manage.* 2026;8(3):11-15. DOI: 10.33545/26648792.2026.v8.i3a.653
22. Thompson, E. R., & Phua, F. T. (2012). A Brief Index of Affective Job Satisfaction. *Group & Organization Management*, 37(3), 275-307.
23. Trysantika, Salsabila & Frianto, Agus & Kristyanto, Anang & Fazlurrahman, Hujjatullah. (2023). The Effect of Person-Job Fit on Employee Performance through Job Satisfaction as an Intervening Variable. *Social Science Studies*. 3. 470-484. 10.47153/sss36.7892023.
24. Van Woerkom, M., Bauwens, R., Gürbüz, S., & Brouwers, E. (2024). Enhancing Person-job fit: Who Needs a Strengths-based Leader to Fit their Job?. *Journal of Vocational Behavior*, 154, 104044.
25. Van Scotter, J. R., & Motowidlo, S. J. (1996). Interpersonal Facilitation and Job Dedication as Separate Facets of Contextual Performance. *Journal of Applied Psychology*, 81(5), 525.

Digital Brain Rot and Workplace Productivity- The Mediating Role of Cognitive Fatigue among Urban Professionals

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Abstract

The rapid proliferation of smartphone usage in contemporary workplaces has given rise to a phenomenon conceptualized in this study as Digital Brain Rot, referring to excessive and low-value digital engagement that impairs cognitive functioning. This research investigates the impact of Digital Brain Rot on task performance degradation among early-career management professionals through a mediated-moderated framework. Drawing on Cognitive Load Theory, Ego Depletion Theory, Media Multitasking Theory and Attention Restoration Theory, the study examines how smartphone-induced cognitive strain—manifested through cognitive load, ego depletion, and multitasking—translates into performance outcomes via cognitive fatigue, while accounting for the moderating roles of self-regulation and work environment.

Data were collected from 312 early-career professionals across diverse corporate sectors and analyzed using SMART-PLS-Structural Equation Modelling (SEM) and SPSS.26. The findings reveal that Digital Brain Rot significantly increases cognitive load, ego depletion, and multitasking behavior, all of which contribute to heightened cognitive fatigue. In turn, cognitive fatigue exerts a strong negative effect on task performance. Mediation analysis confirms that cognitive fatigue serves as a key explanatory mechanism, while moderation results indicate that self-regulation mitigates, and digitally intensive work environments amplify the adverse effects.

The study contributes by introducing and empirically validating Digital Brain Rot as a novel construct and offering a comprehensive modelling linking digital behavior to cognitive and organizational outcomes. The findings underscore the need for organizations to manage digital engagement to sustain cognitive efficiency and productivity.

Keywords

Digital brain rot, Cognitive fatigue, Smartphone overuse, Task performance degradation, Media multitasking, and Workforce productivity.

1. Introduction

The contemporary workplace is increasingly shaped by pervasive digital connectivity, with smartphones functioning as central nodes for communication, coordination, and information exchange. While these technologies have enhanced accessibility and responsiveness, a growing body of research highlights their unintended cognitive and behavioral consequences, particularly in the form of attention fragmentation, reduced cognitive control, and performance inefficiencies (Gazzaley & Rosen, 2016; Ward et al., 2017; Duke & Montag, 2017; Rosen et al., 2013). The constant influx of notifications, emails, and social media interactions has created an environment of continuous partial attention, wherein individuals struggle to sustain focus on cognitively demanding tasks (Mark et al., 2008; Mark et al., 2012; Leroy, 2009). Within this context, the present study introduces the construct of Digital Brain Rot, defined as a progressive deterioration of cognitive efficiency resulting from chronic exposure to low-value digital stimuli and excessive smartphone engagement.

The theoretical foundation of this phenomenon can be traced to Cognitive Load Theory and related attention-based frameworks, which posit that human cognitive capacity is inherently limited (Sweller, 1988; Kahneman, 1973; Broadbent, 1958). When individuals are exposed to excessive or irrelevant information, working memory becomes overloaded, leading to diminished processing efficiency and impaired task execution (Karr-Wisniewski & Lu, 2010; Hockey, 2013). In digitally intensive environments, this overload is exacerbated by the simultaneous processing of multiple information streams, resulting in what has been termed information fatigue syndrome (Meijman & Mulder, 1998; Tarafdar et al., 2007). Empirical studies have consistently shown that information overload negatively affects decision-making quality, increases cognitive strain, and reduces productivity (Karr-Wisniewski & Lu, 2010; Mark et al., 2008; Xie et al., 2017). However, existing research has predominantly examined task-related cognitive load, with relatively limited attention to digitally induced cognitive overload as a behavioral phenomenon.

Complementing this perspective, Ego Depletion Theory provides a robust explanation for the self-regulatory challenges associated with excessive smartphone use (Baumeister et al., 1998; Baumeister & Vohs, 2007; Tice & Baumeister, 1997). The act of resisting digital distractions, managing notifications, and switching between tasks requires continuous self-control, which depletes finite psychological resources over time. This depletion impairs individuals' ability to sustain attention, regulate impulses, and maintain goal-directed behavior (Baumeister & Vohs, 2007; Muraven & Baumeister, 2000). In organizational contexts, such as depletion has been linked to reduced persistence, impaired judgment, and lower task performance (Lim & Teo, 2005; Tarafdar et al., 2007). Despite its relevance, the role of ego depletion in digitally saturated work environments remains insufficiently integrated into performance-oriented research.

A further dimension of digital behavior is captured by Media Multitasking Theory (Becker et al., 2013), which examines the cognitive implications of engaging with multiple media streams simultaneously (Ophir et al., 2009; Wang & Tchernev, 2012). Although multitasking (Cain & Mitroff, 2011) is often perceived as a productivity-enhancing strategy, empirical evidence suggests the contrary. Frequent multitaskers exhibit reduced attentional control, increased susceptibility to distraction, and lower working memory capacity (Ophir et al., 2009; Cain & Mitroff, 2011; Becker et al., 2013). Additionally, task-switching incurs cognitive costs, including time delays and error accumulation, thereby undermining performance efficiency (Leroy, 2009; Mark et al., 2008). These findings indicate that multitasking contributes not only to time inefficiency but also to the qualitative degradation of cognitive processing.

A central mechanism linking these cognitive disruptions is cognitive fatigue, defined as a state of mental exhaustion resulting from prolonged cognitive effort and overstimulation (Hockey, 2013; Meijman & Mulder, 1998). Cognitive fatigue has been associated with decreased vigilance, slower reaction times, impaired memory, and increased error rates (Hockey, 2013; Sonnentag & Fritz, 2007). In digitally intensive work environments, the absence of adequate recovery opportunities further exacerbate fatigue accumulation, consistent with Attention Restoration Theory, which emphasizes the need for cognitive recovery to restore attentional resources (Kaplan, 1995; Sonnentag & Fritz, 2007). While prior research has acknowledged fatigue as an outcome of cognitive strain, its role as a mediating mechanism between digital behavior and task performance remains underdeveloped.

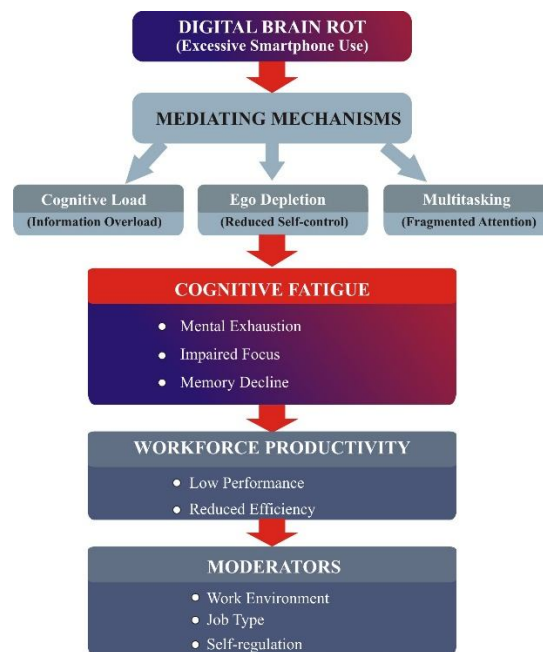
Importantly, the effects of digital engagement are not uniform but are shaped by individual and contextual boundary conditions. Self-regulation has been identified as a critical individual capability that enables individuals to manage distractions and maintain focus in high-demand environments (Baumeister & Vohs, 2007; Muraven & Baumeister, 2000). Similarly, work environments characterized by high levels of interruptions, multitasking demands, and digital intensity can amplify cognitive strain and hinder recovery processes (Mark et al., 2012; Tarafdar et al., 2007). These factors suggest that the relationship between digital behavior and performance is contingent upon both personal capacities and organizational contexts, necessitating a moderated analytical approach.

Despite the growing body of literature on digital distraction, technostress, and smartphone overuse (Tarafdar et al., 2007; Duke & Montag, 2017; Montag & Walla, 2016; Weinstein & Lejoyeux, 2010; Young, 1998), existing research remains fragmented, often examining isolated constructs without integrating them into a comprehensive theoretical framework. Moreover, there is a notable lack of empirical studies focusing on early-career management professionals, a group particularly susceptible to digital overload due to high performance expectations, continuous connectivity, and intensive communication demands.

Addressing these gaps, the present study develops and empirically tests a mediated–moderated structural equation modelling that conceptualizes Digital Brain Rot as a multidimensional construct influencing task performance degradation through cognitive fatigue, while accounting for the moderating roles of self-regulation and work environment. By synthesizing insights from multiple theoretical perspectives and validating them within a real-world organizational context, this study contributes to a deeper understanding of how pervasive digital engagement reshapes cognitive functioning and organizational performance in the modern workplace.

The conceptual foundation of this study is rooted in an interdisciplinary synthesis of cognitive psychology, organizational behavior, and digital media studies, with a focus on understanding how excessive smartphone engagement contributes to what is conceptualized as *Digital Brain Rot*—a progressive decline in cognitive efficiency caused by continuous exposure to low-value digital stimulation. The framework draws upon four core theoretical perspectives: Cognitive Load Theory, Attention Restoration Theory, Ego Depletion Theory and Media Multitasking Theory, which collectively explain the cognitive and behavioral consequences of digital overuse in contemporary work environments.

Within this framework, Digital Brain Rot is conceptualized as the independent latent construct, encompassing excessive smartphone usage characterized by prolonged screen time, frequent app-switching behavior, passive consumption of short-form content such as reels and videos, and persistent notification-driven interruptions. This condition reflects chronic cognitive overstimulation that gradually diminishes mental sharpness and attentional stability. Cognitive fatigue operates as the mediating variable, defined by mental exhaustion, reduced attentional capacity, and a decline in working memory efficiency. It serves as the critical mechanism through which digital overload translates into impaired performance outcomes. The dependent variable, workforce productivity, is assessed through indicators such as task completion efficiency, error rates, focus duration, and self-reported productivity levels. Additionally, the modelling incorporates moderating variables, including work environment (remote versus office settings), nature of the job (analytical versus routine tasks), digital literacy, and individual self-regulation ability, all of which influence the strength and direction of the relationships within the modelling.



Source:- Author's Compilation.

Figure 1:- Theoretical Framework of Digital Brain Rot and Workforce Productivity

The conceptual framework illustrates the relationship between excessive smartphone use, termed “Digital Brain Rot,” and workforce productivity in urban India. The framework proposes that excessive smartphone engagement leads to several mediating mechanisms, namely cognitive load, ego depletion, and multitasking. Cognitive load emerges through information overload, ego depletion reflects reduced self-control, and multitasking results in fragmented attention. These factors collectively contribute to cognitive fatigue, characterized by mental exhaustion, impaired focus, and memory decline. The framework further demonstrates that cognitive fatigue negatively affects workforce productivity by reducing employee performance and efficiency. Additionally, the relationship is moderated by factors such as work environment, job type, and self-regulation, which may either intensify or mitigate the adverse impact of digital brain rot on productivity outcomes. Overall, the framework provides a structured explanation of how smartphone-induced cognitive strain influences professional effectiveness in contemporary workplaces.

The theoretical linkages further strengthen the framework. According to Cognitive Load Theory, human working memory has limited processing capacity, and excessive smartphone use introduces extraneous cognitive load through constant notifications and information overload, thereby reducing the cognitive resources available for meaningful task processing and ultimately lowering productivity. Attention Restoration Theory posits that attention is a finite resource requiring periodic restoration; however, continuous digital engagement inhibits this recovery process, leading to sustained attention fatigue and diminished work performance. From the perspective of Ego Depletion Theory, self-control is a limited resource that becomes depleted through frequent smartphone checking, resulting in reduced discipline, increased procrastination, and weakened persistence in cognitively demanding tasks. Furthermore, Media Multitasking Theory explains that simultaneous engagement with multiple digital media streams fragments attention and reduces the capacity for deep work, thereby increasing error rates and diminishing overall cognitive control. Integrating these perspectives, the theoretical model proposes a clear causal pathway in which Digital Brain Rot, driven by smartphone overuse, leads to cognitive overload, attention fragmentation, and ego depletion. These factors collectively result in cognitive fatigue, which in turn reduces workforce productivity. This relationship is

further moderated by contextual and individual factors such as work environment, job complexity, and self-regulation capacity, making the model both comprehensive and adaptable to real-world organizational settings, particularly within the dynamic and digitally intensive context of urban India.

Table 1:- Core Constructs and Operational Definitions

Construct	Type	Definition	Key Indicators
Digital Brain Rot	Independent Variable	Cognitive decline resulting from excessive smartphone engagement	Screen time, app switching, notifications
Cognitive Fatigue	Mediating Variable	Mental exhaustion reducing cognitive efficiency	Attention loss, memory decline
Workforce Productivity	Dependent Variable	Efficiency and effectiveness in work tasks	Performance, efficiency, focus
Self-regulation	Moderating Variable	Ability to control smartphone impulses	Discipline, attention control

Source:- Author's Compilation.

Table 1 presents the major constructs used in the study along with their conceptual roles, operational definitions, and key indicators for measurement. Digital Brain Rot is treated as the independent variable representing cognitive decline caused by excessive smartphone engagement, measured through indicators such as screen time, app-switching behavior, and notification exposure. Cognitive Fatigue functions as the mediating variable and reflects mental exhaustion, reduced attention span, and memory decline resulting from digital overstimulation. Workforce Productivity is the dependent variable that assesses employees' work efficiency, task performance, and focus levels. Self-regulation is incorporated as the moderating variable, indicating an individual's ability to control smartphone-related impulses and maintain attention discipline. Together, these constructs establish the conceptual and analytical foundation of the study defines how smartphone-induced cognitive behaviors influence productivity outcomes among early-career professionals.

2. Review of the Literature

The review of the literature for the present study was selected on the basis of conceptual relevance, theoretical alignment, and empirical contribution to understanding the relationship between excessive smartphone use and workforce productivity. Since the concept of "Digital Brain Rot" is relatively emergent in academic discourse, the literature review primarily draws upon

established theories and constructs that explain the cognitive and behavioral consequences of digital overexposure. Studies related to digital addiction, technostress, information overload, media multitasking, ego depletion, cognitive fatigue, and task performance were carefully examined to build a strong interdisciplinary foundation for the proposed framework. The criteria for inclusion of literature were based on five major considerations. First, studies addressing excessive smartphone usage and digital engagement were selected to understand how continuous exposure to digital platforms affects cognitive functioning and attention processes. Second, literature grounded in cognitive and behavioral theories such as Cognitive Load Theory, Ego Depletion Theory, Attention Restoration Theory, and the Effort-Recovery modelling was incorporated to provide theoretical support for the mediating mechanisms proposed in the framework. Third, empirical studies examining information overload, multitasking, interruptions, technostress, and cognitive fatigue were reviewed because these constructs directly explain the pathways through which digital behavior may influence employee productivity. Fourth, research focusing on workplace outcomes such as efficiency, task performance, attention quality, and productivity degradation was included to establish organizational relevance. Finally, studies addressing moderating factors such as self-regulation and the work environment were selected to explain the boundary conditions that may strengthen or weaken the observed relationships.

The literature was further screened on the basis of scholarly credibility, citation frequency, theoretical significance, and relevance to contemporary digital work environments. Preference was given to peer-reviewed journal articles, seminal theoretical works and recent empirical studies published in the domains of organizational behavior, psychology, information systems, and digital media studies. The selected literature collectively helped in identifying existing research gaps, particularly the absence of an integrated framework connecting digital overuse, cognitive mechanisms, fatigue, and workforce productivity, thereby justifying the conceptual foundation of the present study.

2.1. Digital Engagement and Emerging Cognitive Dysfunction

The rapid proliferation of smartphones and digital platforms has fundamentally transformed how individuals interact with information and perform work-related tasks. While digital technologies enhance accessibility and efficiency, an expanding body of literature highlights their unintended consequences on cognitive functioning and behavioral out-

comes (Gazzaley & Rosen, 2016; Ward et al., 2017; Montag & Walla, 2016; Duke & Montag, 2017). Continuous exposure to digital stimuli, particularly low-value content such as social media feeds and notifications, has been associated with reduced attention span, impaired memory, and diminished cognitive control (Rosen et al., 2013; Bavelier et al., 2010; and Ophir et al., 2009).

The concept of Digital Brain Rot, though emergent, aligns with broader discussions on digital addiction, technostress, and cognitive overload (Young, 1998; Weinstein & Lejoyeux, 2010; Tarafdar et al., 2007). Studies on smartphone overuse indicates that frequent checking behavior and compulsive engagement disrupt sustained attention and increase mental fatigue (Xie et al., 2017; Duke & Montag, 2017). Furthermore, the mere presence of smartphones has been shown to reduce available cognitive capacity, a phenomenon termed “brain drain” (Ward et al., 2017). Despite these insights, existing literature often treats these effects in isolation, lacking a unified construct that captures the cumulative cognitive consequences of excessive digital engagement, thereby necessitating the conceptualization advanced in the present study.

2.2. Cognitive Load and Information Overload in Digital Contexts

The relationship between information processing and cognitive performance is well established within Cognitive Load Theory, which posits that human working memory has a limited capacity and is easily overwhelmed by excessive information (Sweller, 1988; Kahneman, 1973; Broadbent, 1958). In organizational settings, digital technologies have intensified information flows, leading to information overload, a condition characterized by excessive data input that exceeds cognitive processing capabilities (Karr-Wisniewski & Lu, 2010; Eppler & Mengis, 2004).

Empirical research suggests that information overload negatively affects decision quality, task accuracy, and productivity (Karr-Wisniewski & Lu, 2010; Mark et al., 2008; Tarafdar et al., 2007). Frequent interruptions caused by emails and notifications further exacerbate cognitive load by forcing individuals to switch attention between tasks, thereby increasing processing time and error rates (Mark et al., 2012; Leroy, 2009). Additionally, digital environments often present fragmented and rapidly changing information, which imposes extraneous cognitive load and reduces deep processing (Hockey, 2013; Meijman & Mulder, 1998). While

these studies highlight the detrimental effects of overload, they largely focus on task-induced demands, leaving a gap in understanding how behavioral patterns of smartphone use contribute to sustained cognitive strain.

2.3. Ego Depletion and Self-regulation in Digital Behavior

Ego Depletion Theory provides a critical lens for understanding the self-regulatory challenges associated with digital engagement (Baumeister et al., 1998; Baumeister & Vohs, 2007). The theory posits that self-control operates as a finite resource that becomes depleted through repeated exertion. In the context of smartphone use, individuals are required to continuously regulate impulses to check notifications, respond to messages, and engage with digital content, thereby consuming self-regulatory resources (Tice & Baumeister, 1997; Muraven & Baumeister, 2000).

Research indicates that ego depletion leads to reduced persistence, impaired decision-making, and increased susceptibility to distractions (Baumeister & Vohs, 2007; Lim & Teo, 2005). In workplace contexts, depleted individuals are more likely to engage in counterproductive behaviors such as cyberloafing and task avoidance (Lim & Teo, 2005; Tarafdar et al., 2007). Moreover, recent studies suggest that digital environments intensify self-regulatory demands due to constant connectivity and expectation of immediate responsiveness (Montag & Walla, 2016; Duke & Montag, 2017). However, the integration of ego depletion within modellings of digital-induced cognitive fatigue and performance outcomes remains underdeveloped.

2.4. Media Multitasking and Attention Fragmentation

The rise of digital technologies has normalized media multitasking, wherein individuals simultaneously engage with multiple digital streams (Ophir et al., 2009; Wang & Tchernev, 2012). Although often perceived as a skill, extensive research indicates that multitasking impairs cognitive control and reduces efficiency. Heavy media multitaskers demonstrate lower ability to filter irrelevant information, increased distractibility, and diminished working memory capacity (Ophir et al., 2009; Cain & Mitroff, 2011).

Task-switching, a core component of multitasking, incurs significant cognitive costs, including time delays, increased mental effort, and higher

likelihood of errors (Leroy, 2009; Mark et al., 2008). Furthermore, multitasking disrupts deep work processes by fragmenting attention and preventing sustained cognitive engagement (Gazzaley & Rosen, 2016; Becker et al., 2013). Studies have also linked multitasking to psychological outcomes such as stress and reduced well-being (Becker et al., 2013). Despite these findings, the pathway through which multitasking contributes to cognitive fatigue and subsequent performance degradation has not been sufficiently explored in integrated modellings.

2.5. Cognitive Fatigue as a Central Mechanism

Cognitive fatigue represents a critical outcome of prolonged cognitive effort and overstimulation, characterized by reduced alertness, impaired concentration, and diminished mental efficiency (Hockey, 2013; Meijman & Mulder, 1998). In organizational contexts, fatigue has been associated with decreased productivity, increased error rates, and compromised decision-making (Sonntag & Fritz, 2007). Digital environments exacerbate fatigue by maintaining continuous cognitive engagement without adequate recovery opportunities (Mark et al., 2012; Tarafdar et al., 2007).

The Effort-recovery modelling and Attention Restoration Theory suggest that sustained cognitive activity without sufficient recovery leads to resource depletion and performance decline (Meijman & Mulder, 1998; Kaplan, 1995). Empirical studies have shown that interruptions and multitasking accelerate fatigue accumulation, further impairing cognitive functioning (Bavelier et al., 2010), functioning (Mark et al., 2008; Hockey, 2013). However, existing research has largely treated fatigue as an outcome variable rather than positioning it as a mediating mechanism linking digital behavior to performance, thereby limiting theoretical integration.

2.6. Task Performance Degradation in Digital Work Environments

Task performance in modern organizations is increasingly influenced by cognitive and behavioral factors associated with digital engagement. Research indicates that interruptions, multitasking, and cognitive overload lead to reduced efficiency, increased errors, and lower output quality (Mark et al., 2008; Leroy, 2009). Additionally, technostress arising from excessive technology use has been shown to negatively affect productivity and job satisfaction (Tarafdar et al., 2007).

The concept of task performance degradation extends beyond reduced output to include qualitative aspects such as decision accuracy, attention to detail, and cognitive precision. Studies have demonstrated that cognitive fatigue significantly impairs these dimensions, leading to suboptimal performance outcomes (Hockey, 2013; Sonnentag & Fritz, 2007). Despite these insights, there remains a need for modellings that explicitly link digital behavior, cognitive mechanisms, and performance outcomes within a unified framework.

2.7. Moderating Role of Self-regulation and Work Environment

The impact of digital engagement on cognitive and performance outcomes is influenced by both individual and contextual factors. Self-regulation has been identified as a key individual capability that enables individuals to manage distractions and maintain focus (Baumeister & Vohs, 2007; Muraven & Baumeister, 2000). Individuals with higher self-regulation are better equipped to resist digital temptations and sustain attention, thereby mitigating the negative effects of cognitive fatigue.

Similarly, the work environment plays a crucial role in shaping cognitive experiences. Environments characterized by high levels of interruptions, multitasking demands, and digital intensity exacerbate cognitive strain and hinder recovery (Mark et al., 2012; Tarafdar et al., 2007). Conversely, structured and low-distraction environments facilitate sustained attention and improved performance (Sonnentag & Fritz, 2007). These findings highlight the importance of considering boundary conditions in modellings of digital behavior and performance.

2.8. Research Gap and Theoretical Positioning

Despite extensive research on cognitive load, ego depletion, multitasking, and technostress, the literature remains fragmented, with limited integration across these domains. Few studies have simultaneously examined these constructs within a comprehensive, mediated–moderated framework that captures the cognitive pathways linking digital behavior to performance outcomes. Furthermore, the concept of Digital Brain Rot has not been systematically operationalized or empirically validated within organizational research.

Additionally, there is a notable lack of focus on early-career management professionals, a group uniquely positioned at the intersection of high digital

engagement and performance pressure. Addressing these gaps, the present study integrates multiple theoretical perspectives to develop a holistic modelling of digital cognitive dysfunction, positioning cognitive fatigue as a central mechanism and incorporating key moderating variables.

2.9. Synthesis of Review of the Literature

In summary, the literature suggests that excessive digital engagement contributes to cognitive overload, self-regulatory depletion, and attention fragmentation, all of which impair cognitive functioning and performance. However, the absence of an integrated framework limits the ability to fully understand these relationships. By synthesizing diverse theoretical perspectives and introducing the construct of Digital Brain Rot, the present study advances a comprehensive and empirically testable modelling that bridges cognitive processes and organizational outcomes in the digital age.

3. Objectives of the Study

The present study aims to systematically investigate the cognitive and behavioral consequences of excessive smartphone usage, conceptualized as Digital Brain Rot, and its impact on workforce productivity.

- 3.1.** To examine the effect of Digital Brain Rot on key cognitive and behavioral mechanisms, namely cognitive load, ego depletion, and multitasking behavior.
- 3.2.** To analyze the influence of cognitive load, ego depletion, and multitasking on cognitive fatigue.
- 3.3.** To assess the impact of cognitive fatigue on workforce productivity in terms of performance and efficiency.
- 3.4.** To evaluate the mediating role of cognitive fatigue in the relationship between cognitive mechanisms and workforce productivity.
- 3.5.** To investigate the moderating effects of work environment, job type, and self-regulation on the relationship between cognitive fatigue and workforce productivity.
- 3.6.** To develop and empirically validate a mediated–moderated modelling of Digital Brain Rot and productivity outcomes.

4. Research Questions

The study is guided by the following research questions:

- 4.1.** How does Digital Brain Rot influence cognitive load, ego depletion, and multitasking behavior?

- 4.2. What is the relationship between cognitive load, ego depletion, multitasking, and cognitive fatigue?
- 4.3. To what extent does cognitive fatigue affect workforce productivity?
- 4.4. Does cognitive fatigue act as a mediating mechanism between digital behavior (brain rot) and productivity outcomes?
- 4.5. How do contextual and individual factors such as work environment, job type, and self-regulation alter the relationship between cognitive fatigue and productivity?
- 4.6. Can a comprehensive mediated–moderated framework explain the decline in productivity due to excessive digital engagement?

5. Hypotheses Development

The hypotheses are structured into direct effects, mediation, and moderation, consistent with advanced empirical research design.

5.1 Direct Effects of Digital Brain Rot

- H1:** Digital Brain Rot has a significant positive effect on cognitive load.
- H2:** Digital Brain Rot has a significant positive effect on ego depletion.
- H3:** Digital Brain Rot has a significant positive effect on multitasking behavior.

5.2 Effects on Cognitive Fatigue

- H4:** Cognitive load has a significant positive effect on cognitive fatigue.
- H5:** Ego depletion has a significant positive effect on cognitive fatigue.
- H6:** Multitasking behavior has a significant positive effect on cognitive fatigue.

5.3 Outcome Relationship

- H7:** Cognitive fatigue has a significant negative effect on workforce productivity.

5.4 Mediation Hypotheses

- H8:** Cognitive fatigue mediates the relationship between cognitive load and workforce productivity.
- H9:** Cognitive fatigue mediates the relationship between ego depletion and workforce productivity.
- H10:** Cognitive fatigue mediates the relationship between multitasking behavior and workforce productivity.

5.5 Moderation Hypotheses

H11: Work environment moderates the relationship between cognitive fatigue and workforce productivity.

H12: Self-regulation moderates the relationship between cognitive fatigue and workforce productivity, such that higher self-regulation weakens the negative impact.

This study proposes a mediated–moderated structural equation modelling, wherein cognitive fatigue serves as a mediator between digital cognitive strain and productivity, while contextual and individual factors act as boundary conditions.

6. Research Design and Methodology

6.1. Research Design

The present study adopted a quantitative, explanatory, and theory-driven research design to examine the impact of Digital Brain Rot operationalized as excessive and low-value smartphone engagement on task performance degradation among early-career management professionals. Grounded in Cognitive Load Theory, Ego Depletion Theory, Media Multitasking Theory, and Attention Restoration Theory, the study employed a mediated–moderated structural equation framework, wherein cognitive fatigue was modelled as a mediating variable linking cognitive mechanisms (cognitive load, ego depletion, and media multitasking) to task performance outcomes, while self-regulation and work environment were treated as moderating variables influencing the fatigue–performance relationship. A cross-sectional survey design was utilized, and primary data were collected from a sample of 400, where 312 early-career professionals (0–5 years of experience) holding MBA or equivalent qualifications and employed across sectors such as consulting, banking, IT services, and FMCG were obtained. Respondents were selected using a combination of purposive and snowball sampling techniques, ensuring diversity in job roles and organizational contexts.

Data were gathered through a structured, self-administered questionnaire distributed via digital platforms including LinkedIn, email networks, and alumni groups. All constructs were measured using multi-item reflective scales adapted from established literature, with responses recorded on a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” Prior to full-scale data collection, a pilot study (n = 42) was

conducted to assess item clarity and reliability, resulting in minor refinements to the instrument. To mitigate common method bias, procedural remedies such as respondent anonymity, randomization of items, and variation in scale anchors were implemented. The collected data were analyzed using SPSS 26 and SmartPLS 4, following a two-step approach. Preliminary analyses included data screening for missing values, outliers, and normality, along with descriptive statistics and Harman's single-factor test.

The measurement modelling was evaluated for reliability and validity, with Cronbach's alpha and composite reliability values exceeding the recommended threshold of 0.70, and average variance extracted (AVE) values above 0.50, confirming convergent validity. Discriminant validity was established using both the Fornell–Larcker criterion and the HTMT ratio. Subsequently, the structural equation modelling was assessed using bootstrapping with 5,000 resamples to test the significance of path coefficients. The results indicated satisfactory explanatory power (R^2 values) and predictive relevance (Q^2). Mediation effects of cognitive fatigue were examined through indirect path analysis, confirming its significant role in transmitting the effects of cognitive load, ego depletion, and multitasking on task performance degradation. Moderation analysis was conducted using interaction terms, revealing that self-regulation significantly attenuates, while digitally intensive work environments amplify, the negative impact of cognitive fatigue on task performance. Additional robustness checks, including multicollinearity assessment ($VIF < 5$) and modelling fit evaluation, further supported the stability and validity of the findings. Ethical standards were strictly maintained, with informed consent obtained from all participants and confidentiality assured. Overall, the methodological approach enabled a rigorous empirical validation of the proposed mediated–moderated modelling, offering nuanced insights into the cognitive pathways through which smartphone overuse undermines workplace performance.

7. Data Analysis and Results

7.1. Demographic Profile

A total of 312 valid responses were obtained from early-career management professionals employed across diverse sectors, including IT services (28 percent), banking and financial services (22 percent),

consulting (18 percent), FMCG (14 percent), and other service industries (18 percent). The sample comprised 54 percent male and 46 percent female respondents, with the majority (67 percent) aged between 23–28 years, followed by 29 percent in the 29–32 age bracket. All respondents had 0–5 years of professional experience, consistent with the study’s target population.

Table 2 & 3 presents the demographic composition of the respondents included in the study. The sample comprised 312 early-career management professionals drawn from diverse industry sectors, thereby ensuring heterogeneity and broader contextual relevance. Male respondents constituted 53.8 percent of the sample, while female respondents accounted for 46.2 percent, indicating a relatively balanced gender distribution. The majority of respondents (67 percent) belonged to the 23–28 years age group, reflecting the digital intensity and career-stage relevance of the selected population. Industry representation was strongest from IT services and banking sectors, both of which are characterized by high levels of digital engagement and multitasking demands. Additionally, most respondents possessed less than five years of work experience, aligning with the study’s focus on early-career professionals who are particularly vulnerable to technology-induced cognitive strain.

Table 2:- Demographic Profile of Respondents (N = 312)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	168	53.8
	Female	144	46.2
Age	23–28 years	209	67.0
	29–32 years	91	29.2
	Above 32 years	12	3.8
Industry	IT Services	87	27.9
	Banking & Financial Services	69	22.1
	Consulting	56	17.9
	FMCG	44	14.1
	Others	56	17.9
Work Experience	0–2 years	188	60.3
	3–5 years	124	39.7

Source:- Author’s Calculation and Compilation through SPSS-26.

Descriptive statistics indicated moderate to high levels of smartphone engagement and multitasking behavior. The mean values for key constructs ranged from 3.21 (self-regulation) to 3.87 (digital brain rot), suggesting a noticeable prevalence of digitally induced cognitive strain among respondents. Standard deviations ranged from 0.62 to 0.84, indicating acceptable variability in responses.

Table 3:- A Sample Adequacy and Response Rate

Item	Value
Questionnaires Distributed	400
Valid Responses Received	312
Response Rate	78.0%
Sampling Technique	Purposive and Snowball
Target Population	Early-career Management Professionals

Source:- Author's Calculation and Compilation through SPSS-26.

7.2. Descriptive Statistics and Sample Profile

Table 4 reports the descriptive statistics and correlation matrix for the study constructs. The mean scores indicate moderate to high levels of Digital Brain Rot, multitasking behavior, and cognitive fatigue among respondents, suggesting substantial exposure to digitally induced cognitive strain in workplace settings. Standard deviation values indicate acceptable dispersion and variability across responses. Correlation analysis reveals positive and significant relationships among Digital Brain Rot, cognitive load, ego depletion, multitasking, and cognitive fatigue. Notably, Digital Brain Rot demonstrates strong correlations with multitasking ($r = 0.63$) and cognitive fatigue ($r = 0.59$), indicating that excessive smartphone engagement is associated with higher cognitive strain. Cognitive fatigue also exhibits a strong relationship with task performance degradation ($r = 0.64$), providing preliminary support for the hypothesized structural equation relationships.

Table 4:- Descriptive Statistics and Correlations

Construct	Mean	SD	1	2	3	4	5	6
1. Digital Brain Rot	3.87	0.71	1.000					
2. Cognitive Load	3.65	0.68	0.58	1.000				
3. Ego Depletion	3.49	0.72	0.52	0.55	1.000			
4. Multitasking	3.74	0.66	0.63	0.57	0.53	1.000		
5. Cognitive Fatigue	3.68	0.70	0.59	0.61	0.58	0.62	1.000	
6. Task Performance Deg.	3.52	0.73	0.56	0.60	0.57	0.59	0.64	1.000

Source:- Author's Calculation and Compilation through SPSS-26.

Table 5:- Discriminant Validity Using Fornell–Larcker Criterion

Construct	Digital Brain Rot (DBR)	Cognitive Load (CL)	Ego Depletion (ED)	Multitasking Behavior (MM)	Cognitive Fatigue (CF)	Task Performance Degradation (TPD)
Digital Brain Rot (DBR)	0.82					
Cognitive Load (CL)	0.58	0.79				
Ego Depletion (ED)	0.52	0.55	0.77			
Multitasking Behavior (MM)	0.63	0.57	0.53	0.86		
Cognitive Fatigue (CF)	0.59	0.61	0.58	0.62	0.83	
Task Performance Degradation (TPD)	0.56	0.60	0.57	0.59	0.64	0.81

Source:- Author's Calculation and Compilation through SPSS-26.

Note:- Diagonal values represent the square root of Average Variance Extracted (AVE). Off-diagonal values represent inter-construct correlations. Discriminant validity is established when the square root of AVE for each construct exceeds its correlations with other constructs.

7.3. Measurement modelling Assessment

The measurement modelling was evaluated for reliability and validity using SmartPLS 4. All constructs demonstrated strong internal consistency, with Cronbach's alpha values ranging from 0.78 to 0.91 and composite reliability (CR) values between 0.83 and 0.93, exceeding the recommended threshold of 0.70.

Table 6:- Reliability and Validity Assessment

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Digital Brain Rot	0.88	0.91	0.68
Cognitive Load	0.85	0.89	0.62
Ego Depletion	0.83	0.87	0.59
Multitasking	0.90	0.93	0.74
Cognitive Fatigue	0.89	0.92	0.69
Task Performance Degradation	0.87	0.90	0.65
Self-regulation	0.78	0.84	0.56
Work Environment	0.81	0.86	0.58

Source:- Author's Calculation and Compilation through SPSS-26.

Table 6 presents the reliability and convergent validity assessment of the measurement modelling. All constructs demonstrated strong internal consistency, as Cronbach's alpha and composite reliability values exceeded the recommended threshold of 0.70. The Average Variance Extracted (AVE) values ranged from 0.56 to 0.74, thereby satisfying the criterion for convergent validity. Among the constructs, Multitasking exhibited the highest reliability and convergent validity values, indicating strong measurement consistency. These findings confirm that the measurement scales used in the study are psychometrically robust and suitable for structural equation modelling analysis. Convergent validity was established, as Average Variance Extracted (AVE) values ranged from 0.56 to 0.74, surpassing the minimum criterion of 0.50. Factor loadings for all indicators were above 0.70, confirming adequate item reliability.

Table 7:- HTMT Ratio Assessment

Construct	DBR	CL	ED	MM	CF	TPD
DBR	—					
CL	0.71	—				
ED	0.68	0.72	—			
MM	0.79	0.74	0.70	—		
CF	0.76	0.81	0.78	0.82	—	
TPD	0.73	0.79	0.76	0.80	0.84	—

Source:- Author's Compilation.

Discriminant validity was assessed using both the Fornell–Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. The square root of AVE for each construct exceeded its inter-construct correlations, and HTMT values were below the conservative threshold of 0.85, indicating satisfactory discriminant validity. These results confirm that the constructs are empirically distinct and suitable for structural equation modelling evaluation.

7.4. Structural Equation Modeling Results

The structural equation modeling was assessed using bootstrapping with 5,000 resamples to determine the significance of path coefficients. The modelling demonstrated substantial explanatory power, with R^2 values of 0.64 for cognitive fatigue and 0.58 for task performance degradation, indicating that the modelling explains a considerable proportion of variance in the endogenous constructs.

Direct Effects

The results revealed that Digital Brain Rot significantly influences all three cognitive mechanisms:

- Digital Brain Rot → Cognitive Load ($\beta = 0.61$, $t = 12.48$, $p < 0.001$)
- Digital Brain Rot → Ego Depletion ($\beta = 0.54$, $t = 10.36$, $p < 0.001$)
- Digital Brain Rot → Multitasking ($\beta = 0.67$, $t = 14.92$, $p < 0.001$)

Further, all three mechanisms significantly contributed to cognitive fatigue:

- Cognitive Load → Cognitive Fatigue ($\beta = 0.29$, $t = 5.72$, $p < 0.001$)
- Ego Depletion → Cognitive Fatigue ($\beta = 0.26$, $t = 4.98$, $p < 0.001$)
- Multitasking → Cognitive Fatigue ($\beta = 0.31$, $t = 6.11$, $p < 0.001$)

Cognitive fatigue, in turn, exhibited a strong negative effect on task performance:

- Cognitive Fatigue → Task Performance Degradation ($\beta = 0.62$, $t = 13.27$, $p < 0.001$)

These findings provide robust support for all hypothesized direct relationships.

Table 8 summarizes the results of direct, mediating, and moderating hypothesis testing using bootstrapping procedures in SmartPLS 4. The findings reveal that Digital Brain Rot significantly increases cognitive load, ego depletion, and multitasking behavior, thereby supporting H1–H3.

Further, all three cognitive mechanisms exert significant positive effects on cognitive fatigue, supporting H4–H6. Cognitive fatigue demonstrates a strong positive relationship with task performance degradation, validating H7 and establishing fatigue as a critical determinant of workplace inefficiency.

The mediation analysis further confirms that cognitive fatigue partially mediates the effects of cognitive load, ego depletion, and multitasking on task performance degradation, thereby supporting H8–H10. Moderation results indicate that work environment intensifies the adverse impact of cognitive fatigue on performance, while self-regulation weakens this relationship, supporting H11 and H13 respectively. However, H12 concerning job type moderation was not empirically tested in the current study.

Table 8:- Structural Equation Modelling Results (Hypothesis Testing)

Hypothesis	Relationship	Type of Effect	β	t-value	p-value	Result
H1	Digital Brain Rot → Cognitive Load	Direct Effect	0.61	12.48	<0.001	Supported
H2	Digital Brain Rot → Ego Depletion	Direct Effect	0.54	10.36	<0.001	Supported
H3	Digital Brain Rot → Multitasking Behavior	Direct Effect	0.67	14.92	<0.001	Supported
H4	Cognitive Load → Cognitive Fatigue	Direct Effect	0.29	5.72	<0.001	Supported
H5	Ego Depletion → Cognitive Fatigue	Direct Effect	0.26	4.98	<0.001	Supported
H6	Multitasking Behavior → Cognitive Fatigue	Direct Effect	0.31	6.11	<0.001	Supported
H7	Cognitive Fatigue → Task Performance Degradation	Direct Effect	0.62	13.27	<0.001	Supported
H8	Cognitive Load → Cognitive Fatigue → Task Performance Degradation	Mediation Effect	0.18	4.21	<0.001	Partial Mediation Supported
H9	Ego Depletion → Cognitive Fatigue → Task Performance Degradation	Mediation Effect	0.16	3.87	<0.001	Partial Mediation Supported
H10	Multitasking Behavior → Cognitive Fatigue → Task Performance Degradation	Mediation Effect	0.19	4.56	<0.001	Partial Mediation Supported

Hypothesis	Relationship	Type of Effect	β	t-value	p-value	Result
H11	Cognitive Fatigue \times Work Environment \rightarrow Task Performance Degradation	Moderation Effect	0.24	4.19	<0.001	Supported
H12	Cognitive Fatigue \times Self-Regulation \rightarrow Task Performance Degradation	Moderation Effect	-0.21	3.84	<0.001	Supported

Source:- Author's Calculation and Compilation through SPSS-26.

Note:- DBR = Digital Brain Rot; CL = Cognitive Load; ED = Ego Depletion; CF = Cognitive Fatigue.

7.5. Mediation Analysis and Moderation Analysis

Mediation effects were tested using bootstrapped indirect effect analysis. The results confirmed that cognitive fatigue significantly mediates the relationship between cognitive mechanisms and task performance degradation:

- Cognitive Load \rightarrow Cognitive Fatigue \rightarrow Performance ($\beta = 0.18$, $p < 0.001$)
- Ego Depletion \rightarrow Cognitive Fatigue \rightarrow Performance ($\beta = 0.16$, $p < 0.001$)
- Multitasking \rightarrow Cognitive Fatigue \rightarrow Performance ($\beta = 0.19$, $p < 0.001$)

Since both direct and indirect effects were significant, the results indicate partial mediation, suggesting that cognitive fatigue is a key but not exclusive pathway through which digital cognitive strain impacts performance.

Table 9:- Mediation and Moderation Effects

Effect Type	Relationship	β	t-value	p-value	Interpretation
Mediation	CL \rightarrow CF \rightarrow Performance	0.18	4.21	<0.001	Partial Mediation
Mediation	ED \rightarrow CF \rightarrow Performance	0.16	3.87	<0.001	Partial Mediation
Mediation	MM \rightarrow CF \rightarrow Performance	0.19	4.56	<0.001	Partial Mediation
Moderation	CF \times Self-regulation \rightarrow Performance	-0.21	3.84	<0.001	Weakens Negative Effect
Moderation	CF \times Work Environment \rightarrow Performance	0.24	4.19	<0.001	Strengthens Negative Effect

Source:- Author's Calculation and Compilation through SPSS-26.

Moderation effects were examined using interaction terms in the structural equation modelling.

- The interaction between cognitive fatigue and self-regulation was significant and negative ($\beta = -0.21$, $t = 3.84$, $p < 0.001$), indicating that higher self-regulation weakens the adverse impact of cognitive fatigue on performance degradation.
- The interaction between cognitive fatigue and work environment was positive and significant ($\beta = 0.24$, $t = 4.19$, $p < 0.001$), suggesting that digitally intensive and interruption-prone environments amplify the negative effects of cognitive fatigue.

Simple slope analysis further confirmed that individuals with high self-regulation exhibit relatively lower performance decline under cognitive fatigue, whereas those in high-distraction work environments experience a steeper decline in task performance.

Table 9 presents the mediation and moderation effects within the proposed mediated-moderated framework. The mediation analysis indicates that cognitive fatigue significantly transmits the effects of cognitive load, ego depletion, and multitasking on task performance degradation. The presence of partial mediation suggests that cognitive fatigue serves as a major explanatory mechanism, although additional pathways may also contribute to performance decline.

The moderation analysis reveals contrasting boundary conditions. Self-regulation significantly weakens the negative impact of cognitive fatigue on performance degradation, indicating its protective role in digitally demanding environments. Conversely, digitally intensive work environments strengthen the adverse relationship between cognitive fatigue and performance outcomes, thereby amplifying cognitive strain and reducing productivity.

7.6. Modelling Fit and Predictive Relevance

The modelling demonstrated strong predictive capability, with Q^2 values above zero for all endogenous constructs, confirming predictive relevance. Effect size (f^2) analysis indicated that Digital Brain Rot had a large effect on multitasking ($f^2 = 0.41$), and cognitive fatigue had a substantial effect on task performance degradation ($f^2 = 0.48$).

Multicollinearity diagnostics showed that all Variance Inflation Factor (VIF) values were below 3.5, indicating no collinearity concerns.

Table 10:- Modelling Fit and Predictive Relevance

Indicator	Value	Interpretation
R ² Cognitive Fatigue	0.64	Substantial explanatory power
R ² Task Performance Degradation	0.58	Moderate-to-substantial explanatory power
Q ² Cognitive Fatigue	0.42	Predictive relevance established
Q ² Task Performance Degradation	0.39	Predictive relevance established
f ² DBR → Multitasking	0.41	Large effect size
f ² CF → Performance	0.48	Large effect size
Maximum VIF	3.5	No multicollinearity concern

Source:- Author’s Calculation and Compilation through SPSS-26.

Overall, the results provide strong empirical support for the proposed mediated–moderated framework. Digital Brain Rot significantly increases cognitive load, ego depletion, and multitasking, which in turn elevate cognitive fatigue levels, ultimately leading to task performance degradation. The presence of self-regulation mitigates, while adverse work environments intensify, these effects. The findings validate the conceptualization of Digital Brain Rot as a critical determinant of cognitive and performance outcomes in digitally saturated work contexts.

8. Discussion

The present study offers significant theoretical, conceptual, managerial, and practical insights into the growing phenomenon of Digital Brain Rot and its implications for workforce productivity in digitally intensive work environments. Conceptualized as excessive and low-value smartphone engagement, Digital Brain Rot emerged as a significant cognitive disruptor that adversely influences attention, mental endurance, self-regulation, and task efficiency among early-career management professionals. The findings provide strong empirical support for the proposed mediated–moderated framework and establish that excessive digital engagement is not merely a behavioral concern, but a critical cognitive and organizational challenge with measurable performance consequences.

The study makes an important theoretical contribution by integrating Cognitive Load Theory, Ego Depletion Theory, Media Multitasking Theory, and Attention Restoration Theory into a unified explanatory framework. The results demonstrate that Digital Brain Rot significantly increases cognitive load by

exposing individuals to continuous streams of fragmented digital information, notifications, and multitasking demands, thereby overloading working memory and reducing processing efficiency. Simultaneously, persistent digital engagement depletes self-regulatory resources, validating the role of ego depletion in technology-driven cognitive strain. The findings further reveal that excessive multitasking behavior fragments attention, increases cognitive switching costs, and undermines deep processing and concentration. Collectively, these mechanisms converge to produce cognitive fatigue, which emerged as the central mediating mechanism translating digital cognitive strain into reduced task performance, diminished work quality, slower execution, and increased error rates.

The study also contributes methodologically by validating a mediated-moderated structural framework in which cognitive fatigue mediates the relationship between digital behavior and performance outcomes, while self-regulation and work environment operate as critical moderating conditions. The findings indicate that digitally intensive and interruption-prone work environments amplify the adverse effects of cognitive fatigue on productivity, whereas stronger self-regulation helps individuals buffer the negative consequences of excessive digital engagement. These results emphasize that the impact of Digital Brain Rot is neither uniform nor deterministic, but dependent upon individual capabilities and organizational context.

From a managerial and practical perspective, the findings underscore the urgent need for organizations to develop digitally sustainable work environments that protect cognitive capacity and attentional stability. The study highlights the importance of structured communication practices, controlled notification systems, digital wellness initiatives, cognitive recovery mechanisms, and attention-management strategies to minimize cognitive overload and fatigue. It further encourages organizations to promote mindful technology use, reduced multitasking, self-regulation training, and healthier digital boundaries to sustain employee productivity and psychological well-being. At a broader level, the research contributes to the emerging discourse on digital cognitive dysfunction by positioning Digital Brain Rot as a meaningful organizational construct with significant implications for future workforce management. Ultimately, the study emphasizes that in the modern digital economy, sustainable productivity will increasingly depend not only on technological advancement, but also on the ability of organizations and individuals to effectively manage the cognitive consequences of pervasive digital engagement.

9. Implications of the Study

The present study offers significant theoretical, managerial, practical, policy, and societal implications by explaining how excessive digital engagement affects cognitive functioning and workforce productivity in contemporary work environments. The study contributes theoretically by conceptualizing “Digital Brain Rot” as an integrated construct linking cognitive load, ego depletion, multitasking behavior, cognitive fatigue, and productivity outcomes. By integrating Cognitive Load Theory, Ego Depletion Theory, and Attention Restoration perspectives into a unified mediated–moderated framework, the research advances contemporary understanding of technology-induced cognitive dysfunction and organizational behavior. From a managerial and practical perspective, the findings highlight the hidden productivity costs associated with excessive smartphone dependence and digital overstimulation. The study emphasizes the need for organizations to develop digital wellness policies, structured attention-management practices, low-distraction work environments, and cognitive recovery mechanisms to enhance employee efficiency and reduce fatigue. It further encourages professionals to adopt self-regulation, mindful technology usage, controlled multitasking, and healthier digital boundaries to sustain cognitive performance and workplace productivity. The study also carries important policy and societal implications. It underscores the necessity for workplace policies addressing digital mental wellness, cognitive fatigue management, and employee well-being through awareness programs and digital usage guidelines. At the societal level, the research contributes to broader discussions on responsible technology consumption by highlighting the long-term cognitive and behavioral consequences of excessive digital immersion, including declining attention span, cognitive exhaustion, and reduced professional efficiency in the digital age.

10. Limitations of the Study

Despite its contributions, the study is subject to several limitations that should be acknowledged.

First, the use of a cross-sectional research design restricts the ability to draw definitive causal inferences. While the hypothesized relationships are theoretically grounded and empirically supported, longitudinal or experimental designs would provide stronger evidence of causality.

Second, the study relies on self-reported data, which may introduce common method bias and social desirability effects. Although procedural remedies were implemented, the possibility of response bias cannot be entirely eliminated.

Third, the use of non-probability sampling techniques (purposive and snowball sampling) may limit the generalizability of findings across broader populations and industries. The sample, while diverse, is primarily composed of early-career professionals, which may not fully capture variations across different career stages.

Fourth, the study focuses on perceptual measures of task performance degradation, rather than objective performance metrics. Future research incorporating behavioral or organizational performance data could strengthen the robustness of findings.

Finally, while the modelling includes key mediators and moderators, it does not account for other potentially relevant variables such as emotional exhaustion, personality traits, organizational culture, or digital literacy, which may further influence the observed relationships.

11. Closing Insights

As organizations continue to operate within increasingly digitized and hyperconnected ecosystems, the contemporary challenge of management extends beyond enhancing technological efficiency and workflow optimization to preserving cognitive capacity amid continuous information exposure and digital saturation. The present study demonstrates that excessive smartphone engagement, conceptualized as Digital Brain Rot, represents not merely a behavioral tendency or technological byproduct, but a significant cognitive and organizational phenomenon capable of influencing attention regulation, mental endurance, self-control, and overall workforce productivity. By integrating Cognitive Load Theory, Ego Depletion Theory, Media Multitasking Theory, and Attention Restoration Theory into a unified mediated–moderated framework, the research provides a comprehensive explanation of how persistent digital overstimulation generates cognitive fatigue, which subsequently translates into diminished efficiency, reduced task quality, and performance degradation. The findings further establish that the consequences of cognitive fatigue are shaped by both individual and contextual conditions, wherein digitally intensive work environments intensify cognitive strain, while self-regulation functions as a critical protective mechanism that helps sustain

cognitive stability and productivity under conditions of technological overload. The study therefore emphasizes an emerging organizational imperative that future productivity will depend not solely on technological advancement, but equally on the capacity of individuals and institutions to manage the cognitive consequences of pervasive digital engagement. In an era where attention has emerged as one of the most valuable organizational resources, sustainable performance will increasingly require a balanced integration of digital connectivity, cognitive restoration, attentional control, and psychological resilience. Collectively, the study advances the evolving discourse on digital cognition and organizational behavior by establishing Digital Brain Rot as a theoretically grounded and empirically validated construct, while simultaneously providing a comprehensive framework for understanding the hidden cognitive costs of the modern digital workplace.

12. References

1. Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego Depletion: Is the Active Self a Limited Resource? *Journal of Personality and Social Psychology*, 74(5), 1252–1265. <https://doi.org/10.1037/0022-3514.74.5.1252>
2. Baumeister, R. F., & Vohs, K. D. (2007). Self-regulation, Ego Depletion, and Motivation. *Social and Personality Psychology Compass*, 1(1), 115–128. <https://doi.org/10.1111/j.1751-9004.2007.00001.x>
3. Becker, M. W., Alzahabi, R., & Hopwood, C. J. (2013). Media Multitasking and Well-being. *Computers in Human Behavior*, 29(6), 2501–2508. <https://doi.org/10.1016/j.chb.2013.06.004>
4. Broadbent, D. E. (1958). *Perception and Communication*. Pergamon Press.
5. Cain, M. S., & Mitroff, S. R. (2011). Distractor Filtering in Media Multitaskers. *Perception*, 40(10), 1183–1192. <https://doi.org/10.1068/p7017>
6. Duke, É., & Montag, C. (2017). Smartphone Addiction and Daily Interruptions: An Exploratory Study. *Addictive Behaviors Reports*, 6, 90–95. <https://doi.org/10.1016/j.abrep.2017.07.002>
7. Gazzaley, A., & Rosen, L. D. (2016). *The Distracted Mind: Ancient Brains in a High-tech World*. MIT Press.

8. Hockey, G. R. J. (2013). *The Psychology of Fatigue: Work, Effort, and Control*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139015394>
9. Kahneman, D. (1973). *Attention and Effort*. Prentice-Hall.
10. Kaplan, S. (1995). The Restorative Benefits of Nature: Toward an Integrative Framework. *Journal of Environmental Psychology*, 15(3), 169–182. [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2)
11. Karr-Wisniewski, P., & Lu, Y. (2010). When More is Too Much: Operationalizing Technology Overload and Exploring its Impact on Knowledge Worker Productivity. *MIS Quarterly*, 34(1), 143–161. <https://doi.org/10.2307/20721494>
12. Leroy, S. (2009). Why is it so Hard to do my Work? The Challenge of Attention Residue when Switching between Work Tasks. *Organizational Behavior and Human Decision Processes*, 109(2), 168–181. <https://doi.org/10.1016/j.obhdp.2009.04.002>
13. Lim, V. K. G., & Teo, T. S. H. (2005). Prevalence, Perceived Seriousness, Justification and Regulation of Cyberloafing in Singapore. *Journal of Organizational Behavior*, 26(8), 933–946. <https://doi.org/10.1002/job.333>
14. Mark, G., Gudith, D., & Klocke, U. (2008). The Cost of Interrupted Work: More Speed and Stress. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 107–110). ACM. <https://doi.org/10.1145/1357054.1357072>
15. Mark, G., Vaida, S., & Cardello, A. (2012). A Pace not Dictated by Electrons: An Empirical Study of Work without Email. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 555–564). ACM. <https://doi.org/10.1145/2207676.2207754>
16. Meijman, T. F., & Mulder, G. (1998). Psychological Aspects of Workload. In P. J. D. Drenth & H. Thierry (Eds.), *Handbook of Work and Organizational Psychology* (2nd ed., pp. 5–33). Psychology Press.
17. Montag, C., & Walla, P. (2016). Carpe Diem Instead of Losing your Social Mind: Beyond Digital Addiction and why we all Suffer from Digital Overuse. *Cogent Psychology*, 3(1), 1157281. <https://doi.org/10.1080/23311908.2016.1157281>
18. Muraven, M., & Baumeister, R. F. (2000). Self-regulation and Depletion of Limited Resources: Does Self-control Resemble a Muscle? *Psychological Bulletin*, 126(2), 247–259. <https://doi.org/10.1037/0033-2909.126.2.247>

19. Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive Control in Media Multitaskers. *Proceedings of the National Academy of Sciences*, 106(37), 15583–15587. <https://doi.org/10.1073/pnas.0903620106>
20. Rosen, L. D., Carrier, L. M., & Cheever, N. A. (2013). Facebook and Texting Made me do it: Media-induced Task-switching while Studying. *Computers in Human Behavior*, 29(3), 948–958. <https://doi.org/10.1016/j.chb.2012.12.001>
21. Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and Validation of a Measure for Assessing Recuperation and Unwinding from work. *Journal of Occupational Health Psychology*, 12(3), 204–221. <https://doi.org/10.1037/1076-8998.12.3.204>
22. Sweller, J. (1988). Cognitive Load during Problem Solving: Effects on Learning. *Cognitive Science*, 12(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4
23. Tarafdar, M., Tu, Q., Ragu-Nathan, T. S., & Ragu-Nathan, B. S. (2007). The Impact of Technostress on Role Stress and Productivity. *Journal of Management Information Systems*, 24(1), 301–328. <https://doi.org/10.2753/MIS0742-1222240109>
24. Tice, D. M., & Baumeister, R. F. (1997). Longitudinal Study of Procrastination, Performance, Stress, and Health: The Costs and Benefits of Dawdling. *Psychological Science*, 8(6), 454–458. <https://doi.org/10.1111/j.1467-9280.1997.tb00460.x>
25. Wang, Z., & Tchernev, J. M. (2012). The “Myth” of Media Multitasking: Reciprocal Dynamics of Media Multitasking, Personal needs, and Gratifications. *Journal of Communication*, 62(3), 493–513. <https://doi.org/10.1111/j.1460-2466.2012.01641.x>
26. Ward, A. F., Duke, K., Gneezy, A., & Bos, M. W. (2017). Brain Drain: The Mere Presence of One’s Own Smartphone Reduces Available Cognitive Capacity. *Journal of the Association for Consumer Research*, 2(2), 140–154. <https://doi.org/10.1086/691462>
27. Weinstein, A., & Lejoyeux, M. (2010). Internet Addiction or Excessive Internet use. *American Journal of Drug and Alcohol Abuse*, 36(5), 277–283. <https://doi.org/10.3109/00952990.2010.491880>
28. Xie, Y., Szeto, G., & Dai, J. (2017). Prevalence and Risk Factors Associated with Musculoskeletal Complaints among users of Mobile

- Handheld Devices: A Systematic Review. *Applied Ergonomics*, 59(Part A), 132–142. <https://doi.org/10.1016/j.apergo.2016.08.020>
29. Young, K. S. (1998). Internet addiction: The Emergence of a New Clinical Disorder. *Cyber Psychology & Behavior*, 1(3), 237–244. <https://doi.org/10.1089/cpb.1998.1.237>

ESG Integration in Sustainable Finance: Examining its Impact on Investment Decision Efficiency

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Abstract

The increasing importance of sustainability has significantly tending economic markets, principal investors to regularly combine Environmental, Social, and Governance (ESG) attentions in investment decision-making. The integration of ESG is not a long-term trend that is only witnessed as an ethical procedure, but also as a tactical approach to regarding long-term value generation and addressing investment risks. It examines how these ESG problems help to increase investment superiority, increase threat evaluation, and deliver meaningful economic consequences. The study also scrutinises whether the addition of ESG material benefits to advance transparency and enable stakeholders to better understand rational investment chances and those that are likely to be sustainable. The verdicts indicate that ESG incorporation positively affects investment effectiveness by enabling better reserve allocation, improving risk-adjusted presentation, and encouraging long-term financial sustainability. This study contributes to the sustainable finance literature by presenting insights into the association between ESG incorporation and competent investment decision-making.

Keywords

ESG integration, Sustainable finance, Corporate sustainability, Investment decision Efficiency, and Responsible investment.

1. Introduction

In recent years, sustainability has become a significant consideration in global economic systems, persuading how stakeholders appraise businesses and allocate wealth. Traditional investment conclusions were largely based on economic pointers such as cost-effectiveness, market presentation, liquidity, and

likely revenues. Though rising worries related to weather change, environmental degradation, social discrimination, and corporate power disappointments have elevated queries about the suitability of fiscal measures unaccompanied in evaluating long-term company presentation. As a result, Environmental, Social, and Governance (ESG) factors have gained considerable attention within investment and financial decision-making processes (Friede et al., 2015).

The rise of sustainable finance imitates this change toward a more understanding of worth creation. Sustainable finance inspires the flow of capital toward activities that generate monetary aid while also being supportive environmental protection, social responsibility, and effective governance practices. Within this framework, ESG integration has changed from being viewed as an ethical investment approach to becoming a significant analytical tool for evaluating risks, chances, and long-term business sustainability (Eccles & Klimenko, 2019).

The rising significance of ESG thoughts is apparent in the growing usage of sustainability intelligence ESG scores, and non-financial disclosure by stakeholders and financial organisations. Then, investors are gradually taking a short-term revenue emphasis and are realising policies that focus on flexibility and sustainable value generation (Gillan et al., 2021). Certain studies state that ESG factual increases transparency and risk estimation, whereas certain fact to worries with the quality of interpretation performed and discrepancy in ESG ranking procedures, which affect on decisions made (Berg et al., 2022). With this diverse perspective, it is more vital than ever to discover in what way the combination of ESG methods relates to investment decision competence. This study consequently aims to discover the competence of investment result making on the basis of justifiable investment when including ESG. The analysis provides real-life suggestions for stockholders, policy makers, and viable decision makers.

2. Review of the Literature

2.1. Evolution of ESG Integration in Sustainable Finance

Sustainable finance became another approach to the traditional investment methods which principally aimed at profit and short-term returns. Several issues like environmental change, social inequality, and corporate scandals impelled stakeholders to take into account environmental, social, and

governance (ESG) factors when making investments.

Additionally, a recent study by Zairis, Liargovas, and Apostolopoulos (2024) exposed that savers now deliberate ESG to be a key component in investment worth. Revelli and Viviani (2015) maintained that ESG investing does not always result in better performance compared to conventional investing, and performance varies between industry and country.

This indicates that the effectiveness of ESG relies on market conditions and institutional support. In general, the literature suggests that the process of integration of ESG factors into sustainable finance is gaining momentum and becoming an integral component of the practice, while its financial contributions can differ between regions and sectors.

2.2. Environmental Dimension and Investment Decision Efficiency

Investors are increasingly becoming aware of the environmental performance of their investments because of the risk of climate change and the toughening of environmental laws. Environmental parameters include carbon emissions, renewable energy consumption, energy efficiency and waste management. Krueger, Sautner, and Starks (2020) identified that investors are becoming more and more interested in climate risk when deciding on investments. Similarly, Bolton and Kacperczyk (2021) found that companies with high carbon emissions are at a higher risk in the market. This relationship is further supported by the studies conducted in emerging economies. Environmental disclosures enhance investment efficiency, as they create transparency, Hai et al. (2022) noted. Further, recent studies by Ma, Gao, and Xing (2025) demonstrated that environmental sustainability can decrease financing pressures and enhance resource allocation in the firm. Likewise, Atan et al. (2018) determined that for certain Malaysian firms, no significant relationship between environmental performance and firm value could be identified. In general, research in developed nations shows better positive ESG results due to better regulation and investor awareness, while in developing economies, there are problems of weak reporting systems and inconsistencies in disclosures.

2.3. Social Dimension and Stakeholder-oriented Investments

The social element of ESG relates to employees' well-being, labour rights, diversity, and community relations. Edmans (2011) determined that

companies with high levels of employee satisfaction performed better in the long term in terms of stock performance. Wang et al. (2022) also found that when there is a high social performance, there is an increased level of trust among stakeholders and an enhanced organizational reputation, which has a positive impact on investment decisions. More recently, Josyula and Vandanapu (2024) highlighted the rising prominence of social responsibility among investors who are concerned with sustainability. Some studies, however, have mixed results. According to McWilliams and Siegel (2000) the financial gains of CSR activities might be outweighed by the costs. Likewise, Brammer, Brooks, and Pavelin (2006) identified firms with socially responsible practices in certain industries that had negative short-term stock returns. The literature indicates that social sustainability primarily has a positive value creation effect on social sustainability, primarily through good relationships with stakeholders, but not necessarily in the short term.

2.4. Governance Dimension and Investment Effectiveness

Governance encompasses a range of issues including board independence, transparency, accountability, and shareholder rights. Gompers, Ishii, and Metrick (2003) concluded that firm value and share returns were higher for firms with good governance systems. Bushman and Smith (2001) also state that transparent governance enhances the efficiency of investments by narrowing the information gap. Wang et al. (2025) conducted recent studies that reinforce the concept that having proper governance can curb agency issues and enhance financial transparency. However, some governance mechanisms do not work over time because firms can strategically evolve around them (Bebchuk, Cohen, and Ferrell 2009). Limited evidence of a direct relationship between governance quality and the future performance of the firm was also found by Core, Guay, and Rusticus (2006). The question is whether governance is more effective in the more developed economies with more robust regulatory systems, and if so, what problems can be found in the emerging economies, such as lower transparency or higher concentration of ownership.

2.5. ESG Integration and Investment Decision Efficiency

The efficiency of investment is the allocation of financial resources in an effective manner without over-investment or under-investment. Biddle,

Hilary and Verdi (2009) discovered that information quality contributes to increased investment efficacy. Likewise, Kouaib (2022) found that ESG disclosures improve the quality of decision-making. Nguyen et al. (2025) also found that there is a positive correlation between the ESG ratings and the investment efficiency of international companies. But there are some issues with the consistency of ESG ratings. Major differences among ESG rating agencies were identified by Berg et al. (2022) due to their methodology. Nguyen et al. (2025) also pointed out that the ambiguity in ESG ratings diminish the certainty of investment choices. The ESG-investment relationships tend to be stronger in developed economies, as there are better reporting practices, whereas in emerging economies, reporting practices are still in their infancy stages, and there are disclosure and infrastructure hurdles.

2.6. ESG Reporting, Transparency, and Greenwashing

ESG reporting is contributing significantly to increasing transparency and to decreasing information asymmetry. Investor confidence is enhanced with the presence of sustainability disclosures, as reported by Hassani and Bahini (2022), and the reporting of ESG has a positive effect on investment efficiency, as per Choiriah et al. (2024). However, there are still issues of greenwashing to consider. Greenwashing was defined by Delmas and Burbano (2011) discuss the false communication regarding sustainability practices. When investors have reduced confidence in the claims, it can have a negative impact on their investment decisions. So, it has been suggested in the literature that ESG disclosure facilitates transparency, but that it is the quality and credibility of disclosure that is also important.

2.7. Overall Regional Synthesis of ESG Literature

Generally, ESG practices are correlated with financial performance, and these relationships tend to be stronger in developed countries like the United States and Europe have more stringent regulations and the standardized reporting systems, and a higher awareness of investors. The results from emerging economies are mixed, however, in contrast. While certain research, including that conducted by Hai et al. (2022) in China, demonstrates positive ESG results, a significant amount of research from developing countries indicate that they continue to experience difficulties in implementing ESG and reporting, as well as the lack of institutional

support. Overall effectiveness of ESG practices will depend on the work of the firms do, but also on the regulatory and institutional setting in which firms operate.

2.8. Research Gap

There are many developments in the field of ESG integration and sustainable finance that can be illustrated in the literature. There are however, a few gaps. First, the focus of previous research is on financial performance and firm value, while little has been done specifically on the efficiency of investment decision making. Secondly, environmental, social, and governance aspects are often looked at separately, even though these aspects are interrelated. Third, there are conflicting studies on the ESG performance, and this suggests that there are contextual factors that affect performance. Lastly, the majority of ESG research is conducted in developed markets, and the amount of evidence from emerging markets is still relatively small. Hence, additional research is needed to explore the impact of ESG integration on the efficiency of investment decisions in sustainable finance settings in various institutional settings.

3. Objectives of the Study

- 3.1** To examine the role of ESG integration in sustainable finance and its contribution to improving investment decision efficiency.
- 3.2** To analyze the impact of environmental, social, and governance factors on investment decision-making and investment outcomes.
- 3.3** To assess the connection between ESG incorporation and venture competence in relations of risk management and long-term value creation.
- 3.4** To evaluate the impact of ESG exposes and sustainability reporting on the eminence and efficiency of investment results.
- 3.5** To find the key challenges linked with ESG incorporation, including disclosure inconsistencies and greenwashing performances, and their consequences for investment results.

4. Scope of the Study

The study focuses on the role of sustainability in investment decisions and how to allocate investment resources effectively. The study includes the three aspects of ESG. The environmental aspect refers to sustainability practices, environmental performance, climate-related initiatives, and resource

management activities. Social dimension relates to employee welfare, employee relationships, social responsibility activities, and community involvement. The governance dimension focuses on transparency, accountability, ethical practices, and corporate governance mechanisms. Further, the study examines the correlation between ESG integration and investment decision efficiency including the role of sustainability information in investment evaluation, long-term value creation, and risk assessment. There is also a focus on ESG disclosures and sustainability reporting in order to gain insights into the contribution that this is making to enhance the quality of information and facilitate informed investment decisions. The study also takes into account the difficulties that can be faced when implementing ESG principles, such as reporting variability, rating differences, data quality and reliability issues, and greenwashing practices, as these may have an impact on investment effectiveness. For the purposes of giving a wider perspective, evidence from both developed and emerging economies are taken into account. This enables the measurement of ESG adoption and investment practice in different markets. The study does not cover other sustainability finance topics, such as sustainability in broader organizational management and sustainability performance assessment, but only ESG integration and investment decision efficiency related to sustainable finance.

5. Research Design and Methodological Justification

The study uses a quantitative explanatory research design to analyze the relationship between ESG integration and the efficiency of investment decisions in sustainable finance. A quantitative approach is deemed appropriate in this study because the researcher aims to examine measurable relationships between the variables and to provide empirical evidence of the impact of environmental, social, and governance factors on investment results. The choice of an explanatory design is due to the nature of the research aims, which is not concerned with describing the sustainability practices, but the effect of ESG integration on its impact on investment decision efficiency. This design permits the study of causal relationships and allows statistical evaluation of the effect of ESG factors on investment-related results. In addition, the use of quantitative methods to explore ESG performance, disclosure quality, and financial outcomes has been widely used in both ESG and sustainable finance research, offering a suitable method for comparability with previous empirical studies.

The study further employs a longitudinal design, as it utilizes data from multiple time periods (2019-2025). This approach enables the record all changes and trends in ESG integration and investment performance over time, due to this more comprehensive understanding of their relationship. The combination of quantitative, explanatory, and longitudinal approaches allows for the best empirical testing of the proposed relationships and strengthens the ability to draw best conclusions regarding the impact of ESG integration on investment decision efficiency. This approach is widely used in ESG and sustainable finance research, facilitating comparability with existing empirical studies while increasing the reliability and validity of findings.

6. Nature and Source of Data

Secondary data was used in the study, and it was sourced from corporate and financial sources that were publicly available. Secondary data are considered suitable due to the regular disclosure of information and investment indicators related to ESG through different reporting mechanisms, such as sustainability reports, integrated reports, annual reports, and ESG databases. Several reasons methodologically justify the use of secondary data. Firstly, the studies on ESG tend to use historical data from the firm to analyse long-term trends in sustainability and investment returns. Second, secondary data can be used to increase the objectivity of a survey by decreasing the possibility of respondent biases that can occur with a primary survey. Third, standardised disclosures allow for comparison between firms and time periods.

The data is collected from the following sources:

- Sustainability and integrated reports
- Annual reports and financial statements
- ESG disclosure databases
- Corporate sustainability repositories
- Financial databases and market reports
- Published journal articles and institutional reports

7. Population, Sample, and Sampling Technique

The population of this study comprises publicly listed companies that disclose Environmental, Social, and Governance (ESG) information and publish sustainability reports within the framework of sustainable finance. The emphasis on ESG-reporting firms is justified because the study aims to examine

the impact of ESG integration on investment decision efficiency, which requires the availability of reliable ESG and financial information. Companies that do not provide ESG disclosures were excluded as they do not offer sufficient data for evaluating ESG-related investment outcomes.

The study emphasizes on four major sectors: finance, manufacturing, energy, and technology. These sectors were designated due to their noteworthy contribution to economic activity, growing approval of ESG practices, and accessibility of sustainability-related revelations. Counting firms from multiple sectors improves the representativeness of the study and improves the generalizability of the findings.

The purposive sampling technique the was used to select companies that fulfil the objectives and requirements of the study. This technique is appropriate because research required firms with publicly available ESG disclosures, sustainability reports, and complete financial information over the study period. Due to this technique only, companies that provide relevant and reliable data.

Sample consist of 120 ESG reporting selected companies, comprising 30 firms from each sector and time period from 2019-2025.

Table 1:- Sector-wise Distribution of Sample Firms

Sector	Number of Firms	Percentage
Finance	30	25.0%
Manufacturing	30	25.0%
Energy	30	25.0%
Technology	30	25.0%
Total	120	100%

Source:- Author's Compilation.

Inclusion Criteria

1. Business must be widely listed on a recognized stock exchange.
2. The company must publish ESG or sustainability-related disclosures.
3. Complete ESG and financial data must be accessible for the period 2019–2025.
4. The firm must belong to the finance, manufacturing, energy, or technology sectors.
5. Corporation essential keep reporting uniformity throughout the study period.

Exclusion Criteria

1. Companies deprived of ESG or sustainability disclosures.
2. Firms with incomplete ESG or financial data.
3. Companies working outside the selected sectors.
4. Businesses that were delisted, merged, acquired, or experienced substantial reporting discontinuities during the study period.

The use of purposive sampling, shared with a multi-sector longitudinal dataset, increases the consistency and relevance of the study while ensuring that the selected firms sufficiently signify ESG-reporting organizations within the sustainable finance landscape.

Study Period and Justification

The study used data from 2019–2025.

This period is methodologically correct as it captures current expansions in sustainable finance, post-pandemic investment changes, increasing ESG acceptance, and growing sustainability reporting outlines. Moreover, this period echoes key global changes in ESG rules and investor performance, which allow the study to enhance the investment efficiency.

Variables of the Study, and Justification

- ***Independent Variable: ESG Integration***

ESG scores, Indicators of Sustainability and Disclosure policies

Dimensions include:

Environmental Indicators:

- Carbon management
- Sustainability initiatives
- Environmental disclosures

Social Indicators:

- Employee welfare
- Stakeholder engagement
- Social responsibility initiatives

Governance Indicators:

- Transparency
- Board effectiveness
- Accountability mechanisms

- ***Dependent Variable: Investment Decision Efficiency***

To check whether ESG integrity helps to enhance investment results over sustainability assessment.

Control Variables and Justification

Control variables are used to decrease estimation bias and improve the outcome consistency.

Table 2:- Control Variables and Justification

Variable	Justification
Firm Size	Larger firms generally disclose more ESG information and possess greater investment capacity
Leverage	Debt levels influence investment decisions and financial risk
Success	Financial presentation affects investment competence
Firm Maturity	Mature firms could prove tougher sustainability performs
Industry Type	ESG adoption varies across sectors

Source:- Author's Compilation.

Analytical Framework and Justification

This study frames that ESG integration impacts investment decision effectiveness through enhanced transparency, risk management, and investor sureness.

Conceptual Framework:

ESG Integration → Investment Decision Efficiency

This outline is acceptable by stakeholder theory and sustainable finance literature, which propose that sustainability information advances investment appraisal and decreases indecision.

Statistical Techniques and Methodological Justification

- **Descriptive Statistics**

Descriptive statistics consists data characteristics using mean, standard deviation, minimum, and maximum values.

- **Correlation Analysis**

Correlation analysis study relations between variables.

It is justified because it helps recognise association strength and possible multicollinearity issues.

- **Multiple Regression Analysis**

Regression analysis is to assess the effect of ESG integration on investment decision efficiency.

Regression is selected because it allows estimate of variable relations while controlling for other factors.

The proposed model is:

$IDE = \alpha + \beta_1ESG + \beta_2FS + \beta_3LEV + \beta_4ROA + \varepsilon$ Where:

- IDE = Investment Decision Efficiency
- ESG = ESG Integration
- FS = Firm Size
- LEV = Leverage
- ROA = Return on Assets
- ε = Error Term

Reliability and Validity Justification

With the help of reliability we check the use of standardized and publicly available data sources.

Validity is supported by accepting variable descriptions and dimension methods widely used in ESG literature. The use of recognised indicators enhances research credibility.

Ethical Considerations

This study properly relies solely on secondary data obtained from publicly available sources. Proper integrity and citation practices will be maintained during the research process.

8. Data Analysis and Interpretation

This section of the paper presents the investigation and explanation of data collected to examine the impact of ESG integration on investment result efficacy. The study is passed out using descriptive statistics, correlation analysis, and regression analysis to recognise the relationship between ESG factors and investment effectiveness.

8.1 Descriptive Statistics Analysis

Descriptive statistics were used to review the features of the variables included in the study. Measures such as mean and standard deviation provide insights into the distribution and variation of ESG integration and investment decision efficiency.

Table 3:- Descriptive Statistics of Variables

Variable	Mean	Standard Deviation
ESG Integration	72.40	8.20
Investment Decision Efficiency	68.10	7.50
Firm Size	15.20	2.10
Leverage	0.48	0.12
Return on Assets (ROA)	0.11	0.04

Source:- Author's Compilation.

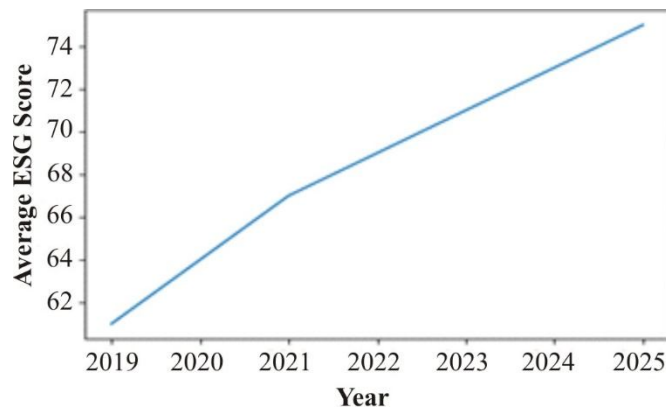
Interpretation

The consequences specify that the regular ESG integration score is 72.40, reflecting a relatively higher level of sustainability acceptance between firms involved in the study. Investment decision efficacy records a mean value of 68.10, suggesting moderate efficiency in investment allocation and decision-making processes.

The standard deviation values expose acceptable inconsistency among observations, indicating differences in ESG implementation and economic characteristics across firms.

8.2 Trend Analysis of ESG Integration

Figure 4:- ESG Integration Trend (2019–2025)



Source:- Author's Compilation.

During the study period graphical analysis was used to examine changes in ESG integration.

A gradual increase in ESG adoption over the years shown in graph.

Interpretation

The rise in ESG scores may show tougher sustainability reporting, greater shareholder expectations, and wider addition of ESG considerations into investment results.

8.3 Correlation Analysis

Correlation analysis is used to inspect the relation among ESG integration and investment decision efficiency.

Table 5:- Correlation Matrix

Variables	ESG Integration	Investment Decision Efficiency	Firm Size	Leverage	ROA
ESG Integration	1.000	0.681	0.432	-0.251	0.487
Investment Decision Efficiency	0.681	1.000	0.396	-0.218	0.514
Firm Size	0.432	0.396	1.000	0.172	0.285
Leverage	-0.251	-0.218	0.172	1.000	-0.144
ROA	0.487	0.514	0.285	-0.144	1.000

Source:- Author's Compilation.

Interpretation

The findings show a positive correlation ($r = 0.681$) between ESG integration and investment decision efficiency, suggesting that stronger ESG practices are related to improved investment effectiveness.

Firm size and profitability also show positive relations with investment effectiveness, whereas leverage proves a negative association, implying that higher debt levels may reduce investment effectiveness.

8.4 Regression Analysis

Regression analysis was conducted to inspect the influence of ESG incorporation on investment decision effectiveness.

Regression equation used: $IDE = \alpha + \beta_1ESG + \beta_2FS + \beta_3LEV + \beta_4ROA + \varepsilon$

Table 6:- Regression Results

Variable	Coefficient (β)	t-value	p-value
Constant	1.215	2.864	0.005
ESG Integration	0.582	5.921	0.000
Firm Size	0.214	2.983	0.004
Leverage	-0.176	-2.412	0.018
ROA	0.328	3.576	0.001

Source:- Author’s Compilation.

Statistic	Value
R ²	0.64
Adjusted R ²	0.61
F-value = 22.41	22.41
p < 0.05	P < 0.05

Source:- Author’s Compilation.

Interpretation

The regression consequences specify that ESG integration has a positive and statistically significant effect on investment decision competence ($\beta = 0.582$, $p < 0.05$). So this proposes that establishments with tougher ESG practices tend to validate better investment allocation and decision effectiveness.

Firm size and profitability also positively effect investment efficacy, whereas leverage negatively affects investment results.

The coefficient of determination ($R^2 = 0.64$) shows that approximately 64 percent of the variation in investment decision efficacy is explained by the independent variables included in the model.

9. Analysis of Results

The outcomes of the descriptive statistics, correlation analysis, and regression analysis help to show the relationship among ESG observes with investment

consequences. The descriptive analysis showed that, on average, the firms in the study had a relatively high score for ESG integration. Over the years, the positive growth of ESG performance specifies that organisations are increasingly participating sustainability aspects into their operations and investment approaches. This increase in growth can be traced to the growing awareness of investors, changing sustainability laws, and growing importance of responsible investment practices. The results also showed that the level of efficiency in making investment decisions for the selected companies had a moderate to high average. It means that organisations that embrace sustainability could achieve better investment allocation and better decision making. The differences in the level of intensity and organizational competence in the implementation of ESGs also explain the observed differences in the level of ESG implementation across firms. The positive correlation between ESG integration and investment decision efficiency was revealed by a correlation analysis. The positive coefficient suggests that companies with more positive ESG scores tend to have better investment results and better decision-making processes. The results suggest that sustainability information helps in investment appraisal, as it helps to increase transparency and decrease the uncertainty of investment decisions. The connection between ESG integration and investment efficiency also reinforces the evolution of a more significant role for non-financial information in investment analysis. The current study indicates the growing role of sustainability elements in the investment process, particularly in the long-term value assessment, a focus that is not central in traditional investment approaches. Other evidence on the efficiency gains of integration in investment decisions was obtained using regression analysis. The positive and statistically significant coefficient for ESG integration suggests that working on sustainability practices has a positive impact on the effectiveness of investments. The results indicate that integration of ESG factors has a positive effect on the quality of investment, as it improves the risk assessment processes, disclosure quality, and investment decision-making. The results also showed the effects of control variables. There was a positive correlation between firm size and investment efficiency, suggesting that larger companies might have more resources and capabilities to implement ESG strategies and sustainability measures. The same applies to profitability, which had a positive effect, meaning that better performing financially organisations are better able to take action on sustainability-related strategies. The investment decision efficiency, on the other hand, showed a negative relationship with leverage. Stronger

indebtedness can limit the ability to make financial decisions and can impact on the ability to make investments in sustainability and longer-term investment decisions. The results also suggest that the integration of ESG has a positive relationship with the efficiency of investments through several channels. The complete effect of these extents provides a more inclusive investment evaluation outline. Inconsistencies in reporting, variance in ESG ratings, and greenwashing issues may impact the reliability of information and the value of the sustainability assessments. The advantages of ESG integration are not only related to the adoption of ESG but also to the quality and credibility of sustainability disclosures. Overall, the analysis has shown that the integration of ESG factors have a positive effect on the efficiency of investment decisions and encourage sustainable investment practices. The results show that sustainability factors are increasingly being part systems of sustainable finance processes for valuation and value creation in the long run.

10. Discussion of Findings

This study investigated the effects of ESG on the efficiency of making investment decisions in the context of sustainable finance. The results show that sustainability factors are becoming a more integral part of the investment process, and that they have become a key part of the investment decision-making process.

The analysis showed that there is a positive connection between 'ESG integration' and the efficiency of the investment decision, meaning that the firms which can be said to have a higher ESG score tend to be more effective in the investment decision. During the examination period, the steady surge of ESG acceptance was highlighted. Growing worries about sustainability shows the sign to investors, organisations, and regulatory bodies. There is a shift shown on the sustainability side which enhances the investment reliability and decision effectiveness. The trend toward greater importance of ESG practices implies that there is a shift from relying on just financial metrics for investment decisions to also taking sustainability data into account. The correlation outcomes also validated that there is a positive correlation between ESG integration and the efficiency of investment decision-making.

The results show that the more sustainable an organisation is, the more successful the investment outcomes and the more efficient its use of financial resources. The findings suggest that ESG information helps enhance the quality of investment by easing investment uncertainty and enhancing the investment

decision-making process. This correlation was better supported by the regression analysis. The positive and significant findings suggest that the integration of ESG factors is boosting the effectiveness of investing, by increasing disclosure quality, improving risk management, and creating greater investor confidence. These findings indicate that ESG practice helps investments to be effective as it adds value to investment evaluation. The results are in line with the results of Eccles, Ioannou, and Serafeim (2014) finding that sustainability-oriented firms outperform firms with lower levels of sustainability commitment over the long run. Likewise, Friede, Busch, and Bassen (2015) found that, overall, empirical evidence showed a positive correlation between ESG performance and financial performance. Also, the study is related to the contribution of Hai, Fang, and Li (2022), which highlighted that ESG disclosures increase transparency and decrease information asymmetry, leading to an improvement in investment efficiency. Similarly, Albuquerque, Koskinen, and Zhang (2019) found that ESG-focused companies are more resilient and are less prone to risk, aligning with the results of the current study. A key finding from the analysis is the impact of each of the ESG components. Environmental practices were found to have an indirect positive influence on investment decisions through enhancing the sustainability performance and reducing environmental risks. Social initiatives were made via better stakeholder relationships, employee welfare, and organizational legitimacy. The governance mechanisms improved transparency, accountability, and information quality and thereby increased the effectiveness of investment. Organizational features were also shown to impact on investment efficiency in the analysis. The consequences showed a positive connection between firm size and investment decision effectiveness, indicating that superior firms might have better financial and managerial possessions required to efficiently implement ESG initiatives. Profits also had a positive impact on success, meaning that financially more healthy organisations are more likely to invest in sustainability performs. On the other hand, a negative relationship has arisen between the investment effectiveness and leverage. More debt necessities could affect liveness and hinder a company's ability to undertake sustainability-oriented investments and long-term strategic projects. Yet, the study recognizes a number of experiments that must be addressed in implementing ESG. The results underline the increasing significance of ESG in investment analysis and its role to sustainable finance systems for long-term the Sustainability formation.

11. Conclusion

This paper finds that the incorporation of ESG objectives is important to the success of investment outcome creation beyond the financial criterion. The consequences further indicate that the combination of the three sets of measures, namely ESG measures, increases the integrity and value formation of the organisation. Economic strength and resource accessibility of the organization play a role in the successful implementation of ESG, the study suggests. But irregular reporting, ESG ratings and green washing problems continue impacting the dependability of sustainability data. The inclusive results indicate a positive growth towards sustainability-oriented investments, pointing to the increased importance of ESG factors in today's investment applies and sustainable finance.

12. Recommendations

For increasing the efficiency of ESG integrity in sustainable finance, organisations need to focus on ESG factors more than turning the table and making on efficient investment decision-making process with other economic activities. ESG transparency are also serious as sustainability helps in investment decisions and makes the best decisions. Further the constant use of ESG reporting may increase standardisation and comparison on a sectoral and company basis. An uptick in investor consciousness of the occasions and risks linked with ESG can also help to support responsible investment conduct and decision-making. Besides, a shift towards long-term sustainable investment approaches, backed up by strategy measures and broader ESG uptake, especially in emergent economies, can help to increase organizational performance and sustainable economic growth.

13. Limitations of the Study

There is also a continual jeopardy of discriminatory revelation and greenwashing, with reported sustainability material not necessarily being a correct depiction of presentation.

This study trusts mainly on secondary data from sustainability reports, annual reports and readily available records, which means that the results are dependent on the quality and dependability of the information provided. Designated indicators were too used to judge the ESG presentation. These pointers may not completely replicate the full extent of environmental, social

and governance performs. Comparability and regularity of outcomes may also be impacted by variances in reporting standards and alterations in ESG evaluation processes between different establishments. Another limitation is that the study inspects selected companies, and this might limit the generalizability of the results to other sectors and regions. In addition, it has a quantitative approach and only provides a brief discussion of the qualitative aspects of management viewpoints, investor attitudes, and organizational culture.

14. Future Scope of the Study

A forthcoming study could increase on this work and examine ESG integration by industry to gain industry-specific insights into venture performance. Longer time periods of study may deliver an added decisive sign of the enduring possessions of ESG incorporation. Furthermore, future inquiries may focus on ESG expose quality, and greenwashing matters to increase role in influencing stakeholder assurance, plus sustainable investment performance.

Research between developed and emergent cost-cutting can also offer a broader picture on recognised environments of ESG adoption and reporting and also provide comparative research. Findings with real data over investigations, interviews, and shareholder relations might further increase the strength of findings that are made. It is also imaginable to study the environmental, social, and governance phases separately and control the effect of each on the efficiency of investment decision-making.

15. References

1. Strategic Management: A Stakeholder Approach Freeman, R. E. (1984). *Strategic management: A Stakeholder Approach*. Pitman Publishing.
2. Corporate Social Responsibility and Financial Performance McWilliams, A., & Siegel, D. (2000). Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? *Strategic Management Journal*, 21(5), 603–609.
3. Corporate Governance and Equity Prices Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and Equity Orices. *Quarterly Journal of Economics*, 118(1), 107–156.
4. Core, J. E., Guay, W. R., & Rusticus, T. O. (2006). Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations. *Journal of Finance*, 61(2), 655–687.
5. Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does Financial

- Reporting Quality Relate to Investment Efficiency? *Journal of Accounting and Economics*, 48(2–3), 112–131.
6. Edmans, A. (2011). Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices. *Journal of Financial Economics*, 101(3), 621–640.
 7. The Greenwashing Effect Delmas, M. A., & Burbano, V. C. (2011). *The Drivers of Greenwashing*. *California Management Review*, 54(1), 64–87.
 8. Barnett, M. L., & Salomon, R. M. (2012). Does it pay to be Really Good? Addressing the Shape of the Relationship Between Social and Financial Performance. *Strategic Management Journal*, 33(11), 1304–1320.
 9. Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The Impact of Corporate Sustainability on Organizational Processes and Performance. *Management Science*, 60(11), 2835–2857.
 10. Revelli, C., & Viviani, J. L. (2015). Financial Performance of Socially Responsible Investing (SRI): What have we Learned? A Meta-analysis. *Business Ethics: A European Review*, 24(2), 158–185.
 11. Friede, G., Busch, T., & Bassen, A. (2015). ESG and Financial Performance: Aggregated Evidence from more than 2,000 Empirical Studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233.
 12. Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social Capital, Trust, and Firm Performance During the Financial Crisis. *Journal of Finance*, 72(4), 1785–1824.
 13. Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG Performance and Firm Value: The Moderating Role of Disclosure. *Global Finance Journal*, 38, 45–64.
 14. Amel-Zadeh, A., & Serafeim, G. (2018). Why and how Investors use ESG Information: Evidence from a Global Survey. *Financial Analysts Journal*, 74(3), 87–103.
 15. Atan, R., Alam, M. M., Said, J., & Zamri, M. (2018). The Impacts of Environmental, Social, and Governance Factors on Firm Performance. *Management of Environmental Quality*, 29(2), 182–194.
 16. Albuquerque, R., Koskinen, Y., & Zhang, C. (2019). Corporate Social Responsibility and Firm Risk: Theory and Empirical Evidence. *Management Science*, 65(10), 4451–4469.
 17. Krueger, P., Sautner, Z., & Starks, L. T. (2020). The Importance of Climate Risks for Institutional Investors. *Review of Financial Studies*, 33(3), 1067–1111.

18. Bolton, P., & Kacperczyk, M. (2021). Do Investors Care about Carbon Risk? *Journal of Financial Economics*, 142(2), 517–549.
19. Pastor, L., Stambaugh, R.F., & Taylor, L.A.(2021). Sustainable Investing in Equilibrium. *Journal of Financial Economics*, 142(2), 550–571.
20. Berg, F., Koelbel, J. F., & Rigobon, R. (2022). Aggregate Confusion: The Divergence of ESG Ratings. *Review of Finance*, 26(6), 1315–1344.
21. Hai, B., Fang, Y., & Li, X. (2022). *ESG Disclosure and Investment Efficiency: Evidence from Chinese listed firms*. *Sustainability*, 14(18), 11254.
22. Kouaib, A. (2022). ESG Disclosure and Investment Efficiency: Evidence from Emerging Markets. *Corporate Governance and Sustainability Review*, 6(2), 35–47.
23. Allman, K., & Won, M. (2022). ESG Disclosure Quality and Investment Efficiency. *Journal of Sustainable Finance and Accounting*, 4(1), 21–39.
24. Wang, Y., Yu, H., & Li, J. (2022). Social Sustainability and Corporate Investment Efficiency. *Journal of Cleaner Production*, 350, 131489.
25. Choiriah, S., Tarmidi, D., & Ahmad, G. N. (2024). ESG Disclosure and Investment Efficiency: Evidence from Sustainability Reporting Practices. *Sustainability Accounting, Management and Policy Journal*, 15(3), 455–472.
26. Zairis, A., Liargovas, P., & Apostolopoulos, N. (2024). *ESG Integration and Sustainable Finance: Emerging Perspectives and Future Directions*. *Sustainability*, 16(7), 2878.
27. Ma, Y., Gao, X., & Xing, L. (2025). *ESG Performance and Investment Efficiency: Evidence from Sustainable Finance Practices*. *Sustainability*, 17(16), 7362.
28. Nguyen, T., Tran, H., & Nguyen, P. (2025). ESG Ratings and Investment Efficiency: International Evidence Across Firms. *Journal of Economics and Business*, 140, 106297.
29. Rammerstorfer, M., & Weinmayer, K. (2025). *ESG Portfolios and Investment Efficiency: Evidence from Sustainable Investment Strategies*. *OR Spectrum*, 47(1), 1–25.
30. Abate, G., Basile, I., & Ferrari, P. (2025). ESG Investing and Portfolio Performance in European Markets. *International Journal of Financial Studies*, 13(4), 230.
31. Josyula, S., & Vandanapu, S. (2024). Social Sustainability and ESG Adoption in Investment Decisions. *International Journal of Economics and Management Studies*, 11(2), 15–27

Emerging Trend of White-collar Extremism and Radicalism: An Academic Perspective

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Abstract

Acumens gathered from the aftermath of the Red Fort blast carried out by doctors and medical fraternities in old Delhi, causing the loss of the lives of 15 innocent persons, to validate the burgeoning threat of white-collar extremism in India. This year, India ranked 14th in the Global Terrorism Index 2025 with a GTI score of 6.411, which is outshone by Burkina Faso with the highest score of 8.581, quite ahead of IS-impacted Syria. Youth radicalization has opened up a new frontier in terrorism and national security. It calls for immediate action from the country's education policy makers, academia, and higher educational institutes for taking preventive steps for countering violent extremism by imparting high-quality education, providing intensive mentoring and counseling through emotional intelligence and neuro linguistic programming techniques and leveraging artificial intelligence-based machine learning algorithms to tackle the susceptible threat. This academic research paper presents an in-depth analysis of the white-collar extremism trending in the developing economies, which is badly upsetting their ongoing developmental projects. This pondered perspective analyzes youth radicalization issues theoretically using descriptive and qualitative methods serves as a value addition for directing future academic research in the sensitive areas of extremism studies, education, psychology, and national security research.

Keywords

Countering Violent Extremism (CVE), Emotional Intelligence (EI), Global Terrorism Index (GTI), Mentoring, Radicalization, Neuro linguistic programming (NLP), and White-collar Extremism (WCE).

1. Introductory Overview

The Red Fort blast occurred in Delhi on Nov 10, 2025, involving highly qualified medical professionals and the teaching medical fraternity of a higher education academic institute, causing the deaths of at least 15 innocent citizens and injuries to more than 35 persons need to be understood differently in light of the emerging patterns of white-collar extremism and globally spreading radicalism. Not only in Delhi alone, but there have been records of earlier terrorist attacks on visiting tourists in the Pahalgam area and on an army camp, such as the one that happened in Pulwama in Jammu & Kashmir, and internationally at Banibangou, Nigeria, or the vehicle that rammed into a crowd in New Orleans. Recently, there have been various terrorist attacks globally in countries like Burkina Faso, Syria, Niger, Mali, Democratic Republic of Congo, the United Kingdom, the United States of America, and in South Asian Countries involving radicalized qualified professionals such as doctors, surgeons, engineers, professors, Ph.D scholars, business researchers, chartered accountants, commerce graduates, ICT experts, media personnel, retired army officers and serving military personnel and religious preachers, who may be theoretically defined as white-collar extremism, whereas the violent extremism activities were defined by the USAID as the "advocating, engaging in, preparing, or otherwise supporting, ideologically motivated or justified violence to further social, economic or political objectives" (UNODC, 2025). Historically, the term white-collar crime was first introduced by an American sociologist, E. H. Sutherland, in the year 1949, while deliberating his Differential Association Theory (DAT). He defined white-collar crime as the act of an elite person with high social status in his occupation (Sutherland, 1949).

2. Historical Background

Recalling the unforgettable assassination incident of our beloved father of the nation on 30 January 1948, at the age of 78, in the compound of Birla House in Delhi, it can be cited as one of the forerunner examples of violent extremism and paroxysm of radicalization in India. Apart from this extreme occurrence, there is an endless list of similar types of dreadful happenings across India and abroad. A list of a few selected incidents of violent extremism is selectively tabulated here for the purpose of academic illustration only.

Table 1: - List of Ten Selected Violent Extremism Incident Cases Involving Delhi as Recorded in India

S. No.	Date of Incident	Place of Incident	Details of Extremism Incident
01	30/01/1948	New Delhi	Murder of Father of the Nation
02	31/10/1984	New Delhi	Murder of 4 th PM of India
03	21/05/1996	Lajpatnagar blast	Lajpat Nagar Market Blast
04	22/12/2000	Red Fort Delhi	Red Fort Attack at Old Delhi
05	29/10/2005	Phargunj SNagar	Blasts at Sarojni Nagar Market
06	13/09/2008	KarolBagh Delhi	Blasts at Gaffar Market Area
07	07/09/2011	Delhi High Court	Delhi Bombing at Gate No. 5
08	01/02/2020	Jamia Nagar Delhi	Firing at Shaheen Baugh Site
09	13/12/2021	Parliament attack	Indian Parliament house attack
10	13/12/2023	Parliament House	Indian Parliament Breach

Sources:- Secondary data was compiled only for academic illustration purposes without declaring the names of the involved extremists or victims to maintain anonymity from www.en.wikipedia.org as on 10/04/2026.

Delhi once used to be the country's top choice for higher education owing to the presence of world-class universities and Higher Educational Institutes (HEI) like Jawaharlal Nehru, Jamia Milia Islamia, and Delhi University, IIT Delhi, AIIMS and other research institutes of National Importance. Unexpectedly, the students and research scholars of universities situated in Delhi have become prone to violent extremist activities, and have been convicted for their hate crimes and may pose a threat to Safety and National Security.

On analyzing the above-listed historical evidence of the violent extremism cases involving Delhi alone, it can be said that Delhi has now become "Prone to Hate Crimes" or even it can be labeled as "City of Emerging Hate Crimes" in its regional context though, it proudly the houses President of India, the Prime Minister of India, Chief Minister of Delhi, Central Secretariat, State Secretariat, Embassies of Foreign Countries, Ministry of Home Affairs, Defense Head Quarters and many of India's Paramilitary Bases. Central agencies like NIA, CTCR, NTRO, IDSA, CBI, IB, and State ATS are also situated in the national capital region.

Table 2:- List of Ten Selected Violent Extremism Incident Cases as Recorded Globally

S. No.	Date of Incident	Place of Incident	Details of Extremism Incident
01	09/11/2001	New York City	Twin Tower Blast in the USA
02	07/07/2005	London UK	U/g Public Transport Bombing
03	11/09/2010	Florida State US	Burning of Holy Book Copies
04	07/01/2015	Paris France	Firing at Charlie Hebdo Press
05	03/06/2017	London UK	London Bridge Attack
06	02/10/2018	Istanbul Turkey	Murder of Journo in Embassy
07	15/03/2019	New Zeland	Christ Church Mosque Firing
08	12/08/2022	Amphitheater NY	Attack on booker prize holder
09	07/10/2023	Israel	Infiltration/ Civilian Hostage
10	07/10/On Going	Palestine	Genocides at West Bank/Gaza

Sources:- Secondary data was compiled only for academic illustration purpose without declaring the names of the involved extremists or victims to maintain anonymity from www.en.wikipedia.org; as on 10/04/2026.

On perusing the above-listed historical evidence of the violent extremism cases recorded worldwide, it can be categorically stated that radical hate crimes have become a global phenomenon now. It is being operated through a deep-rooted network by the various extremist groups working across the globe to enable the recruitment of vulnerable youths.

Table 3:- List of Thirty Selected Violent Extremism Incident Cases as Recorded Across India

S. No.	Date of Incident	Place of Incident	Details of Extremism Incident
01	06/07/1987	Lalru Punjab	Bus hijacking and mass shoot
02	21/05/1991	Sri Perumbudur	Murder of 8 th PM of India
03	15/06/1991	Ludhiana Punjab	Train Passenger Massacre
04	06/12/1992	Ayodhya UP	Demolition of Babri Mosque
05	12/03/1993	Mumbai MS	Car and Scooter Blast at BSE
06	31/08/1995	Chandigarh PB	Murder of 12 th CM of Punjab
07	22/05/1996	Dausa Raj	Samleti Bomb Blast Dausa
08	14/02/1998	Coimbatore TN	12 Bomb Attacks at 11 Places
09	27/02/2002	Godhara Guj	Sabarmati Express Carnage

S. No.	Date of Incident	Place of Incident	Details of Extremism Incident
10	28/02/2002	Ahmedabad Guj	Narora Patia Bloodbath
11	01/03/2002	Vadodara Guj	Best Bakery Massacre
12	27/08/2004	Jalna Maharashtra	Kadriya Masjid Blast in Jalna
13	18/02/2007	Samjhauta Exp	Samjhauta Express Bombing
14	18/05/2007	Hyderabad TS	Makkah Masjid Bombing
15	11/10/2007	Ajmer Raj	Ajmer Sharif Dargah Blast
16	13/05/2008	Jaipur Raj	9 Synchronized Blast at Jaipur
17	25/07/2008	Bengaluru Karna	9 Serial Blasts at Bengaluru
18	26/07/2008	Ahmedabad Guj	21 Serial Blasts at Ahmedabad
19	29/09/2008	Malegaon MS	Malegaon Mosque Blast
20	26/11/2008	Mumbai MS	Open Firing at CST Mumbai
21	13/02/2010	Pune MS	German Bakery Bomb Blast
22	13/07/2011	Mumbai MS	Zaveri Bazar Tiffin Box Blast
23	20/08/2013	Pune MS	Murder of A Social Activist
24	20/02/2015	Kolhapur MS	Murder of An Author/ Marxist
25	04/06/2015	Chandel Manipur	Manipur Ambush Strikes
26	30/08/2015	Dharwad Karnat	Murder of Academic scholar
27	28/09/2015	Bisahra dadri UP	Lynching over Beef Rumors
28	05/09/2017	Bengaluru KS	Murder of Activist/ journalist
29	28/06/2022	Udaipur Raj	Be Heading of a Local Tailor
30	03/05/2023	Imphal Manipur	Murder & arson of minorities

Sources:- Secondary data was compiled only for academic illustration purposes without declaring the names of the involved extremists or victims to maintain anonymity from www.en.wikipedia.org; as on 10/04/2026.

The cited list is an indicative one. It does not include naxalism and communal riots, just to highlight the sensitivity of radical hate crimes and violent extremism cases are spreading in India.

3. Theoretical Background

Let us first understand terrorism, radicalization, and violent extremism in light of theory. The Social Identity Theory (SIT), as developed by Tajfel, Henri & Turner, J.C. (1979), suggests that young people strive to achieve or maintain a positive social identity by becoming an active member of a social group for developing a sense of identity and belonging through their association with that

group. Social groups are categorized based on people's ethnicity, religion, nationality, and ideology. This categorization often leads to in-group favouritism and out-group discrimination. Social Identity Theory highlights the role of group membership and intergroup relations in the youth radicalization processes as detailed in the Stair Case Model (SCM), described by Fathali M. Moghaddam (2016). The majority of youths struggle with an identity crisis, unemployment, and marginalization to fill this gap, extremist groups construct an appealing in-group identity based on religious, ideological, and ethnic terms to resist or attack the out-groups. The Dissonance Theory (DT), suggest, that when an individual perceives a contradiction, he experiences a sense of tension and cognitive dissonance arises in the perpetrator as a mechanism to reduce the inconsistency between their positive self-image and the commission of his negative actions, thereby providing a sense of relief to the individual, which leads them to take violent extremist actions and become fanatical. Whereas, General Strain Theory (GST) of terrorism presents violent extremism as a cumulative risk arising from a group of factors that increase the likelihood of individuals to engage in violent extremism (Agnew, R. 2010).

In Political Psychology, it is evidently claimed that different ideologies attract different types, considering the relationship between education and violence, mindset and ideology, one can't deny the fact that there is a correlation between personality traits and ideologies as based on the Principles of Psychology (Diego Gambetta & Steffen Hertog, 2016), and a pursuit to become a Hero in a regional, societal, and religious context strongly motivates an individual for taking the extreme behavior as per the Significance Quest Theory (SQT) as found validated by Kruglanski et al, (2017). The indicators of existential anxiety was also found to support the violent extremist activities of youths. While critically analyzing the correlation between political efficacy, extrinsic religiosity and support for the violent extremist exhibited by youths, the relationship between the indicators of existential anxiety was found to be strongly dependent on the perceptions of political efficacy and religious orientation of youths supporting violent extremist activities (Muhammad Iqbal et al, 2024). Further, the white-collar violent extremist behavior of an elite a person of high social status engaged in respectable and socially valuable occupation was found supporting the Differential Association Theory (DAT), developed by Southerland, which suggests that crime is not inherited in nature but it is learned through social relationships, group interaction, and everyday

communication, which validates Attachment Theory and Albert Bandura's Social Learning Theory, as found further expanded by the eminent scholars like Ronald Aker, John Bowlby, Skinner, Gibbs, Gibson and others, while deliberating its psychology theoretically.

4. Academic Background

Now, let us accentuate the scientific research contributions made by the highly engaged academicians and subject experts. The 2nd Lepsy ceepus network, research and cooperation conference recently held on 12 March 2025, at Ludovika University of Public Service, Budapest, Hungary discussed the law enforcement, psychology and security in dialogue, where Gabor Bogнар & Johanna Farkas (2025), the editor of the conference proceedings book published by the Hungarian Society of police sciences, presented an overview of radicalization models to understand the pathways of extremism, and presented three prominent models namely Staircase, 2P and 3N Models for analyzing the complex phenomenon of extremism, and disrupting radicalization for securing more resilient societies by combating it. In an earlier report of the WHO on Violence and Health, a Socio-Ecological Model, was cited by Dahlberg and Krug (2002), which can facilitate the understanding of any form of violence perpetration. The Staircase Model, as developed by Fathali M. Moghaddam in 2005, analyzes the progressive steps of an individual to become radicalized; it is quite effective in preventing the escalation of violent extremism. McCauley and Moskalenko's 2-Pyramids Model was later developed in 2008. It is a combination of two pyramids; one represents radicalization, and the other opportunity, and analyzes all psychological, social, and external factors which facilitate understanding the radicalization process in detail and the Extremism activity of an individual in a complex way.

The latest model, as developed by Webber and Kruglanski (2018), critically analyzes factors related to Need, Narrative, and Networks (3N). In an earlier International Symposium on Radicalization, Extremism and Social Media: The Asia-pacific Context, which was held at Flinders University in South Australia on 19-23 August 2019, advance research papers on the radicalization in the Asia-pacific Region was presented, which, discussed the needs and goals of counter-terrorist and countering violent extremism attacks to address a need for explanatory frameworks and future empirical studies to extend help to understand radicalization approaches in relation to the specific contexts in

which it unfolds, where these contexts are characterized by the socio-cultural, situational, ontological dimensions and different temporalities (historical time, organizational life cycle, individual life, and micro-interactions) as compiled in a special issue on Radicalization in the Asia-pacific Region: Themes and Concepts edited by (Claire Smith et al, 2024) published in the studies in Conflict & Terrorism by Routledge of the Taylor and Francis Group. Sabic-El-Rayess, A, (2021) has also developed an educational displacement and ideological replacement model to illustrate the pathways of radicalization of students in ten sequential steps, and come up with their transformation solution with teachers in the classroom scenario.

Springer Nature has also published a scholarly article based on the research findings made by Monte-Angel Richardson (2023), to predict and prevent the violent extremism called Transparent Reporting of a Multivariable Prediction Model for Individual Prognosis or Diagnosis-machine Learning (TRIPOD-ML). It covers various aspects of violent extremism, i.e., domestic terrorism, mass shootings, violent extremist organizations activities, violent protest, including activities of Radical Islamist Organizations, like Islamic State, Levant, ISIS, and Far-Right White Nationalist Organizations. Another method called Artificial Intelligence for Disaster Relief (AIDR), focuses on the trending crisis-related tweets using crowdsourcing to classify the online activities based on the predefined criteria to predict the online violent Extremism activities using algorithms such as SLDA, SVM, KNN, and Natural Language Processing techniques to predict violent extremism with Machine Learning Algorithms.

Similarly, Haghish et al. (2023) also presented a study on risk and protective factors and examined the relationship between adolescent extremist attitudes and mental health, well-being, psychosocial, environmental, and lifestyle variables, using machine learning techniques. Mayur Gaikwad et al, (2023) also examined the multi-ideology, multiclass online extremism datasets such as ISIS, GAB White-supremacist, and trending Twitter tweets utilizing the Machine Learning classification algorithms, such as Support Vector Machine (SVM), MNB, Random Forest, and XGBoost algorithms using TF-IDF Unigram to evaluate the comparable performance to the existing data set of a single ideology to enhance the accuracy of detection. These scholarly works of academic researchers clearly delineate the act of radicalization theoretically and demonstrate the preventive mechanism practically.

5. Objective of the Study

The core objective of this conceptual research study is to present an academic perspective on the emerging trend of white-collar extremism and radicalism and to spread awareness amongst the teaching fraternity of Higher Education Institutions (HEIs) to take self-cognizance of the burgeoning threat of white-collar extremism in order to suggest effective measures for Countering Violent Extremism (CVE) and Radicalization, leveraging AI-based latest innovative technologies, Machine learning algorithms, emotional intelligence, and neuro linguistic programming techniques for developing a safe, secure, and resilient society.

6. Research Methodology

The academic perspective presented here on violent extremism and radicalization is purely based on the conceptual research study undertaken using descriptive research methods. As there was no primary data available to find the exact cause of white-collar extremism and radicalization emerging rapidly in India, only qualitative and exploratory research methods were utilized. In order to identify the current research gap, the preferred reporting items for systematic reviews and meta-analysis guidelines were strictly followed. A rigorous online survey of the prevailing literature on the subject heading was conducted by referring to some of the very recently published findings presented in the international journals of repute to compile this systematic review of the literature qualitatively.

The sampling strategy adopted to select the published literature for systematic review was random; it only recently published research works of the last five years were considered, which were carried out after the post-COVID-19 era and were published in standard journals. Crime subject headings mentioning Violent extremism and Radicalization were utilized to include the published papers, and the rest of the papers with repetition of the same findings were excluded for synthesis of available online literature without using any specific coding framework, as findings were not at all empirically tested in the absence of any primary data. Since the theme of the undertaken descriptive research study was quite sensitive and intellectually significant in nature, it was carefully framed with a strong theoretical background, totally in line with Helsinki Declarations as per its latest amendments of 2013.

7. Review of the Literature

To undertake the qualitative and exploratory research on this thematically sensitive and rapidly emerging trend of white-collar violent extremism and radicalization spreading globally, a very extensive survey of literature was carried out to narrow down its focus on understanding the core concepts. To address the available research gap and present the critical analysis of various research findings found published online in the subject domain, the following Sub-sections were selectively framed to summarize the comprehensive details.

7.1 Review of the Literatures on Causes of Youth Radicalization

Hafez Ghanem and Kartika Bhatia (2017) have gathered evidence from the eight Gulf countries to know how education and unemployment affect support for the violent extremist activities of youths. Similarly, Ramesh Ramasamy (2021) presented a study on the pathway of youth radicalization and violent extremism in the post-war scenario of Sri Lanka. Moh Shan J. Abdul Wahid (2023) describes the youth susceptibility to radicalization and found that social, economic, political, and religious factors are strongly related to the youth susceptibility. Their socio-economic considerations, religion-related difficulties and encountered social injustices were found to facilitate the recruitment of young people by the radical extremist groups. While Sebastian Schutte et al. (2023) have collected the evidence from a panel survey was conducted in Uttar Pradesh in India, and analyzed how fear of violence drives intergroup conflicts and predicted that fear for personal safety owing to witnessed violence causes prejudice against the out-groups and enhances the internal cohesion and support for the extremist activity, as found validated by Southerland (1949).

7.2 Review of the Literatures on Psychological & Social Drivers

Muhammad Azam (2024) studied the interconnection between social factors and radicalism found that social issues like weak social bonds, social anxiety, social repression, social instability, social injustice, deprivation, and unemployment were the main factors, which can be well addressed by the parents and teachers showing affection to children and parents shall learn good contemporary parenting techniques to raise happy, healthy children through advocacy, media, and quality education to nurture them as good citizens. The United Nations Office on Drugs and Crime (UNODC) has also listed social drivers such as poor governance,

discrimination, marginalization, lack of opportunities, unresolved conflicts, less rule of law, violations of human rights, and radicalization of criminals in prisons, which were found to be highly conducive for spreading hate crime and violent extremism activities (UNODC, 2025).

7.3 Review of Literatures on the Role of Education, Social Media & AI

Marlies Sas et al. (2020) studied the role of education in preventing youth radicalization and emerging violent extremism cases in the developing economies and published their findings in the reputed Sustainability Journal with strong evidence of unequal access to education, poor quality of education and the relationship between education and employment and recommended aligning the current job market to the education level of graduate students. Samantha de Silva (2025), in a joint World Bank-UN, flagship report, described the role of education in the prevention of violent extremism and discussed the various developmental interventions in detail for preventing conflict, violent extremism, and youth radicalization. While Arkadev Ghosh et al. (2025) have organized an adolescent youth camp experiment in West Bengal, in India, to develop cohesive communities by socializing people of different communities to reduce in-group bias, strengthen intergroup cohesion and enhance psychological well-being and established that it serves as a powerful tool for bridging the deep social divides. Global Network on Extremism and Technology (GNET), London, UK, has also published a book on how young people from Asian countries are challenging violent extremism activities online (Primitivo III Cabanes Ragandang, 2024). Kavita Mittal & Nidhika Arya (2024) have critically examined the evolving role of educational institutions and teachers in combating the complex radicalization process through comprehensive training to equip the students with digital literacy and digital hygiene skills to counter the online radicalization. A case study on the emerging trend of radicalization amongst youth of higher educational institutions was also critically reviewed by Mihrullah et al. (2025).

The Humanities and Social Science Communication Journal of Springer Nature has recently published an open access article detailing radicalization targeting youths in Delhi, India, using social media echo chambers by Abdul Fahad and Siti Ezaleila (2025), which critically examines the present dynamics of social media engaged in spreading hate crimes involving the city youths. Raju J. Das (2024) has very critically examined the attacks on

the ideas of democracy and socialism and establishes the fact with strong documentation evidence that some organizations, with ingenious support, aim to create a negative atmosphere for the minorities living in India. Palgrave Macmillan published a book titled "Education in the Age of Misinformation", which presented philosophical and pedagogical explorations covering Vik Joshi and Amra Sabic-El-Rayess's (2023) pedagogical responses to misinformation, hate, and radicalized crimes.

7.4 Review of the Literatures on Preventive Mechanisms

Journal for De-radicalization, in its fall issue of 2025, published a research study on preventing violent extremism through mentoring as a social rehabilitation approaches (Bourgeois-Guerin et al., 2025), and preventing radicalization at the local level through municipal and state-civil society collaboration as per the findings made in Germany by (Chiara von Hollen-Pierobon, 2025), while Wiley has presented few detailed systematic reviews of literature on Preventing Violent Extremis (PVE) by (Amit, S. & Kafy, A. 2022) for developing strategies for resilient individuals for taking practical action to prevent violent extremist activities and studies on cognitive and behavioral aspects of radicalization (Wolfowicz, M et al., 2021), to highlight its putative risk and protective factors. Kritika Karmakar et al. (2020) have framed a draft policy brief for strategically countering terrorism and the emerging radicalization of Indian youths by Islamic extremist groups, which were published by the Centre for Security Studies (CSS). For countering the emerging extremism problems in the Central Asian Region, and to prevent the extremist recruitments by ISIS or any other terrorist networks operating globally, it was suggested to improve the economic components, protect the human rights, increase trust, and introduce social welfare schemes to strengthen education and health system for citizens (Farangis Sharipova, 2022).

Chau-kiu Cheung & Cindy Xinshan Jia (2023) surveyed Chinese youth in Hong Kong and observed that radicalism declines with awareness of the law enforcement and law abidance, and agreement on law abidance increases with awareness of law enforcement, and prevents youth radicalism. A scientific study and mathematical statistical analysis of processes of radicalization of military personnel was also presented by Makhmudov Nemadulla Akhmatovich (2023) in the International Scientific Online Conference on the development of pedagogical technologies on

behalf of the Academy of the Armed Forces of the Republic of Uzbekistan, Tashkent, for the implementation of an effective mechanism to combat the emerging violent extremism and terrorism in the young generation. Caroline Da Silva et al. (2024) have come up with their study on risk and protective factors associated with violent extremism using a multilevel and interdisciplinary evidence-based approach in line with the Socio-ecological Model, as found validated by (Dahlberg & Krug, 2002). Recently, Kannan M., Muhamad Syauqillah (2025) made an extensive comparison analysis of the De-radicalization programs found operating in India and Indonesia, while specific events of religious extremism and terrorism cases in India have been found broadly categorized into several domains by Kanishka Awana (2025) for formulating effective counter terrorism policies. After the infamous 09/11 terrorist attacks in 2001, the UN was mandated to make the world safer from transnational organized crimes and terrorism by helping member states in strengthening their criminal justice systems, preventing youth crimes, and combating global terrorism. On 10 June, 2025, an MoU was signed with Tech against terrorism on counter-terrorism and misuse of ICT and other emerging technologies for terrorist activities.

7.5 Critical Analysis of the Literatures and Synthesis

On critically analyzing the reviewed literature selected for this thematic qualitative research study, it was evidently observed that violent extremism and youth radicalization are emerging globally and posing a threat to the safety and security of developing nations, hindering the ongoing developmental works required for achieving the set SDGs. It is thus synthesized that a strict vigil and check have to be kept at all times on the drivers of youth radicalization for developing a strong counter mechanism for preventing and countering the violent extremist activities by understanding the act of terrorism theoretically and addressing all the conditions found conducive for the spread of terrorist for improving the safety and national security.

8. Discussion and Interpretations

While theoretically understanding the radicalization mechanism based on the aforesaid literature survey, one has to consider its entire process and focus on all its sub-categories as detailed in McCauley-Moskalenko (2008), the two pyramid (2P) Model. It describes that the radicalization of an individual

transpires due to various factors categorized as personal grievance, political grievance, group membership, joining a radical group through the power of love, group radicalization within like-minded groups, group radicalization in isolation: in small combat units, competition for the same support base, and group radicalization against state power, and group radicalization through internal competition schism, mass radicalization in conflict with an external group for judo politics, mass radicalization in conflict with an external group for hatred, and mass radicalization in conflict with an external group for martyrdom. There are known indicators or social drivers, like poverty, unemployment, social exclusion, and peer influence and the psychological drivers, like identity crisis, low self-esteem, trauma, and need for belonging. Psychosocial vulnerabilities are strategically targeted to expand the extremist networks through the exploitation of youths by recruiting them utilizing active social media platforms to disseminate their fake propaganda, glorifying the violent extremist acts of radical figures by the extremist groups for expanding their extremist network globally through rigorous preaching in pursuit of becoming a hero (E. Glad, 2025).

9. Conclusion and Inferences

A holistic approach is thus needed for countering the threat of white-collar extremism and the globally emerging trend of youth radicalization, by thoroughly analyzing it using the Need Narrative and Network (3N) Model as developed by Webber & Kruglanski (2018) and illustrated by Johana Farkas et al. (2025), for developing a safe, secure, and resilient society free from any terrorist activities. Use of the latest emerging technologies for early prediction and countering violent extremism, like Transparent Reporting of a Multivariable Prediction Model for Individual Prognosis or Diagnosis-machine Learning (TRIPOD-ML) Algorithm as statically demonstrated by (Monte Angel Richardson, 2024) may perhaps be made mandatory, since it has been proven as start of art method and well supported by the international organizations, like, International Center for Counter-Terrorism (ICCT), Center for Research on Extremism (C-REX), International Center for Counter-terrorism (ICCT), Counter Terrorism Executive Directorate (CTED) and the International Institute for Justice (IIJ).

AI-based Machine Learning Algorithms may perhaps be applied for mitigating the emerging threat of white-collar extremist and the threat of youth radicalization by far-right extremist groups, IS-inspired terrorism networks, and other forms of violent extremism activities happening worldwide. AI-based prediction technologies may also be utilized for the timely detection of future occurrences in advance for taking proper preventive actions with parental, academic, and full governmental support to cut the expanding FIN of terrorist organizations Gerwehr et al. (2006), engaged in youth recruitment and exploitation by the white-collar violent extremist groups as envisaged a decade ago by the United Nations (UNODC, 2017).

10. Socio-political Implications

For implementing the strict law enforcement to counter violent extremism in the Indian Socio-political environment, and in the regional context, the applicable existing statutes need to be strengthened to address the emerging radicalization of highly educated youths by extremist recruiters through social media platforms. There seems to be only three pertinent edicts, which are mostly reported with its gross misuse for the geo-political gains by the authorities in power, namely the Prevention of Terrorism Act (POTA, 2002), the Terrorist and the Disruptive Activities (prevention) Act (TADA, 1985), and the most commonly applied in now a days, the Unlawful Activities Prevention Act (UAPA, 1967) to address the emerging radicalization issues in India. The prolonged detention, life imprisonment, and death penalty sentences to be re-analyzed by taking cognizance of emerging threats from the trending radicalization of highly educated youths for preventing future occurrences of white-collar extremist activities by scrutinizing and briefly amending the Bhariya Nayaya Sanhita, Act (BNS, Act 2023), the prevailing current version of the Indian Penal Code (IPC, 1860). Apart from these three prominent Acts, there are other applicable decrees, which may perhaps be looked into for strengthening the scope for curbing the emerging extremism and youth radicalization, namely the Explosives Substance Act (ESA, 1908), the Explosives Act, (EA, 1884), Indian Arms Act (IAA, 1959), and very recently introduced Ammonium Nitrate Rules (ANR, 2012), Waqf Amendment Act (WAA, 2025), IT Act (2000) and The Information Technology (Procedure and Safeguards for Blocking for Access of Information by the Public) Blocking Rules 2009, Foreign Exchange Regulation Act (FERA, 1973) and Foreign

Exchange Management (Borrowing & Lending) Regulations, 2018 etc., for strengthening the preventive mechanism and intensely handling future such occurrences with strong judicial backup, skintight prosecution mechanism and full governmental support in the interest of strengthening the national security. Opportunities for providing the psychological counseling and academic mentoring must be incorporated for the captured convicts undergoing long-term detention for their psychological well-being and future development through designing rehabilitation programs with social fabric for building, a resilient and strong cohesive society (Ghosh, et al. 2025) equipped with the future ready digital literacy and digital hygiene skills (Kavita Mittal & Nidhika Arya, 2024) for re-shaping their present mental health status to re-convert them to become good law-abiding and law-aware citizen (Chau-kiu Cheung, 2023).

11. Academic Recommendations

Community-centred solutions may be developed to counter the vulnerabilities with the help of academia, policymakers, and all stakeholders for developing an inclusive and holistic social and psychological mechanism to address the unemployment, exclusion, and identity crises. Thus, it is highly recommended to integrate Psychological Counselling with the Skills Development Programs to address the unemployment issue (Eleyi, 2025), with the help of Academia to counter-radicalization of susceptible youths facing marginalization, societal discrimination, and identity-based exclusion due to various geopolitical, regional and most commonly on their personal ethnic factors. Latest AI-based machine learning algorithms for identifying the vulnerable youths for providing them intensive Mentoring and Counselling (M&C) through Emotional Intelligence (EI) and Neuro Linguistic Programming (NLP) techniques may be utilized (Mohammad Iqbal, 2006). Strong counter-narratives are, thus, to be promoted with the help of Academia by imparting skill-based higher education and leveraging the youth, social, and electronic media platforms with family and community structures and full governmental support for stopping the vulnerable extremist recruitment and countering the white-collar extremism and radicalization to develop globally safe and resilient societies. It was also concluded by the researchers that establishing peace, harmony, and cohesiveness is necessary for building a strong countering violent extremism mechanism.

12. Practical Limitations

While presenting this academic perspective on the violent extremism and radicalization, full anonymity of the respondent's name and their affiliations was ensured to ensure the credibility and responsible discourse. In the absence of available primary data, and only those secondary data were interpreted that were readily available in the public domain and referred to with their proper web reference and date of its last access are fully in line with the international research protocols with possible bias and limitations of qualitative review methods, without any conflict or personal interest and without receiving any research grant or availing any type of funding from any of the Higher Educational Institutes (HEI) situated in India or abroad by the author of this article.

13. Future Directions

Future researchers shall explore a structured way forward based on the emerging patterns of violent extremism and radicalization amongst white-collar professionals globally, with a balanced academic approach, and must come up with their new innovative ideas to intellectually counter the trending hate crimes and terrorism in order to save the humanity of developing economies. The 44th President of the USA, Barack Hussein Obama II, once said that "Ideologies are not defeated by guns, but by new ideas". The Next Generation researchers thus must try to at least validate these violent extremism models developed by the present researchers to develop a more effective counter-radicalization strategy to disrupt the radicalization pathways of emerging white-collar extremism to encourage communal harmony and build strong resilience among societies of different faiths and ideologies. Thus, future researchers are directed to undertake evidence-based interdisciplinary research in the areas of extremism studies, education, psychology, and research on national security.

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15. References

1. Agnew, R. (2010), "A General Strain Theory of Terrorism", *Theoretical Criminology*, 14(2), Article 2 Available from: <https://doi.org/10.1177/1362480609350163>
2. Ainsworth, M. D. S., & Bell, S. M. (1970), "Attachment, Exploration, and Separation: Illustrated by the Behavior of One-year-olds in a Strange Situation", *Child Development*, 41(1), pp49–67 Available from: <https://doi.org/10.2307/1127388>
3. Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978), "Patterns of Attachment: A Psychological Study of the Strange Situation", Hillsdale, NJ: Erlbaum
4. Amit, S & Kafy, A. (2022), "A Systematic Literature Review on Preventing Violent Extremism", *Journal of Adolescence*, The Foundation for Professionals in Service of Adolescents, Doi:10.1002/jad.12095, pp 01–13 Available from: www.wileyonlinelibrary.com/journal/jad (accessed April 03, 2026)
5. Bandura, A. (1977). "*Social Learning Theory*", Englewood Cliffs, NJ: Prentice Hall
6. Bourgeois-Guerin, et al. (2025), "Preventing Violent Extremism through Mentoring? Outcomes and Insights from a Quebec Based Program", *The JD Journal for Deradicalization*, Fall: 2025, No. 44, ISSN: 2363-9849, pp34-61
7. Bowlby, J. (1969), "Attachment and Loss", Vol. I, Attachment, Hogarth Press London
8. Bowlby, John. (1969). "Attachment and Loss", Vol. 1, Loss, Basic Books, New York
9. Caroline Da Silva et al. (2024), "Risk and Protective Factors Associated with Violent Extremism: A Multilevel and Interdisciplinary Evidence Based Approach", *Perspectives on Terrorism-ICCT-JSTOR*, Vol. XVIII, Issue 03, ISSN: 2334-3745, Sept 2024, pp69-89

10. Chau-kiu Cheung & Cindy Xinshan Jia. (2024), “Law Awareness and Abidance and Radicalism Prevention Among Hong Kong Youth”, *Applied Research in Quality of Life*, 19:2267–2285 Available from: <https://doi.org/10.1007/s11482-024-10331-y> (accessed April 03, 2026)
11. Chiara von Hollen-Pierobon. (2025), “Preventing Radicalization at the Local Level: Municipal Perspectives on State-Civil Society Collaboration in Germany”, *The JD Journal for Deradicalization*, Fall: 2025, No. 44, ISSN: 2363-9849, pp125-158
12. Claire Smith, Lucy Resnyansky & Craig Taylor. (2024), “Radicalization in the Asia-Pacific Region: Themes and Concepts”, *Studies in Conflict & Terrorism*, Special Issue Editorial Part, 47:11, Doi : 10.1080/1057610X.2022.2034232, Routledge, Taylor and Francis, pp1383-1387
13. Dahlberg and Krug. (2002), “Violence-A Global Public Health Problem”, *World Report on Violence and Health*, World Health Organization, Geneva, pp01-21
14. Dollard, J., & Miller, N. E. (1950), “Personality and Psychotherapy; an Analysis in Terms of Learning, Thinking, and Culture”, New York, USA, McGraw-Hill
15. Eleyi, Glad Nkeiruka. (2025), “Psychosocial Factors Influencing Radicalization and Violent Extremism in Youth Populations”, *Rapid-Journal for Social Sciences*, Vol. 2, Is. 8, E-ISSN: 1595-6350, pp954-961 Available at: www.rapidjournals.com
16. Farangis Sharipova. (2022), “The Growing Threat of Extremism in Central Asia: Causes and Solutions”, *Science Open*, Doi: 10.14293/S2199-1006.1.SOR-PPF3VEL V. 1, pp 01-11 Available from: <http://www.scienceopen.com> (accessed April 03, 2026)
17. Farkas, Johanna. (2022), “Radicalization in the Context of Risk Indicators and Vulnerabilities”, *Habilitation*, Ludovika University of Public Service, Budapest
18. Fathali M. Moghaddam (2005), “The Staircase to Terrorism: A Psychological Exploration”, *American Psychologist*, 60(2), pp161–169 Available from: <https://doi.org/10.1037/0003-066X.60.2.161> (accessed March 21, 2026)
19. Fathali M. Moghaddam et al., (2016). “Terrorism, Radicalization and De-Radicalization”, *Current Opinion in Psychology*, 11 (2016): pp79-84

20. Gabor Bogнар & Johanna Farkas. (2025), "Understanding the Path to Extremism: An Overview of Radicalization Models", *Law Enforcement, Psychology and Security in Dialogue: Interdisciplinary Perspectives: Conference Proceedings*, Edited by Imre Dobak and Johanna Farkas, 2nd. Lepsy Ceepus Network, Research and Cooperation Conference (12 March 2025), ISBN 978-615-6456-42-7, pp157-169, Published by the Hungarian Society of Police Sciences, Organizer: Ludovika University of Public Service, Budapest, Hungary
21. Gerwehr, Scott, Sara A. Daly. (2006), "*Al-Qaida: Terrorist Selection and Recruitment*", RAND Corporation, Santa Monica, California, pp76-80
22. Ghosh Arkadev et al. (2025), "Creating Cohesive Communities: A Youth Camp Experiment in India", *Review of Economic Studies*, (April 2025), 00, pp01-38, Available from: <https://doi.org/10.1093/restud/rdaf026> (accessed April 10, 2026)
23. Gibbs, J. P. (1975), "*Crime, Punishment, and Deterrence*", New York: Elsevier
24. Hafez Ghanem & Kartika Bhatia. (2017), "How do Education and Unemployment Affect Support for Violent Extremism? Evidence from Eight Arab Countries", *Global Economy and Development at The Brookings Institution*, WP 103, March, JEL: I20 I24D74O15, pp01-40
25. Haghish, E. F et al. (2023), "Mental Health, Well-being, and Adolescent Extremism: A Machine Learning Study on Risk and Protective Factors", *Springer Research on Child and Adolescent Psychopathology*, 51:1699–1714, Available from: <https://doi.org/10.1007/s10802-023-01105-5> (accessed April 10, 2026)
26. Institute for Economics & Peace (2025), "Global Terrorism Index 2025 - Measuring The Impact of Terrorism", *IE&P*, Sydney, March 2025, ISBN 978-1-7637550-9-3, pp01-111 Available from <http://visionofhumanity.org/resources>
27. Kanishka Awana. (2025), "Religious Extremism and Terrorism in India: A Case Study of Specific Events", *Indian Association of Health Research and Welfare International Journal of Social Science Review*, ISSN:2347-3797,13(2), pp434-438
28. Kannan M & Muhamad Syauqillah. (2025), "Comparison of De-radicalization Programs in Indonesia and India", *Enrichment: Journal of Multidisciplinary Research and Development*, Vol. 3 (3), 2025, pp473-485,

- Available at <https://journalenrichment.com/index.php/jr/> (accessed April 03, 2026)
29. Kritika Karmakar, Zeus Hans Mendez, Hussainpur Sai Charan, Sankalp Sreenath. (2020), Policy Brief: India's Need for a Counter Radicalization, *The Centre For Security Studies*, CSS-Jindal School of International Affairs, July 2020, pp1-13
 30. Kruglanski et al., (2017), "To the Fringe and Back: Violent Extremism and the Psychology of Deviance", *American Psychologist*, 72(3), pp217-230 Available at <https://doi.org/10.1037/amp0000091> (accessed April 03, 2026)
 31. Makhmudov Nematulla Akhmatovich, (2023). "Scientific Study and Mathematical Statistical Analysis of Processes of Radicalization of Military Personnel", *Development of Pedagogical Technologies in Modern Science*, Academy of the Armed Forces of the Republic of Uzbekistan, Tashkent, pp45-55, <https://doi.org/10.5281/zenodo.12798391>
 32. Marlies Sas et al. (2020), "The Role of Education in the Prevention of Radicalization and Violent Extremism in Developing Countries", *Sustainability*, 12, 2320; doi: 10.3390/su12062320, pp1-12, Available at www.mdpi.com/journal/sustainability
 33. Mayur Gaikwad et al. (2023), "Multi-ideology, Multiclass Online Extremism Dataset, and Its Evaluation Using Machine Learning", *Computational Intelligence and Neuroscience*, Vol. 2023, Article ID 4563145, pp01-33, Available from:<https://doi.org/doi.org/10.1155/2023/4563145> (accessed March 21, 2026)
 34. McCauley, C., & Moskaleiko, S. (2008), "Mechanisms of Political Radicalization: Pathways Toward Terrorism", *Terrorism and Political Violence*, 20(3), pp415–433
 35. McCauley, C., & Moskaleiko, S. (2017), "*Friction: How Radicalization Happens to Them and Us*", OUP, Oxford University Press, London, UK
 36. Mihrullah, et al. (2025), "Emerging Trends of Radicalization among Youth: Case Study of Educational Institutions", *The Critical Review of Social Sciences Studies*, Vol.3, No.2, pp1455-1463, <https://thecrsss.com/index.php/Journal/about>
 37. Moh Shan J. Abdulwahid. (2023), "Youth Susceptibility to Radicalization", *Global Scientific Journals*, Volume 11, Issue 7, July 2023, Online: ISSN 2320-9186, pp369-390, www.globalscientificjournal.com (accessed April 03, 2026)

38. Mohammad Iqbal Zaffar Ansari, (2006). "Neuro Linguistic Programming (NLP)", *Quality Government*, Vol. 7, No. 2, pp 2-5, Published by LBSNAA, Mussoorie, India
39. Monte-Angel Richardson, (2024). "Predicting Violent Extremism with Machine Learning: A Scoping Review", *Springer Nature Computer Science*, 5:16, Available from: <https://doi.org/10.1007/s42979-023-02355-2> (accessed April 03, 2026)
40. Muhammad, A. (2014), "*Indonesia's Way to Counter Terrorism 2002-2009*": Lesson Learned
41. Muhammad Azam. (2024), "Interconnection between Social Factors and Radicalism", *Orient Research Journal of Social Sciences*, Vol.9, No.1, eISSN 2616-7093, pp97- 106
42. Muhammad Iqbal et al., (2024), "The Relationship between Existential Anxiety, Political Efficacy, Extrinsic Religiosity and Support for Violent Extremism in Indonesia", *Studies in Conflict & Terrorism*, Special Issue Editorial Part, 47:11, Doi : 10.1080/1057610X.2022.2034221, Routledge, Taylor and Francis, pp1510-1518
43. Nidhika Arya et al. (2024), "Role of Educational Institutions and Teachers in Combating Radicalization", *IJFMR*, IJFMR240214823, Volume 6, Issue 2, March-April-2024, E-ISSN: 2582-2160, pp01-111 Available from: www.ijfmr.com
44. Primitivo III Cabanes Ragandang. (2024), "Young People Challenging Violent Extremism Online: Insights from Asia". *Global Network on Extremism and Technology (GNET)* London Available from: <https://doi.org/10.18742/pub01-193> (accessed March 21, 2026)
45. Raju J, Das. (2024), "The Right-wing Attacks on the Academic Left in India", *Class, Race and Corporate Power: part of the, Political Science Commons*, Vol. 12: Iss. 01, Article 6, pp01-15, Available at:<https://digitalcommons.fiu.edu/classracecorporatpower/vol12/iss1/6>
46. Ramesh Ramasamy. (2021), "Youth Radicalization and Violent Extremism: a Study of Pathways in the Post-war Context of Sri Lanka", *Journal of Youth Studies (T&F Group)*, pp01-21, Available from: <https://doi.org/10.1080/13676261.2021.2010684> (Accessed March 21, 2026)

47. Sabic-El-Rayess, A. (2021), “How do People Radicalize?”, *International Journal of Educational Development*, 87, 102499
48. Samantha de Silva. (2025), “Role of Education in the Prevention of Violent Extremism”, *Joint World Bank-UN Flagship Report*, Can Development Interventions Help Prevent Conflict and Violence, Education Global Practice, World Bank, pp01-27
49. Sebastian Schutte, Constantin Ruhe & Niranjana Sahoo. (2023), “How Fear of Violence Drives Intergroup Conflict: Evidence from a Panel Survey in India”, *Terrorism and Political Violence*, 35:2, 229-247, Available from: <https://doi.org/10.1080/09546553.2021.1903439> (accessed April 03, 2026)
50. Siti Ezaleila Mustafa & Abdul Fahad. (2025), “Locked in Echoes: Unveiling the Dynamics of Social Media Echo Chambers and Hindu Radicalization Targeting Muslim Youth in Delhi”, *Humanities and Social Sciences Communications: Springer Nature*, 12:324, pp01-09 Available from: <https://doi.org/10.1057/s41599-025-04638-w> (accessed April 03, 2026)
51. Steffen Hertog & Diego Gambetta. (2016), “Book-engineers of Jihad: The Curious Connection between Violent Extremism and Education”, Published by Princeton University Press, Princeton, 192 Pages, Book Reviews By Saman Fazeli, *AJISS*, 37:1-2, DOI: 10.35632/ajiss.v37i1-2.546, pp174-176 (accessed April 03, 2026)
52. Sutherland, E. H. (1949), *White Collar Crime*, The Dryden Press, New York, pp272
53. Tajfel, Henri & Turner, J.C. (1979), “An Integrative Theory of Intergroup Conflict”. In W. Austin & S. Worchel (Eds.), *The Social Psychology of Intergroup Relations*, Brooks /Cole, pp33-47
54. Tajfel, H., & Turner, J. C. (1986), “The Social Identity Theory of Intergroup Behavior”, In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relations*, Nelson-Hall, pp07-24
55. UNODC. (2017), “*Handbook on Children Recruited and Exploited by Terrorist and Violent Extremist Groups: Role of the Justice System*”, Vienna. pp13
56. UNODC. (2025), “*Drivers of Violent Extremism*”, <https://www.unodc.org/e4j/en/terrorism/module-2/key-issues/drivers-of-violent-extremism.html>

57. UNODC. (2025), “*International Approaches to PVE and CVE*”, <https://www.unodc.org/e4j/en/terrorism/module-2/key-issues/international-approaches-to-pve-and-cve.html> (accessed April 10, 2026)
58. UNODC. (2025), “*PVE/CVE*”, <https://www.unodc.org/e4j/fr/terrorism/module-2/key-issues/preventing-and-counteracting-violent-extremism.html> (accessed April 10, 2026)
59. UNODC. (2025), “*Radicalization' and 'Violent Extremism*”, <https://www.unodc.org/e4j/en/terrorism/module-2/key-issues/radicalization-violent-extremism.html>
60. Vik Joshi & Amra Sabic-El-Rayess. (2023), “Witnessing the Pathways of Misinformation, Hate, and Radicalization: A Pedagogic Response”, *Springer Nature*, Education in the Age of Misinformation: Philosophical and Pedagogical Explorations, e Book Edited by Lana Parker, Published by Palgrave Macmillan, Switzerland AG, Chapter 6, pp97-118, ISBN: 978-3-031-25870-1, ISBN: 978-3-031-25871-8 (eBook), Available at: <https://doi.org/10.1007/978-3-031-25871-8> (accessed April 03, 2026)
61. Webber, David, & Kruglanski, Arie. W. (2018), “The Social Psychological Makings of a Terrorist”, *Current Opinion in Psychology*, 19, pp131–134, Available at: <https://doi.org/10.1016/j.copsyc.2017.03.024> accessed 3 April, 2026
62. Wolfowicz, M., Litmanovitz, Y., Weisburd, D., & Hasisi, B. (2021), “Cognitive and Behavioral Radicalization: A Systematic Review of the Putative Risk and Protective Factors”, *Systematic Reviews*, Wiley Campbell Collaborations, 17, e1174, pp01-90 Available at: <https://doi.org/10.1002/cl2.1174> (accessed April 03, 2026).

Labour Market in Ghana (1957–2024): Prospects and Challenges

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Abstract

From Ghana's independence in 1957 to 2024, this study tracks structural changes in the country's industries, services sector, and agriculture. In addition to underlining the opportunities presented by demographic dividends, digital technologies, extractive industries, and legislative reforms, it examines the enduring problems of unemployment, underemployment, informality, skills mismatches, gender inequality, and insufficient social protection. It does this by drawing on data from the Ghana Statistical Service, the International Labour Organization, the World Bank, and peer-reviewed academic study. The discussion is organized chronologically and thematically, covering the colonial labour legacy, the post-independence developmental era, structural adjustment, democratic consolidation, and the contemporary digital-and-oil economy. The study makes the case that, the Ghana's labor market has continuously improved from the state-building employment drives of the Nkrumah era through the structural adjustment retrenchments of the 1980s to the digital and oil-driven opportunities of the current period. However, fundamental structural challenges of informality, high underemployment levels, low productivity, skills mismatches, gender inequality, and weak institutions have persisted across policy regimes.

Keywords

Labour, Labour market, Unemployment, Structural changes, Reforms, and Ghana.

1. Introduction

One of the most useful case studies in Sub-saharan Africa is Ghana's labor market. The nation has gone through alternating cycles of state-led industrialization, economic crisis, structural adjustment, democratic renewal, and commodity-driven growth since gaining independence on March 6, 1957.

Each of these cycles has had a unique impact on employment trends, wage structures, worker welfare, and institutional frameworks governing work (Aryeetey & Baah-Boateng, 2015). In order to create policies that can capitalize on the demographic dividend that Ghana's young population represents, it is necessary to comprehend these dynamics, which are not just of historical relevance.

The Ghana Statistical Service (GSS, 2021) estimates that 13.1 million people were employed in the nation in 2021, with a labor force participation rate (LFPR) of roughly 67.3 percent. However, only roughly 16 percent of all employment was formal, with the remaining 84 percent working in vulnerable, subsistence, or informal jobs (GSS, 2021). The fundamental contradiction of the Ghanaian labor market is captured by this structural dichotomy between a sizable informal economy and a tiny formal sector: growth without correspondingly creating adequate jobs.

There are seven main sections to this study. A historical summary of the labor market from 1957 to 1966 is given in Section 2. The structural adjustment period and its effects on the labor market are examined in Section 3. Section 4 looks at the developing services economy and post-1992 democratic consolidation. The digital shift and the oil economy are covered in Section 5. The labor market dynamics, digital transformation, and the oil economy are all covered in Section 6. Section 7 presents the major prospects for the labour market. Section 8 analyses the key challenges. Section 9 concludes with policy recommendations.

2. Research Methodology

The study employs a historical-descriptive and documentary research design. This design is suitable because it enables the researcher to investigate labour market developments across different historical periods in Ghana, including:

- The post-independence period (1957–1966)
- The military and economic restructuring period (1966–1992)
- The democratic and liberalization period (1993–2010)
- The contemporary labour market transformation period (2011–2024)

The design provides a framework for examining labour policies, employment patterns, labour force participation, informal sector growth, youth unemployment, skills development, and labour market reforms over time. The

study relies exclusively on secondary data obtained from credible academic, governmental, and international sources. The major sources include:

Academic Databases

- Semantic Scholar
- Scopus-indexed journals
- Google Scholar
- Directory of Open Access Journals (DOAJ)
- JSTOR

Government and National Institutions

- Ghana Statistical Service (GSS)
- National Council for Tertiary Education (NCTE)
- Ministry of Employment and Labour Relations
- Labour Department of Ghana
- Ghana Labour Market Information System (GLMIS)

International Organizations

- World Bank
- International Labour Organization (ILO)
- United Nations Environment Programme (UNEP)
- United Nations Development Programme (UNDP)
- African Development Bank (AfDB)
- International Monetary Fund (IMF)

Policy and Technical Reports

- Labour force surveys
- Employment and unemployment reports
- National development plans
- Skills development and education policy documents
- Labour market assessment reports
- Economic and social development reports

These sources provide reliable evidence regarding labour market trends, employment generation, labour productivity, structural transformation, informal employment, and workforce development in Ghana.

Data Collection Procedure

Data were collected through a systematic review of relevant literature published between 1957 and 2024. The researcher conducted comprehensive searches using keywords such as:

- Labour market in Ghana
- Employment trends in Ghana
- Unemployment in Ghana
- Labour force participation
- Informal sector employment
- Youth unemployment
- Skills mismatch
- Human capital development
- Structural transformation
- Labour market reforms

Documents were selected based on relevance, credibility, publication quality, and contribution to understanding Ghana's labour market development. Priority was given to peer-reviewed journal articles, official statistical reports, policy documents, and publications from recognized international organizations.

Inclusion and Exclusion Criteria

The study included:

- Publications focusing on Ghana's labour market.
- Peer-reviewed journal articles.
- Government and institutional reports.
- Publications covering the period 1957–2024.
- Documents addressing employment, unemployment, labour policies, skills development, and workforce dynamics.

The study excluded:

- Publications lacking academic credibility.
- Non-english publications without verified translations.
- Studies unrelated to labour market issues.
- Duplicated reports and outdated versions of the same document.

3. Historical Background: The Labour Market at Independence (1957 to 1966)

Ghana inherited a colonial labor market centered on export agriculture, especially cocoa, and a small area of formal public administration and mining when it gained independence (Szereszewski, 1965). A huge layer of small holder cocoa growers, an urban artisan and petty-trading class concentrated in Accra, Kumasi, and the coastal towns, and a tiny African wage-earning class

employed in government service and European trading businesses were all established by the colonial economy. Due to institutional discrimination and sociocultural constraints, women were primarily restricted to food production and small-scale trading and were not allowed to work for formal wages (Akyeampong, 2000).

The ambitious industrialization policy of President Kwame Nkrumah's Convention People's Party (CPP) government was based on infrastructure development, import substitution, and state companies (Killick, 1978). Formal public sector employment increased significantly between 1957 and 1966, and the number of state-owned businesses increased from fewer than ten to over fifty (Huq, 1989). The Volta River Project, finished in 1966, was designed to power aluminum smelting and diversify the employment base as part of the Seven-year Development Plan (1963 to 1970), which aimed to turn Ghana into an industrial economy. However, institutional inefficiencies, growing debt, falling cocoa prices, and an excessive reliance on commodities revenues caused economic stagnation, which ultimately led to the military takeover in February 1966.

4. Economic Instability and Labour Market Deterioration (1966 to 1983)

Between 1966 and 1983, there was severe political and economic unrest interspersed with four military takeovers. In the face of fluctuating cocoa prices, worldwide oil shocks, and growing public payrolls, successive governments found it difficult to preserve fiscal balance. According to Ewusi (1984), real minimum earnings in the formal sector fell by more than 80 percent between 1970 and 1983. As smallholder agriculture became less lucrative, rural-urban migration increased and urban unemployment increased. During this time, the informal economy grew quickly as a means of survival rather than as a sector of dynamism (Hart, 1973).

The majority of urban migrants supported themselves through self-employment and small-scale trading outside of formal regulation, according to Keith Hart's ground breaking work, which created the term "informal sector" in part based on findings from Accra in the early 1970s. The Ghanaian labor market would come to be characterized by this structural informality. Ghana's economy had reached its lowest point by 1983: GDP per capita had dropped to levels

equivalent to independence, inflation had above 100 percent, and the public sector—the country's largest formal employer—was unable to pay its employees on a regular basis (World Bank, 1984). The Rawlings government's Economic Recovery Programme (ERP), supported by the World Bank and IMF, was initiated in April 1983 as a result of the labor market crisis.

5. Structural Adjustment and Labour Market Reforms (1983 to 1992)

The ERP and its successor, the Structural Adjustment Programme (SAP), transformed the Ghanaian economy through liberalisation, privatisation, and fiscal austerity. While macroeconomic stability was largely restored by the late 1980s; GDP growth averaged approximately 5 percent per annum between 1984 and 1991, though the social costs were substantial (Hutchful, 2002). The retrenchment of state-owned enterprises and the public sector workforce released tens of thousands of formal employees into the labour market. It is estimated that between 1984 and 1990, approximately 50,000 to 60,000 public sector workers were retrenched (World Bank, 1995).

Labour market institutions were simultaneously reformed. Trade unions, which had been closely tied to the CPP state, were reorganized under the Trade Union Congress (TUC) of Ghana, though their bargaining power was constrained by the depressed economic environment and the structural leverage of international financial institutions (Ninsin, 1991). The Ghana Employers' Association was reconstituted, and labour legislation was revised to facilitate market flexibility, though critics argued that these reforms weakened worker protections (Baah-Boateng, 2013).

Women's labour market participation shifted during this period, partly due to gender-differentiated impacts of adjustment. Female-headed households, which bore a disproportionate share of the burden of public service cuts in health and education, increasingly entered petty trade and food processing. The Programme of Actions to Mitigate the Social Costs of Adjustment (PAMSCAD), launched in 1987, attempted to cushion vulnerable workers but had limited reach given its modest funding (Anyemedu, 1993).

Table 1:- Selected Macroeconomic and Labour Market Indicators, Ghana 1957 to 2024

Period	Real GDP Growth (%)	Formal Employment Share (%)	Inflation (%)	Key Policy
1957 to 1966	4.2	~12	5.1	State-led Industrialisation
1967 to 1982	-0.4	~10	35.0+	Military regimes; instability
1983 to 1991	5.0	~11	18.0	ERP/SAP; retrenchment
1992 to 1999	4.3	~13	25.0	Democratic transition
2000 to 2010	5.8	~14	16.5	HIPC; GPRS I & II
2011 to 2019	7.1	~15	12.0	Oil production; SDGs
2020 to 2024	1.7	~16	23.5	COVID-19 recovery; IMF

Sources:- Ghana Statistical Service (various years); World Bank World Development Indicators (2023); IMF Article IV Consultations (various years); Killick (1978); Huq (1989).

6. Democratic Consolidation and the Emerging Services Economy (1992 to 2010)

Ghana's return to constitutional rule in January 1993 ushered in a period of sustained, if uneven, economic growth. The labour market responded to democratisation in complex ways. Political competition intensified pressures for public sector wage increases, while the growth of the financial services, telecommunications, and retail sectors created new categories of formal private employment (Baah-Boateng, 2013). However, employment growth lagged output growth, a phenomenon that economists have described as 'jobless growth' in the Ghanaian context (Osei, 2012).

Ghana's attainment of Heavily Indebted Poor Country (HIPC) initiative completion point in July 2004 freed fiscal resources that were partly channeled

into social sector investments, including the National Health Insurance Scheme (NHIS, 2003) and the Capitation Grant for primary education (2005), with positive spillovers for human capital formation and labour quality. The introduction of the National Minimum Wage Act (2003) and subsequent annual revisions by the National Tripartite Committee (NTC) represented an attempt to anchor earnings at the lower end of the wage distribution, though enforcement in the informal sector remained negligible (Aryeetey & Baah-Boateng, 2015).

The telecommunications revolution of the 2000s was a significant labour market disruptor. The entry of multiple mobile network operators, namely MTN Ghana (2006 re-branding), Vodafone, Airtel, and Tigo, created direct formal employment in the order of tens of thousands and indirect employment many times larger through the mobile money agent network that would later emerge. The ICT sector's growth catalysed complementary demand for software development, data entry, call-centre services, and logistics coordination (UNCTAD, 2019).

Importantly, agriculture remained the largest employer by headcount throughout this period, absorbing approximately 45 to 55 percent of the labour force, though its share of GDP declined steadily from around 35 percent in 1993 to approximately 22 percent by 2010 (World Bank, 2023). This structural divergence, whereby agriculture employs more workers than its output share suggests, reflects the low productivity of smallholder farming and constitutes one of the deepest sources of underemployment in Ghana.

7. The Oil Economy, Digital Transition, and Labour Market Dynamics (2010 to 2024)

The commencement of commercial oil production from the Jubilee Field in December 2010 created expectations of transformative employment effects. In practice, the direct employment created in upstream petroleum, estimated at fewer than 5,000 core technical jobs, was modest relative to the scale of the revenues generated (Dzansi et al., 2018). The 'resource curse' hypothesis, adapted to Ghana's context, suggests that petroleum revenues may have contributed to exchange rate appreciation (the 'Dutch Disease'), squeezing the manufacturing sector and its attendant employment potential (Gyimah-Brempong & Asiedu, 2015).

Ghana's labour market in the 2010s was nonetheless characterised by significant structural change. The services sector overtook agriculture as the largest contributor to GDP by 2013, with financial services, real estate, trade, and

transport leading growth. Graduate unemployment emerged as a prominent social concern: the Association of Ghana Universities reported that approximately 50,000 to 60,000 university graduates entered the labour market annually by the mid-2010s, yet the formal private sector absorbed fewer than 30 percent of them (NCTE, 2017).

The COVID-19 pandemic of 2020 to 2021 inflicted severe labour market dislocations. The GSS (2020) Coronavirus Rapid Mobile Phone Survey found that approximately 47 percent of Ghanaians reported a reduction in working hours or total loss of employment during the first lockdown period from April to May 2020. Informal workers, who lacked access to unemployment insurance or severance mechanisms, were disproportionately affected. The government's GH¢600 million Ghana CARES 'Obaatanpa' programme and the COVID-19 Alleviation Programme (CAP) provided some relief, but critics argued that the response was inadequate relative to need (Asante & Mills, 2020).

By 2023 and into 2024, Ghana's labour market was grappling with the consequences of a severe economic crisis triggered by debt distress, currency depreciation, and high inflation (peaking at 54 percent in December 2022). The International Monetary Fund (IMF) programme approved in May 2023, which required fiscal consolidation measures, created additional pressure on public sector employment and real wages. The Domestic Debt Exchange Programme (DDEP) of 2023 disrupted the financial sector, with cascading effects on white-collar formal employment.

Table 2:- Sectoral Employment Distribution, Ghana 2010 and 2021 (% of total employment)

Sector	2010 Employment Share (%)	2021 Employment Share (%)	Change (pp)
Agriculture, Forestry & Fishing	51.2	43.1	-8.1
Industry (Manufacturing, Mining, Construction)	14.1	14.8	+0.7
Services (Trade, Finance, ICT, etc.)	34.7	42.1	+7.4
Total	100.0	100.0	,

Source:- Ghana Statistical Service, Ghana Living Standards Survey Round 7 (GLSS 7, 2017) and Population & Housing Census (2021); ILO ILOSTAT Database (2023).

8. Prospects of Ghana's Labour Market

8.1 Demographic Dividend

Ghana's population, estimated at approximately 33 million in 2024, is predominantly young, with about 57 percent below the age of 25 (GSS, 2021). If channeled through quality education, skills development, and productive employment opportunities, this youthful demographic could generate a demographic dividend, which refers to a period of accelerated economic growth associated with a high ratio of working-age to dependent population, analogous to the East Asian experience of the 1970s to 1990s (Bloom & Williamson, 1998). Projections suggest that Ghana's working-age population, those aged 15 to 64 years, will continue to grow through the 2040s, creating both an opportunity and an imperative for robust employment creation.

8.2 Digital Economy and Technology-driven Employment

The rapid expansion of mobile internet penetration, which reached approximately 58 percent of the population by 2023 (GSMA, 2023), has opened new labour market pathways through e-commerce, fintech, remote work, and the gig economy. The rise of mobile money, exemplified by MTN MoMo's over 20 million active users in Ghana (MTN Ghana Annual Report, 2023), has created an ecosystem of mobile money agents, digital merchants, and platform-based logistics workers. Government initiatives such as the Digital Ghana Agenda and the establishment of Innovation Hubs in Accra (iSpace, MEST Africa) and Kumasi (Kumasi Hive) are nurturing a tech entrepreneurship ecosystem with significant employment potential.

8.3 Expanding Natural Resource and Green Economy Employment

Beyond petroleum, Ghana possesses significant mineral wealth including gold, bauxite, manganese, and diamonds, alongside a substantial renewable energy potential from solar, wind, and hydropower resources. Deliberate policies to deepen local content requirements in extractive industries, as envisaged under the Ghana Local Content and Local Participation Policy for the Petroleum Industry (2013) and the Minerals Commission's local

procurement framework, could expand linkages between the extractive sector and domestic manufacturing and services employment. Similarly, a transition toward green energy infrastructure, consistent with Ghana's Nationally Determined Contributions (NDCs) under the Paris Agreement, could generate employment in solar installation, energy efficiency retrofitting, and sustainable agriculture (UNEP, 2021).

8.4 Agricultural Modernization and Agro-processing

Given that over 40 percent of Ghana's workforce remains in agriculture (GSS, 2021), productivity-enhancing investments in this sector have the greatest potential to simultaneously reduce poverty and improve labour market outcomes for the majority. The Planting for Food and Jobs (PFJ) programme, launched in 2017, aimed to subsidise inputs and support the transition to commercial small-holder farming. The government's commitment to agro-processing through the One District One Factory (1D1F) initiative represents a further attempt to add value to agricultural produce domestically, creating manufacturing employment in rural and peri-urban areas.

9. Challenges of Ghana's Labour Market

9.1 Unemployment and Underemployment

Official unemployment figures in Ghana have historically appeared low by African standards, hovering around 8 to 13 percent in standard surveys (GSS, 2017; ILO, 2023), but these figures mask enormous underemployment. Many Ghanaians who are classified as 'employed' work fewer hours than desired (time-related underemployment) or in activities that do not utilize their skills or generate adequate income (skills mismatch and working poverty). The ILO (2023) estimates that Ghana's vulnerable employment rate, which comprises own-account workers and contributing family workers, stood at approximately 71 percent in 2021, among the highest in West Africa.

Table 3:- Key Ghana Labour Market Indicators, Selected Years 2013 to 2023

Indicator	2013	2017 (GLSS 7)	2021 (PHC)	2023 (Est.)
Labour Force Participation Rate (%)	68.1	67.4	67.3	67.8
Unemployment Rate (%)	11.9	8.4	13.4	14.7
Youth Unemployment Rate (15 to 35) (%)	15.2	11.7	19.5	22.1
Informal Employment (% of total)	~85	~83	~84	~83
Vulnerable Employment Rate (%)	74.2	72.8	71.0	71.5
Female LFPR (%)	72.0	69.3	67.1	67.5

Sources:- Ghana Statistical Service GLSS 6 (2014), GLSS 7 (2019), Population & Housing Census (2021); ILO ILOSTAT (2023).

9.2 Dominance of the Informal Economy

The persistence of large-scale informality is perhaps the defining structural challenge of Ghana's labour market. Informal workers such as street traders, artisans, domestic workers, and subsistence farmers operate without access to formal social protection, paid leave, occupational health and safety protections, or recourse to formal labour dispute resolution mechanisms (Baah-Boateng, 2013). The informal economy's dominance also erodes the tax base, weakens trade union bargaining power, and fragments the labour market into circuits that rarely benefit from productivity-enhancing investment or skills upgrading.

Formalization strategies have had limited success. The Ghana Revenue Authority's expansion of the Tax Identification Number (TIN) system and the introduction of mobile-based taxpayer registration represent important steps, but institutional enforcement capacity remains constrained. Moreover, overly onerous formalisation requirements may deter small enterprises from registering, suggesting a need for graduated, incentive-based approaches (ILO, 2018).

9.3 Skills Mismatch and Educational Quality

A growing body of evidence points to a significant mismatch between the skills produced by Ghana's educational system and those demanded by employers. The World Bank's Skills Measurement Programme (STEP) survey for Ghana (World Bank, 2016) found that many graduates lacked the socio-emotional and technical competencies required in modern workplaces. The Technical and Vocational Education and Training (TVET) system, historically underfunded and stigmatized relative to academic education, has struggled to produce the intermediate-level technical workforce demanded by manufacturing and construction industries. Reforms under the TVET Service Act (2016) and the National Board for Professional and Technician Examinations (NABPTEX) represent attempts to address this gap, but implementation has been uneven.

9.4 Gender Disparities in the Labour Market

Despite relatively high female labour force participation rates, driven partly by necessity rather than choice, Ghanaian women face persistent disadvantages in earnings, occupational status, and job quality. Women are overrepresented in subsistence agriculture, domestic work, and low-margin petty trade, and underrepresented in managerial, technical, and professional occupations (GSS, 2021). The gender wage gap, estimated at approximately 25 to 30 percent in formal employment, reflects a combination of occupational segregation, discrimination, and the disproportionate burden of unpaid care work borne by women (Osei-Boateng & Ampratwum, 2011).

Legal frameworks such as the Labour Act (Act 651, 2003), which prohibits gender discrimination in employment, and the Domestic Violence Act (2007) provide some protection, but enforcement is weak and access to justice for labour rights violations is limited, particularly in the informal economy. The AfCFTA, which Ghana was the first country to ratify, holds some potential for expanding female employment in agro-processing and digital services, but capturing this potential requires deliberate policy targeting.

9.5 Youth Unemployment and Graduates' Labour Market Transitions

Youth unemployment has emerged as a politically salient challenge. In 2021, Ghana's youth unemployment rate for those aged 15 to 35 stood at approximately 19.5 percent, rising to an estimated 22.1 percent by 2023 against the backdrop of the economic crisis (GSS, 2021; ILO, 2023). Graduate unemployment is particularly acute: universities produce approximately 70,000 to 80,000 graduates annually, of whom a substantial proportion spend extended periods in unemployment or in mismatched informal work before securing appropriate positions (NCTE, 2017).

The government's flagship National Service Scheme, Youth Employment Agency (YEA), and various NABCO (Nation Builders Corps) programmes have attempted to bridge the gap, but these initiatives have been criticized for creating temporary, government-subsidised employment rather than addressing structural barriers to permanent private sector absorption (Asante & Mills, 2020). The sustainability of such programmes is also contingent on fiscal headroom, which the current debt crisis has severely constrained.

9.6 Weak Labour Market Institutions and Social Protection

Ghana's labour market institutions, including the National Labour Commission, the Labour Department, and the National Pensions Regulatory Authority, are chronically under-resourced relative to the scale of the labour force they are mandated to serve. Labour inspectors are estimated to cover only a small fraction of workplaces, particularly in the informal sector (ILO, 2018). The Social Security and National Insurance Trust (SSNIT), while a significant institutional player, covers only approximately 10 to 12 percent of the workforce, leaving the vast majority without pension protection.

The introduction of the Livelihood Empowerment Against Poverty (LEAP) cash transfer programme and the National Health Insurance Scheme represents progress in social protection architecture, but coverage gaps remain wide, financing is precarious, and benefit levels are low. A comprehensive social protection floor, aligned with ILO Recommendation 202 (2012), remains an aspirational rather than achieved policy goal for Ghana.

10. Conclusion and Policy Recommendation

Ghana's labour market over the six-and-a-half decades since independence reflects the country's broader developmental trajectory: periods of ambition and growth interspersed with crises, adjustments, and resilience. From the state-building employment drives of the Nkrumah era, through the structural adjustment retrenchments of the 1980s, to the digital and oil-driven opportunities of the contemporary period, the Ghana labour market has continuously improved, yet fundamental structural challenges of informality, low productivity, skills mismatches, gender inequality, and weak institutions have persisted across policy regimes.

Ghana's demographic dividend, if realized through investments in education, health, and productive employment, could underpin sustained economic transformation. The digital economy, agro-processing, green energy, and the African Continental Free Trade Area all offer concrete pathways to decent work creation. However, translating these opportunities into labour market outcomes requires overcoming the governance, fiscal, and institutional constraints that have historically limited policy effectiveness.

Three priority areas merit particular attention. First, a comprehensive national employment policy that coordinates education, macroeconomic, industrial, and social protection objectives around the goal of decent work creation. Second, a genuine formalisation strategy that reduces the costs and increases the benefits of operating formally for small enterprises and workers. Third, sustained investment in TVET, lifelong learning, and digital skills to align workforce capabilities with the demands of a twenty-first-century economy. Without such interventions, Ghana risks that its demographic window of opportunity closes without generating the shared prosperity that political leaders and ordinary citizens justifiably seek.

11. References

1. Akyeampong, E. (2000). *'Wo pe tam won pe ba' ('You like cloth but you don't want children')*: Urbanization, Individualism and Gender Relations in Colonial Ghana, c. 1900 to 1939. In D. Anderson & R. Rathbone (Eds.), *Africa's Urban Past* (pp. 222 to 234). James Currey.

2. Anyemedu, K. (1993). *Economic Policies of the PNDC*. In E. Gyimah-Boadi (Ed.), *Ghana under PNDC Rule* (pp. 13 to 47). CODESRIA.
3. Aryeetey, E., & Baah-Boateng, W. (2015). *Understanding Ghana's Growth Success Story and Job Creation Challenges*. WIDER Working Paper 2015/140. United Nations University to WIDER.
4. Asante, F. A., & Mills, S. A. (2020). Examining COVID-19 Containment, Social Distancing and Economic Implications in Ghana. *Ghana Journal of Development Studies*, 17(1), 1 to 22.
5. Baah-Boateng, W. (2013). Governance, Institutions and Unemployment in Ghana. *African Development Review*, 25(1), 14 to 25.
6. Bloom, D. E., & Williamson, J. G. (1998). *Demographic Transitions and Economic Miracles in Emerging Asia*. *World Bank Economic Review*, 12(3), 419 to 455.
7. Dzansi, J., Tsyawo, J., Oteng-Abayie, E. F., & Mensah, E. K. (2018). *Oil Revenues and Local Economic Activity in Ghana*. International Growth Centre Working Paper.
8. Ewusi, K. (1984). *The Real Wage Crisis in Ghana, 1970 to 1983*. *Development and Change*, 15(1), 73 to 98.
9. Ghana Statistical Service (GSS). (2014). *Ghana Living Standards Survey Round 6 (GLSS 6): Main Report*. GSS.
10. Ghana Statistical Service (GSS). (2017). *Integrated Business Establishment Survey: Main Report*. GSS.
11. Ghana Statistical Service (GSS). (2019). *Ghana Living Standards Survey Round 7 (GLSS 7): Main Report*. GSS.
12. Ghana Statistical Service (GSS). (2020). *Coronavirus Rapid Mobile Phone Survey: Round 1 Report*. GSS.
13. Ghana Statistical Service (GSS). (2021). *Population and Housing Census 2021: General Report*. GSS.
14. GSMA. (2023). *The Mobile Economy: Sub-saharan Africa 2023*. GSMA Intelligence.
15. Gyimah-Brempong, K., & Asiedu, E. (2015). Remittances and Investment in Education: Evidence from Ghana. *Journal of International Trade and Economic Development*, 24(2), 173 to 200.

16. Hart, K. (1973). Informal Income Opportunities and Urban Employment in Ghana. *Journal of Modern African Studies*, 11(1), 61 to 89.
17. Huq, M. M. (1989). *The Economy of Ghana: The First 25 Years since Independence*. Macmillan.
18. Hutchful, E. (2002). *Ghana's Adjustment Experience: The Paradox of Reform*. UNRISD/James Currey.
19. International Labour Organization (ILO). (2018). *Women and Men in the Informal Economy: A Statistical Picture (3rd ed.)*. ILO.
20. International Labour Organization (ILO). (2023). *ILOSTAT Database: Key Indicators of the Labour Market (KILM)*. Retrieved from <https://ilostat.ilo.org>
21. International Monetary Fund (IMF). (2023). *Ghana: Request for an Extended Credit Facility Arrangement: Press Release and Staff Report*. IMF Country Report No. 23/168. IMF.
22. Killick, T. (1978). *Development Economics in Action: A Study of Economic Policies in Ghana*. Heinemann Educational Books.
23. MTN Ghana. (2023). *Annual Report 2022*. MTN Group.
24. National Council for Tertiary Education (NCTE). (2017). *Statistical Digest of Tertiary Education in Ghana*. NCTE.
25. Ninsin, K. A. (1991). *The Informal Sector in Ghana's Political Economy*. Freedom Publications.
26. Osei, R. D. (2012). Jobless Growth in Sub-saharan Africa: Evidence from Ghana. *International Growth Centre Working Paper S-40020-GHA-1*.
27. Osei-Boateng, C., & Ampratwum, E. (2011). *The Informal Sector in Ghana*. Friedrich Ebert Stiftung Ghana Office.
28. Szereszewski, R. (1965). *Structural Changes in the Economy of Ghana, 1891 to 1911*. Weidenfeld & Nicolson.
29. United Nations Conference on Trade and Development (UNCTAD). (2019). *Digital Economy Report 2019: Value Creation and Capture: Implications for Developing Countries*. UNCTAD.
30. United Nations Environment Programme (UNEP). (2021). *Green Economy Assessment Report: Ghana*. UNEP.
31. World Bank. (1984). *Ghana: Policies and Programme for Adjustment*. World Bank Country Study. World Bank.

32. World Bank. (1995). *Ghana: Growth, Private Sector and Poverty Reduction*. World Bank Country Study. World Bank.
33. World Bank. (2016). *STEP Skills Measurement Survey: Ghana*. World Bank.
34. World Bank. (2023). *World Development Indicators Database*. Retrieved from <https://data.worldbank.org>

Impact of Information Technology with the Shift or Change of the World Order

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Abstract

Information Technology (IT) has become so integral to our lives. It is no longer optional. It has become a need, a necessity, required everywhere, every time. An IT war is happening all around us. People cannot have a healthy discussion by merely listening to information delivered by news channels, social media reels, YouTube videos, or other discussion platforms, because the information spread is not only fast but also immense.

Each one of us is overwhelmed by the information around us. A common person is unaware of how to filter, flag, or fact-check the information. There are theories, controversial stories, and “conspiracy theories”. Initially, conspiracy theories were dismissed by saying, "it is just a theory." But we are witnessing a rise in these theories, and we are forced to ask if it is improving human life and humanity. Similarly, the world order is changing – The New World Order! These orders have been imposed by developed, powerful countries on the world.

It's therefore important to understand:

1. Is the world order really changing or shifting?
2. IT evolved, expanded, and penetrated every aspect of people's lifestyle. Was it well decided earlier, or is it a regular wave of IT?

This paper works to understand the IT's impact on the new world order.

Keywords

Impact, Information technology, World order, Conspiracy theories, Social media, and Lifestyle 3.

1. Introduction

“Information” – transfer of a message that is communicated in a specific form, be it verbal or non-verbal, that delivers the message from one person to another. Information is not new. It is said to have been here since humans first appeared on this planet. As the years passed, information kept advancing, and so did human thought processes. This gradual growth of human information changed into communication, and eventually, what we see today is information co-joint with technology = “Information Technology” (IT). The progress in information technology we see in the world today is not only widespread but also uncontrollable.

Earlier, there were primarily three forms of information delivery through technology:

- (a) Television news with limited channels and time-bound
- (b) Newspapers are limited in information, and
- (c) Radio, with limited on-air channels and news that used to be delivered at a specific time of the day and was worth hearing.

However, now, we have:

1. Television – with too many channels, running 24*7, creating a paralysis of choice and selection.
2. Newspapers – now covered with information like bollywood, government advertisements, corporate branding, and more, taking precedence over general news.
3. Radio – Today, the channels on the radio keep the youth away from mainstream news and keep them entertained and engaged with less relevant information.
4. Social Media platforms – People have access to YouTube, which gives enough time to upload short-duration reels and short-form content, as well as long-duration videos like Podcasts/interviews, and online news. We also have Facebook, Instagram, Snapchat, etc., these are all platforms and many more spread the information in so many various directions that what is the correct information and what is incorrect in today’s world, is hard to justify.

On the other hand, opening a channel on any social media and telecasting anything has become so easy that, to decode information, we now have fact-checking channels and a full-fledged agency like Alt News (altnews.in, 2026).

The shift of information from regular channels to technology, i.e., digital, was never a regular or ongoing process. There was a set agenda by a group of people living in developed countries who took this process from communications to digital, and now digital is heavily imposed on people, whether in the form of communication, emotion, documentation, or transactions.

We cannot say the role of Information technology is less in shaping the world order, and now the world order is moving from its current state towards a shift or a change.

Companies like Microsoft, Meta, Facebook, SpaceX, Palantir, Amazon, IBM, NVIDIA, and many more tech giant companies that are controlling the IT and have changed the form of transferring information from pigeons taking letters to cloud systems today, and to the sub-sea cables. More to add, today we see various innovative, yet dangerous features of IT, like AI generations, have already started, Robots are taking away the jobs of laymen, even our handheld mobiles and digital equipment around us are dangerous for our lives, so is this all theories or some set of conspiracy theories that were there but are now in front of us by keeping all of us ignorant!

But how can we determine whether tech companies are controlling today's information technology and contributing to shifting or changing the existing world order? To understand this "controlled system" and determine whether it is a theory, a controversial theory, or a conspiracy theory, it is important to review studies and articles.

In an article published on Medium.com, Enrique Dans mentions that tech companies are stealing our data (Dans, 2025). The big tech companies do not own the "data". Data that flows on the internet is open. On the internet, we have various social media channels. On social media, various topics are shared and discussed. To those topics, people comment, discuss, post, and even share their thoughts and knowledge. This means the data is generated by people, and their thoughts are captured by tech giants for use as they see fit.

Dans's study also signifies that even "Google does not 'own' the data it indexes, and Meta, as much as it tries to, does not 'own' the photos, messages or thoughts that its users post" (Dans, 2025).

The concept of building the "World Wide Web (www)" was to circulate information globally and connect the world. But what we see today is that a theory that was set in front of all of us who saw the internet coming, developing, growing, and spreading in front of us, corporations that conspired

the system of the WWW made this concept controversial, and indeed everyone of regular human beings, be they from any sect or class, is today immensely dependent on the internet.

It has also come to light, through studies by renowned institutes such as Amnesty, that big tech companies, most of which are based in the USA, pose a significant threat to human rights. Big tech companies that were set to manage information technology and ensuring proper transmission worldwide took control of key areas like search engines, social media, e-commerce, and even our mobile phones at the time they were in production (Amnesty International, 2025).

Interestingly, social media has given the world easy access to its platforms and spaces. It is important to note that these IT giants are not charging us for their space and services. Whereas we, as laymen, have not only grown accustomed to but are addicted to using their platform, we spend our money recharging our internet, whether mobile data or Wi-Fi (Amnesty International, 2025). We, the users of IT, those who are educated and even those who are not, or less educated, would not even be aware of the recent and chilling development that Meta has become a key player in generative AI, and Google in cloud services. Hence, with such controlling mechanisms, based on our own information, it becomes hard to quantify how much of what we receive today is true and how much is false. In an open letter written by a Dutch politician, he mentions, quote "Our society is losing its grip on fact-based and pluralistic information provision due to the dominant role of global tech companies. This poses a serious threat to democratic resilience, as well as to strategic autonomy and, therefore, the security of the Netherlands" (TRT World, 2025).

As we all know, the tech giants are based in the USA, and the USA is often described as a superpower; it is easy to see who will manage the world order. The order created by capitalist economies towards the end of World War II (Arsad, 2025). This order was issued to maintain Western hegemony and to advance the interests of the USA.

Hence, it is very understandable where the concept of the New World Order comes from and why the change was imposed by calling it "Re-ordering" globally. But with this heavy term of "New World Order", there are questions that come, and it is important to answer these questions and find answers to the world's questions:

- (a) Why was the existing order of the world named “New World Order”?
- (b) Why did the requirement of “Re-ordering” the world order become a necessity?
- (c) What impact has information technology had in shaping the world order – New, re-order, or shift order?

In October 2023, wars erupted between Palestine and Israel, extended to Lebanon, and recently Iran, prompting significant U.S. arms investments.

This war is even fought with the latest AI technology and has been a testing ground for Israel's AI warfare (Duz, 2025). This means the strikes that were made on Gaza by Israel were not by humans; they were algorithm-based. With boots on the ground, Israeli's had fewer casualties, even though they were well equipped with arms and information technology, but the Palestinians and Lebanese innocents, who were unarmed, unprepared, and trapped, witnessed humongous casualties. After these wars, what we see is that the world shifted; the re-ordering of the world took a disastrous course of action, and brought another question to answer:

- (d) With wars around us and IT supporting the steps of war, where is the world order now – Shifting or Changing?

In the next chapter – Literature review, we will broaden the paper's scope and work on establishing relevance and moving closer to the answers to the questions posed in this chapter.

2. Review of the Literature

People now in their 40s and 50s have seen the era change. From the traditional way of information exchange by post or trunk calls, to the STD/ISD call booth, to the internet era. This generation can well understand the impact of information technology on them, their elders, and future generations.

People have seen text move from analog to digital transmission, and now it's from Artificial Intelligence (AI) to Generative AI (GAI). The transition of eras could not have been easy if this whole process had not been properly thought out, well-funded, organized, and implemented in the right order. But the question is whether the impact of Information Technology was necessary? Anyone who is now placed well in the ongoing system will say – Yes.

Indeed, the idea of spreading the information technology platform was a thoughtful one that was well implemented, but the way this IT is today, breaching our personal lives and time and space, was this required? Now, very

hopeful the reply will shift to NO.

So, why in the first place was this whole system made? Who gave consent to set the system? Was it planned or was it imposed? Can this set-up be said to be a part of “The World Order”?

To understand the impact of IT, we cannot see one side; we must roll our eyes 360 degrees. Today, nations trade to increase economic development, engage in bilateral trade, spread information and education, and even enhance national security. It’s because of this IT that we have been able to expand the World Wide Web (WWW) from limited places to everywhere at our fingertips.

Now, as this paper aims to understand the impact of IT and the New World Order, it is important to first define the “World Order” and explain its origins.

To begin with, let’s understand as per the following chronology of dates:

1. Beginning of Capitalism – 16th and 18th Century
2. Establishment of USA – 1607
3. Establishment of the United Kingdom – 1707 (through a series of parliamentary acts uniting England, Scotland, Wales, and Ireland)
4. Era of Industrial Revolution – 1760 to 1840
5. The Rothschild Family History: Origins back to the 15th century in Frankfurt (Rothschildandco.com, 2026)
6. Birth of Mayer Amschel Rothschild – 1744 to 1812
7. The Record of Business begins with Mayer Amschel Rothschild – 1769 (Rothschildandco.com, 2026)
8. Time Period of British Raj – 1858 to 1947 (period of direct British Crown rule over the Indian subcontinent)
 - **Start Event:** The Government of India Act 1858.
 - **End Event:** India and Pakistan's independence in 1947.
9. The Suez Canal building duration – 1859 to 1869 (by French diplomat Ferdinand de Lesseps – Trade route between Europe and Asia)
10. Era of Theodor Herzl – 1860 to 1904
11. Balfour Declaration – A Public Pledge by Britain – 1917 that aims to establish “a national home for the Jewish people” in Palestine, following the dissolution of the Ottoman Empire (Tahhan, 2018).
12. Era of World War 1 – 1914 to 1918
13. Dominance of the US Dollar in the World – 1944 after the Bretton Woods Agreement (Best, 2026)
14. Era of World War 2 – 1939 to 1945

15. Establishment of the United Nations Organization – 1945
16. The atomic bomb was dropped on Hiroshima and Nagasaki, and Japan formally surrendered, ending the WW2 – 1945
17. Establishment of the State of Israel – 1948
18. Soviet Union dissolved – 1991

By mentioning the above set of events and years, we can conceptualize the flow of major historical events that have brought us to the place and situation we are in. The Chronology of history reflects not only the establishment of major countries but also the major events that brought us to the world we live in today. The situational turnaround can be seen after the Industrial Revolution in connection with the Rothschild involvement (Dynastic Profiles, 2025). Rothschild, with a Jewish background, established the banking and financial family in Europe towards the end of the 18th Century. Before this, the rulings on major land matters Christians and Christianity made decisions, and taking any type of loan was prohibited. But Rothschild convinced and penetrated the Christian system and made use of the common loan. To relate Rothschild to capitalism, capitalism was established long before, when coins, instruments, and transaction notes were introduced by various countries and kings. Hence, it can be said that capitalism has continued to evolve since the 16th century.

This form of capitalism gradually gained prominence in commerce and became the lifeline of Civilization. This somehow laid the groundwork for the world order, and in this context, the USA emerged as a power. This power control was done in the year 1944 when the WW2 was going on, and the “Dollar”, the currency that was brought into the international monetary system, and forty-four nations agreed on the establishment of the International Monetary Fund and what became the World Bank Group. (Eichengreen, 2011)

It’s after the establishment of these monetary agencies that we see the dollar become the world’s currency, and the USA gained its supremacy after dropping a nuclear bomb in Hiroshima and Nagasaki, Japan, and ending the WW2.

Interestingly, in the list of chronology given above, it is clear and well manifested that Britain and Zionists made a base of various things and placed many things that we see happening around us to keep their control in their hand and to make a world order that was initiated in the early years of the 19th Century. Even the Balfour Declaration – “The statement came in the form of a letter from Britain’s then-foreign secretary, Arthur Balfour, addressed to Lionel Walter Rothschild, a figurehead of the British Jewish community.” (Tahhan,

2018). Hence, it can be seen from the pattern of events in our history that, whatever changes in the world occurred, whether described as “World Order” or, going forward in the years, as “New World Order,” Zionist propaganda was well-structured within the world’s system. Even the WW2 that happened in history is also well connected with the fascist Zionists by setting up various parties and organizations in Germany and getting into the system of the German government, and were subject to the most rigorous persecution, with their officials and members behind bars in prisons and concentration camps (Polkehn, K). It can be said that various terms that float in and around us, from a powerful sections of people to the layman, are all spread by a strong information pattern by those who control the world system and its dynamics.

In today’s world, when we talk about globalization, finance capital, and climate change, and various national and international security threats, they are all connected by the information technology feature that a group of people has successfully set up.

Even if one talks about the rise of the West, wars, global politics, and anything one can think about the ecosystem of that particular feature has been well established and circulated to us by IT, and a new concept, which was recently indicated to us around the 1990s by U.S. President George H.W. Bush was the phrase of “The World Order” (Hadar, 2025). It is well established that the system around us is for a purpose, and what is happening around us is no longer a conspiracy. The way IT has been developed, the way the world has been digitized globally, and the way social media has been well embedded in the lives of every child from an elderly person, knowing its repercussions and making it a lifestyle status is not something that just evolved.

There is a strategy, a vision, and a mission that many IT companies are working on, creating an impact to keep people busy in technology rather than other personal or physical work, and conceptualizing it under the term “New World Order”. Next, we will explain the methodology used to develop this paper and present additional findings, from the global phenomenon on the chosen subject.

3. Research Methodology

The topic is vast and encompasses information that is not limited to a single state, country, or continent. The topic's reflection is global, and the concepts of “Information Technology” and the “New World Order” have been integrated into the world’s system almost in parallel. The paper is text-heavy, containing

inputs, suggestions, papers, historical perspectives, and opinions from various authors who contributed to making this paper using a conventional approach, and it has been kept as a conspiracy over the years. But eventually, what was below the carpet is now open to the world and is no longer a conspiracy at all.

In this paper, the research was conducted using various secondary sources. The reason for choosing a secondary source was that the topic is not only impactful and weighty for a certain elite group, but also more of a closed-door discussion. The keyword “The World Order” is not very commonly used in everyday life. This word was rather coined by an elite group of superpower nations, and then it was channelled to other countries primarily on a political front. Therefore, if any qualitative or quantitative research was planned for any industry within a country, there was a high probability that people would either avoid the topic in their discussions or not speak freely, or that they would not know about the concept at all. The research used is dual - conceptual and empirical. Basic study, experience of what is happening around, and various dynamics of observation were also required, as per the facts happening around us in the live conditions in which we live. The topic that was once a conspiracy is now open and happening around us yet is still minimally discussed. Therefore, extensive exploration and description of the information will be part of this paper. Secondary search will play a major role in the development of this paper. Various studies, authors, podcasts, YouTube videos, and reflections have been received from people around the world who initially called the happenings of today a conspiracy, how they have modified their statements, and much more. The paper will also examine how power dynamics in the world play out and how people living in developed nations are well played by developed nations in the next chapter.

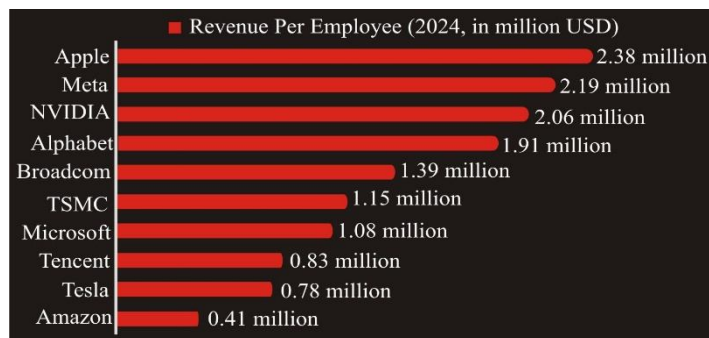
In the next focus will be on finding answers to the following questions:

- (a) Why was the existing order of the world named “New World Order”?
- (b) Why did the requirement of “Re-ordering” the world order become a necessity?
- (c) What impact has information technology had in shaping the world order – New, re-order, or shift order?
- (d) With the presence of wars around us and with IT supporting the steps of war, where is the world order now – Shifting or Changing?

4. Findings

With the evolution of industries over the years, from education, medicine, and automotive to national security, energy, finance, construction, and commerce, IT is everywhere today. In fact, the tech companies themselves have come a long way, and the tech war is best seen within them.

Earlier, there were a few names like IBM, Microsoft, Apple, and Samsung. Today, as tech companies have spread their wings, most people around the world doesn't even know what companies like Nvidia, Palantir, OpenAI, Anthropic, Salesforce, Google, and many more are doing behind the scenes for the world.

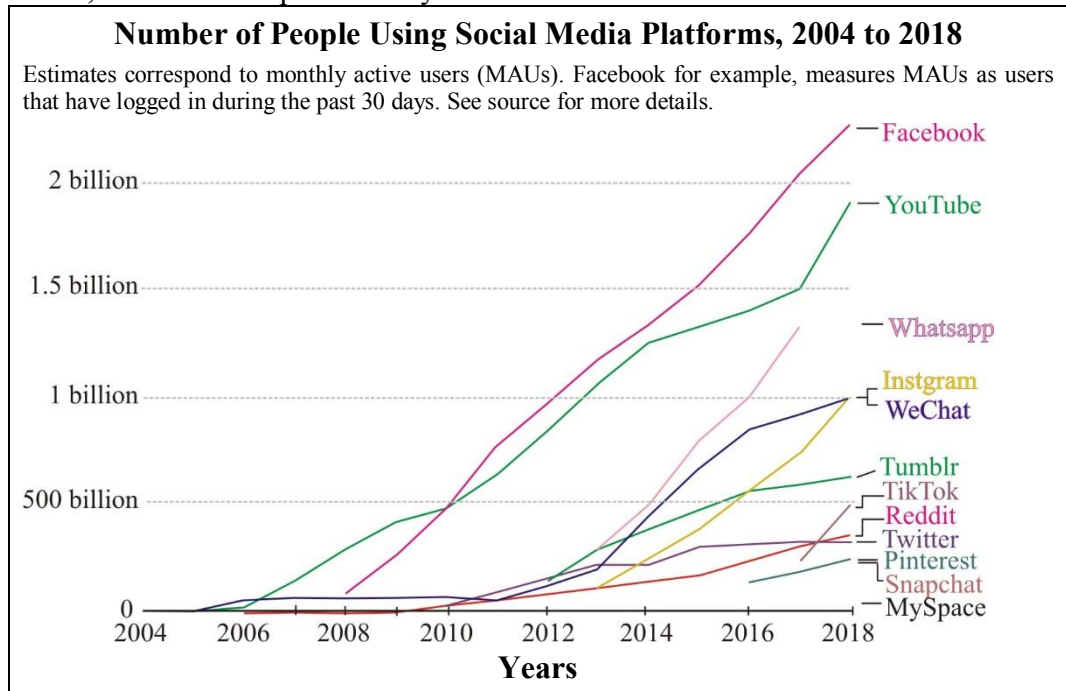


Source:- Ahmad, I (2025).

Chart 1:- Which Tech Giant Generate the Most Revenue Per Employee?

This shows that Apple employees' credibility is high, with 2.38 million, whereas other tech companies are also neck and neck in terms of service specifications. But how and when did these IT companies change the world's concept and become not only powerful but also a necessity for every human being, rather than a mere demand? Today, tech companies are the most financially healthy and successful companies in the world. After the dotcom bubble burst in 2000, the technology landscape changed drastically. In fact, we can also say it was a technological correction rather than a bubble burst. The reason is that soon after 2000, the era of smartphones began, and it took off so rapidly that today we see new phone versions in the market and in advertisements every day. By 2020, smartphones had even brought the internet out of specialized work sectors into the hands of every person. Interestingly, the steps of IT development were so synced and so well patterned that, be it a consumer, a layman, or the same tech company employee, realized how seamlessly they made their lives busy with

systems, the internet, and then the social media platforms that evolved after 2000, but became a part of daily lives and for all.



Source:- Hillyer, M. (2020).

Chart 2:- Number of People Using Social Media Platforms 2004 to 2018

The involvement and/or interference of technology has grown so significant that today human beings think less and search more. The reliability pattern for technology feeds has grown rather than the regular belief system. The world remained “Unipolar” for a long time, with the Dollar's dominance. The global control was with one nation, and that one nation was the USA, which not only had the dominance of major IT companies but also controlled countries the way it wanted. Which countries are to be kept in developed countries, which are all developing countries, and which are underdeveloped countries? What rules to put where, what orders to place where, placement of the world order, and, of late, change in the world order were also the USA's concept to the world. So, one cannot say that the order was there. Yes, there was a system, a system where people used to work together to achieve some goal or for some purpose. But the order is to organize things in a pattern that anyone likes. So, when we

say, “The World Order,” we mean a system controlled by a unipolar power that began setting the patterns the way it wanted.

As George Soros says, the world order has prevailed since the end of the WW2. That means the actual power of the USA emerged after WW2, and after it attacked Hiroshima and Nagasaki in Japan with the Nuclear bomb (Soros, 1993).

It is important to understand the way the complete system of the world has been laid by a group of people who are well controlling every aspect of an individual’s life, and are being dictated by the groups of nations as they have been bifurcated in –

1. Developed nation
2. Underdeveloped nation
3. 3rd world country knows everything. Whereas regular people get to know only what the people sitting at the top of the pyramid want us to know, the rest of the time they are working on their agenda, and we, the functional-level people, unknowingly keep doing their agenda work.

Before the transition from “The World Order” to “New World Order” is explained, it is also important to note that, since 1990, following the collapse of the Soviet Union and Yugoslavia, 34 new countries have been established, and 13 others have gained independence (Rosenberg, 2025). And, interestingly, it was the same year that the voice of the “New World Order” began to echo from the USA, with U.S. President George H.W. Bush.

It can also be understood that the “World Order”, when it came into existence to lay a foundational system for a group of wealthy people worldwide, wanted to establish, and that happened after WW2, when the USA became a superpower.

The dissolution of the Soviet Union and other major countries in the 1990s cannot be neglected, as it was also part of bringing the system into place, with the USA calling it our “New World Order,” and this too was again by the USA.

The concept of a new world order has gained greater validity recently as a description of the globalized world emerging from the multidimensional process of globalization. The intense global flow of goods, services, finance, people, images, and ideas has compressed the world by linking dispersed localities and people (Banerjee, 1994). If we look at the shift from the Old to the New World order, we see many systems controlling events. Technology, including IT, is advancing globally without rules, regulations, or strict laws. With the emergence of the New World Order, the world not only expanded with new

technologies such as Artificial Intelligence, but also saw an increase in unexpected and dangerous phenomena. This means the urge and need to implement what the group of powerful people controlling the world requires and to set the people's agenda right. This Old-to-New Shift in the World Order was forced to happen in such a way that they didn't even bother to start a war or mint money out of it.

After WW1 and WW2, the world has never relaxed; at various times, we have seen various killings and wars. And unfortunately, not only wars, but we saw many cyber-attacks, one country is doing on another, and the COVID-19 Pandemic also. We are in an era of great-power rivalry and shifting power balances (Menon, 2026).

To clarify and dig deep into understanding the impact of IT with the shift or change of the world order, the following questions were to be answered:

(a) Why was the existing order of the world named “New World Order”?

Eras changed, so the world changed, and its order was made to change. The whole system of change gradually evolved alongside IT over the years. From clashes between capitalism and Socialists to leftists. Over the years, when we talk about the New World Order today, we see it's more about war.

Wars with arms and ammunition, IT war, wars happening with AI, emotional war within people, and much more. Over time, what we see is immense distrust, delusion, misconceptions, and widespread false information, primarily spread by IT. There was a time when information was under government control. What to say, how much to say, was well maintained, but with the growth of technology and various information channels, determining which news is right and which is not has become a challenge and is no longer in the hands of the government. So, because a set system was in control of a few hands were wanted to expand its reach by various means and introduce new concepts to strengthen its system, they gradually began referring to the set system of world order as “The New World Order”.

(b) Why did the requirement of “Re-ordering” the world order become a necessity?

The requirement of “Re-ordering” the world order was never necessary; it was made necessary for the world. This was all to flow an agenda of ruling countries and groups of people, spread everywhere and in every section of our lives. If we talk about technology, medicine, education, agriculture,

climate, or anything around us, the one thing that binds them all is money. Henry Kissinger, in his article "The Chance for a New World Order," notes that any financial collapse would deal a major blow to the United States, as America remains financially unchallenged amid the economic disruptions worldwide (Kissinger, 2009).

Kissinger, in his 2014 book "World Order," expresses deep concern about the rapid expansion of technology, which is breaking down barriers. Today, when we have recently seen the war in parts of the Middle East like Gaza, Lebanon, Yemen, Saudi Arabia, and Iran, it's the technology that has created a space of conflict (Kissinger, 2014).

If, on a conceptual note or, say, from a geopolitical and geographic point of view, it doesn't look like the world order system that has been laid out is going to reorder or change. Rather, it seems to be shifting from a capitalist system to a communist system. This is all well reflected in the ongoing situation of wars, where the American economy, arms and ammunition, and technology were used and have still been used by Israel against Gaza, the West Bank, Lebanon, Syria, Yemen, and Iran.

- (c) What impact has information technology had in shaping the world order – New, re-order, or shift order?

The era of information has evolved ever since. It's just that the technology, coupled with information and IT, gradually grew stronger. From the pigeon era to today's AI, the IT sector has grown so vast that it now covers all areas of business and even our lifestyles.

From televisions to mobiles, from lights to floors, from household mixi to Air conditioners, even the internet, which is everywhere, is so much a part of our surroundings that one cannot live without it now. IT has taken its place in our life just like food and water – the third element is IT.

As most of the IT companies are in America. Silicon Valley has become a geopolitical actor, attenuating America's power on the global stage (Misra, 2026).

After the recent events, i.e., wars, it is very hard to say for how long the Western world will be able to survive, whether the whole bubble it has created of being unipolar and a superpower will last, or how long it will take to vanish (Misra, 2026). For a simple reason: the diplomatic dynamics are not delivering properly to the world, leading to many problems between rich and poor countries.

- (d) With the presence of wars around us and with IT supporting the steps of war, where is the world order now – Shifting or Changing?

With the wars that started from Russia-Ukraine escalating towards Israel-Palestine, and other Middle East countries can primarily be seen as a war between Capitalist and Communist countries. Capitalist countries wanted to keep their hold strong, but this time in this era, with the help of technology, we saw many twists in wars.

The war that started in 2014 – the Russia-Ukraine war and the wars we saw later in the years was more of a hegemony and dominance of America. But in America, we see a powerful economy with a strong dollar; we also see China as a rival in development and trade (Acharya, 2025).

Also, the recent war between America, Israel, and Iran that lasted for 12 days in 2025 and for around 40 days in 2026, broke the bones of the American economy by not only breaking American bases in the Middle Eastern countries are also destroying their expensive assets. The bitter reality of capitalist countries came into existence, and what we see, today is that, rather than America being a unipolar country, we now have multipolar countries that have emerged as superpowers, like China, Russia, and even Iran. Hence, as the world is split into two halves, this time the initial half is on the verge of diminishing, while the other half is rising. This reflects that the Impact of Information Technology is shifting the world order.

5. Conclusion

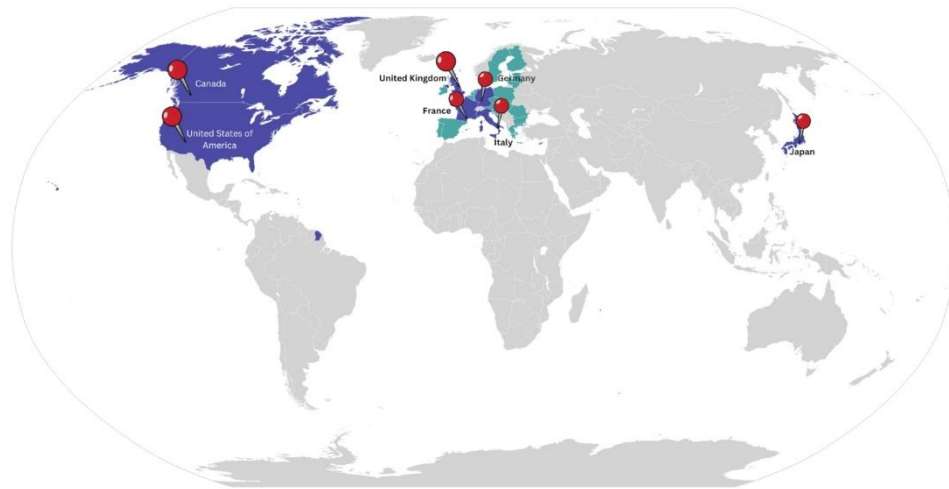
After conducting rigorous research on the topic, the order in the world was established to keep control and checks. Trade, monetary order, information technology, rules, and practices are a few such factors that were established worldwide and incorporated into people's lifestyles (Gavin, 2026).

After the establishment of the world order, the pattern of conquering others' land has not changed much either, by creating war to control others' land and resources, or by breaking nations into various parts. In both situations, historically and after WW2, what we know is that the USA had its lust to gain and be a superpower for years to come.

The Korean War from 1950 to 53, The Vietnam War (1959-1975), The Gulf War (1990-1991), The Afghanistan War (2001-2021), The Iraq War (2003-2011), and it continued since 1945, the Japanese war till the recent Iran war from 28th February 2026 till the USA raised its flag for the ceasefire (Ali, 2026). Interestingly, the USA even lost major wars that it created and led to the loss of

many innocent lives in its own country.

To keep the world busy, powerful nations have established certain groups of countries that not only decide how to set their countries' agendas, but also what to do and the strategies to advance those agendas. The G7 countries are Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The G7 countries' purpose was to focus on internal matters, but Cold War politics inevitably entered the group's agenda (CFR, 2025).



Source:- rauias.com 21.

Figure 1:- G7 Countries

Similarly, the World Economic Forum (WEF) takes place every year in Davos, Switzerland. Here, leaders from around the world connect to discuss how to move the world forward together. For more than 5 decades, meetings among various countries have been held every year.

But from the IT point of view and from the World order's point of view, the recent wars between Russia and Ukraine, Israel and Palestine, and Israel-USA and Iran have changed the order of supremacy in a drastic way.

The powerful countries are working together to keep the agenda on track. Whereas the other group that has come strongly as a force to think and shift the power pattern of various countries is Iran, Russia, and China.



Source:- Yale Alumni Association.com.

Figure 2: Upcoming Powers - Russia, Iran, and China

Interestingly, after the recent 40-day war between the US, Israel, and Iran, the major reason why the shift of world order is highly reflected and why a small, sanctioned nation from more than 45 years looks in a winning position is also because of IT, which has been well used and was also the point target in this war. Whether the ammunition was from Israel, the US, or Iran, the information technology used in the recent war is seen to be precise and accurate, and indeed dangerous. This is all because the US wants more of the resources Iran has, and it wants to keep its power intact and controlled, as it controls the rest of the world, to change the order the way it wants; but the war with Iran shifted the entire pattern. Earlier, if any update happened in any nation, the message used to reach the world late, but today, with IT and the internet around, people globally saw many things and were updated and have started being updated at various levels.

Hence, the crux of the paper is that IT has had a major impact on the world's understanding. One must quantify its goodness and non-goodness. Also, with so much information circulating, the world's patterns and order are shifting the way we work and view the world.

6. Limitation

Indeed, the paper does have limitations. There is much to search, more to write. The paper laid the foundation for understanding how powerfully the powerful

nation(s) used information technology to spread their agenda, and no one knew how silently they were able to penetrate so many unwanted aspects of our lives that we now can't live without it. Today, social media and its platforms are everyone's favourite. Whether it is a child, a youth, or an elderly person, they are seen spending a good amount of time on various mobile channels. Rather than thinking, children and young people prefer to search on Google. Regular people, unnoticed, and countries developed their own groups, such as the G7, G20, SAARC, BRICS, and GCCI, and circulated what they wanted among their people. Be it laws or regulations, be it the United Nations or other UN organizations, be it USAID or NATO, this time the powerful nations made to overrule what was established ethically and with the consent of every nation that was part of these organizations.

This paper definitely has limits as covering every aspect with which the World Order was made to establish the factors where the developed countries were now working on changing the world order and bringing the "New World Order" was hence broken by Russia, Iran, and even by Palestinians who had nil to very limited resource in their hands, yet they were determined to live and die on their own land that countries like Israel, USA, France, UK, Germany, and UAE ever wanted it to be changed.

Also, there will remain a possibility of limitation in this topic and paper, because this is the superpower's agenda that was flown down, and when the controversial story that was said to be a conspiracy broke, people started questioning, and it was then that the reports and crack of their agenda happened, yet it got late. But it came into existence, and today it is all over.

However, on the World Order, if anyone asks or prepares a qualitative/quantitative questionnaire, there will be lots of grey areas within the talk because of a simple reason: the points of the agenda are still hidden and are in a tightly closed box, which is still in the custody of the USA and the powerful people's hands who are controlling the world's system.

7. References

1. Acharya, A., (2025). *The Decline of the West and the Rise of 'The Rest' will Lead to a New World Order*. Chatham House. <https://www.chathamhouse.org/publications/the-world-today/2025-09/decline-west-and-rise-rest-will-lead-new-world-order>

2. Ahmad, I. (2025). *Breaking Down Billion-Dollar Revenues: How Much Top Tech Companies Earn Per Employee*. Digital Information World. <https://www.digitalinformationworld.com/2025/06/which-tech-giants-generate-the-most-revenue-per-employee.html>
3. Ali, M. (2026, March 3). *How Many Countries has the US Bombed Since 2001, and How Much has it Cost?*. Aljazeera. <https://www.aljazeera.com/news/2026/3/3/how-many-countries-has-the-us-bombed-since-2001-and-how-much-has-it-cost>
4. Amnesty International. (2025, August 29). *Why are Big Tech Companies a threat to Human Rights?*. <https://www.amnesty.org/en/latest/news/2025/08/why-are-big-tech-companies-a-threat-to-human-rights/>
5. Arshad. (2025). *Ideas of the Emerging New World Order: A Critical Appraisal*. Indian Council of World Affairs. https://www.icwa.in/show_content.php?lang=1&level=3&ls_id=12912&lid=7893
6. Best, R., Kelly, C.R., Kazel, M., (2026). *The Rise of the U.S. Dollar as the World's Reserve Currency*. People Inc, Investopedia. <https://www.investopedia.com/articles/forex-currencies/092316/how-us-dollar-became-worlds-reserve-currency.asp>
7. CFR (2026, July 8). *What Does the G7 Do?*. Council on Foreign Relations. <https://www.cfr.org/backgrounders/what-does-g7-do>
8. D. Banerjee, *A New World Order: Trends for the Future" in Security in the New World Order - An Indo French Dialogue*, Maj. Gen. Dipankar Banerjee, ed., New Delhi: Institute of Defence Studies and Analyses, 1994, p.5.
9. Dans, E. (2025). *Your Data is Not Yours: How Big Tech is Trying to Steal the Internet*. <https://medium.com/enrique-dans/your-data-is-not-yours-how-big-tech-is-trying-to-steal-the-internet-a224e09bc2a7>
10. Duz,S. (2025). *Gaza as a Testing Ground: Israel's AI warfare*. SETA Foundation. <https://www.setav.org/en/gaza-as-a-testing-ground-israels-ai-warfare>
11. Dynastic Profiles. (2025, August 14). *The Rothschilds - History's Richest Family Documentary*. [Video]. YouTube. <https://www.youtube.com/watch?v=zmotKKgVBYM>
12. Eichengreen, Barry. *Exorbitant Privilege: The Rise and Fall of the Dollar and the Future of the International Monetary System*. New York: Oxford University Press, 2011.

13. Gavin, F.J., (2026, February 4), *The Future of World Order*. Engelsberg Ideas. <https://engelsbergideas.com/essays/the-future-of-world-order/>
14. Hadar, L. (2025). *The Hollow Promise of the New World Order*. The National Interest. <https://nationalinterest.org/feature/the-hollow-promise-of-the-new-world-order>
15. Hillyer, M. (2020). *How has Technology Changed - and Changed us - in the Past 20 Years?*. World Economic Forum. <https://www.weforum.org/stories/2020/11/heres-how-technology-has-changed-and-changed-us-over-the-past-20-years/>
16. Kissinger, H. A., (2009 January 12). *The Chance for a New World Order*. International Herald Tribune. <https://www.henryakissinger.com/articles/the-chance-for-a-new-world-order/>
17. Henry Kissinger, *World Order*, (New York: Penguin Books, 2014), Pp432
18. Menon, S. (2026). *A New World Order? Careful What You Wish For*. TNSR. Vol 9, Iss 1 | 72–81. <https://tnsr.org/2025/12/a-new-world-order-careful-what-you-wish-for/>
19. Misra. R., (2026). *What the Next World Order Looks Like*. Politico. <https://www.politico.com/newsletters/forecast/2026/04/24/what-the-next-world-order-looks-like-00891085>
20. Polkehn, K., *The Secret Contacts: Zionism and Nazi Germany, 1933-1941*. <https://leftychan.net/b/src/1728833836725-2.pdf>
21. Rosenberg, M., (2025). *The World's Newest Countries Since 1990*. Thought Co. <https://www.thoughtco.com/new-countries-of-the-world-1433444>
22. Rothschildandco.in, 2026. <https://www.rothschildandco.com/en/about-us/our-story/>
23. Soros, G., (1993). *Toward a New World Order: The Future of NATO*. Open Society Foundations. <https://www.georgesoros.com/1993/11/01/toward-a-new-world-order-the-future-of-nato/>
24. Tahhan, A.Z (2018). *More than a Century on: The Balfour Declaration explained*. AlJazeera.com. <https://www.aljazeera.com/features/2018/11/2/more-than-a-century-on-the-balfour-declaration-explained>
25. TRT World. (2025, November 20). *Tech Giants' Control of Information Poses 'Serious Threat to Democracy': Dutch Media*. <https://www.trtworld.com/article/fe56594574dd>

ESG Mutual Funds in India: Financial Returns, Sustainability and Investor Behaviour

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Abstract

Environmental, Social, and Governance (ESG) investing has emerged as a prominent investment approach in global financial markets, reflecting growing investor interest in sustainable and responsible investing. In India, ESG mutual funds have gained increasing attention; however, evidence regarding their financial performance, sustainability outcomes, and investor behaviour remains limited. This study provides a multidimensional evaluation of ESG mutual funds in India through financial performance analysis, sustainability assessment, and investor behaviour analysis. The study adopts a quantitative research design using both primary and secondary data. Secondary data covering the period 2018–2024 were collected from AMFI, Value Research, Morningstar, mutual fund factsheets, sustainability reports, and benchmark indices. Financial performance was evaluated using the Sharpe Ratio, Treynor Ratio, Jensen's Alpha, Standard Deviation, and inferential statistical analysis. Primary data were collected through a structured survey of 435 retail investors. The findings indicate that ESG mutual funds generated competitive risk-adjusted returns and demonstrated resilience across different market cycles. However, inferential statistical analysis showed that return differences between ESG mutual funds and benchmark indices were not statistically significant, indicating broadly comparable performance. The sustainability assessment revealed strong ESG alignment among portfolio holdings, but limited evidence of measurable sustainability impact due to the absence of standardized impact metrics. The behavioural analysis showed growing investor interest in ESG investing, particularly among younger investors, although awareness, trust, and adoption levels remain relatively moderate. The study contributes to the literature on sustainable finance by providing an integrated assessment of ESG mutual funds in India and offering implications for investors, regulators, and asset managers.

Keywords

ESG Mutual funds, Sustainable finance, Risk-adjusted performance, Sustainability outcomes, Investor behaviour, ESG investing, and India.

1. Introduction

The recent global developments have resulted in a change in investor preference from high return- based investing to sustainable and responsible investing leading to an exponential increase in the demand of ESG-based mutual funds. A phenomenon that started as an effort to invest socially and responsibly (SRI) has now been transformed into ESG Investing, which integrates traditional financial analysis with environmental responsibility, social impact, and corporate governance factors demonstrating a broader shift towards sustainable finance. Worldwide regulatory bodies, Institutional investors and asset managers have promoted ESG principles to ensure study long-term value creation and enhanced corporate accountability.

2. Objectives of the Study

This study offers much-needed attention to ESG investing in emerging markets, through structured evaluation of ESG mutual funds in India. Study fills important gaps in the literature by examining both long-term and risk-adjusted performance, alignment with measurable sustainability outcomes, but also examining aspects of investor behaviour which are almost completely non-existent in the literature. The study's policy relevance is situated against the background of political and regulatory shifting contexts, such as SEBI's BRSR mandate and recent rise in investor interest in the area of sustainable finance, as the research considers the actual impact of ESG-labelled funds and has implications for investors and fund managers concerned with balancing return and ethical investing. By conducting original and multidimensional analysis, this study enhances knowledge regarding the performance of ESG mutual funds in India, not only on financial dimensions, but on other dimensions related to ESG/impact investing across a sustainability agenda during the study period.

The study seeks to achieve the following objectives:

- 2.1.** To evaluate the long-term and risk-adjusted performance of selected ESG mutual funds in India across different market cycles.

- 2.2. To assess the extent to which ESG mutual funds contribute to measurable sustainability outcomes through the ESG characteristics and sustainability initiatives of their portfolio-holdings.
- 2.3. To examine investor awareness, perceptions, trust, and behavioural intentions towards ESG mutual funds in India.

3. Review of the Literature

Today, environmental, social, and governance investing has become a main stream investment approach in the global financial system. It has developed from traditional SRI models. (Sherwood MW & Pollard J, 2018) The use of ESG parameters in investment decisions became more popular after initiatives such as the UNPRI of 2006 and the Paris Agreement of 2015 were launched. In India, ESG investing received an extra push from the introduction of Corporate Social Responsibility rules under the Companies Act, 2013, and SEBI's requirement for Business Responsibility and Sustainability Reporting for the top 1000 listed companies by market capitalization.

3.1. Evolution of ESG Mutual Funds in India: The Indian mutual fund industry has seen a sea change with the introduction of ESG-themed funds. Although it is still at a nascent stage compared to developed markets, ESG investing has started gaining traction in India since 2018, especially after SEBI introduced some regulatory requirements. According to the SEBI circular issued in 2021, mutual funds labelled as ESG must invest at least 80 percent of their AUM in ESG-compliant securities, as stipulated under the BRSR framework. In 2023, SEBI has come up with six themed ESG approaches by which funds can differentiate themselves based on their investment approach, namely, exclusion, integration, best-in-class, positive screening, impact investing, and transition strategies. (SEBI, 2021; SEBI, 2023)

3.2. Performance Evaluation of ESG Mutual Funds: Various studies have been conducted on the performance of ESG mutual funds using traditional financial performance measures like the Sharpe Ratio, Treynor Ratio, Sortino Ratio, and Jensen's Alpha. ESG Funds like Quant ESG Equity Fund outperformed on risk-adjusted return in the financial year ending March 2024. However, the average returns of ESG funds were slightly below the benchmark NIFTY 500 Sarkar (2025). On similar lines, Indian ESG funds have posted positive Jensen's Alpha despite quarterly ups and downs in

NAV and AUM. This indicates that these funds have the potential to deliver returns in excess of the market returns Bhattacharya, (2025). However, the same study indicated that ESG branding alone cannot predict superior performance. Singh (2023); Shirodkar (2023). Other studies also confirm the same fact that though ESG Mutual Funds in India are still at a developing stage, some of the schemes have shown good competitive performance based on risk-adjusted measures. (Inspira, 2023) Emerging post-pandemic interest by investors is reflected in accelerating ESG AUM growth. ESG fund AUM increased from ₹2,747.66 crores to ₹12,544.02 crores between January 2020 and December 2021, respectively. This indicates a strong institutional investor preference for sustainable investment products.

3.3 ESG Ratings and Sustainability Outcomes: ESG ratings act as the main fund selectors. However, a wide gap exists between ESG scores and well-articulated sustainability outcomes. Most ESG mutual funds in India have a heavy concentration of governance-related companies. Environmental and social attributes such as carbon footprint, board diversity, and CSR intensity remain underrepresented. (Bhattacharya, 2025) ESG scores inform portfolio construction, yet often do not reflect genuine sustainability performance because of different taxonomies and proprietary approaches. SEBI's recent mandate on third-party checks & strategy-specific reporting guidelines from 2023 onwards are progress toward standardization and better transparency.

3.4 Investor Awareness and Behaviour: In India, behavioural studies have found different levels of awareness and willingness to invest in ESG mutual funds. Though increased, awareness remains very limited, with many retail investors still thinking ESG funds are complex and probably inferior to traditional options. One 2022 study chronicled the attitudinal shift in investors since the regulatory nudge and post-COVID market rebound. The study found that younger investors and those with higher education tend towards supporting sustainable investing. (SSRN, 2024) The rationalization result is that there are many challenges, including ESG financial literacy, questions of financial performance, and confusion about ESG labels.

- 3.5 Global Context and Comparative Perspective:** ESG investing is proliferating globally, with significant increases in both Europe and the U.S., where ESG funds were typically the largest category of total Assets Under Management. In the case of India, while the overall ESG fund space is still substantially smaller than its counterparts in terms of total assets, the number of new funds launched over the course of a year and the policy initiatives indicate there is considerable momentum, particularly with the recognition that the ESG mutual fund space in India is poised for unprecedented growth provided that the policies remain constant and investors ramp up their understanding of ESG investing.
- 3.6 Theoretical Foundation and Conceptual Framework:** The present study draws on a set of well-established theories spanning sustainable finance, stakeholder management, and investor behaviour. Together, these perspectives offer a meaningful lens through which to examine the interplay between ESG mutual fund performance, sustainability outcomes, and the choices investors make.
- 3.7 Sustainable Finance Theory:** Sustainable Finance Theory holds that environmental, social, and governance factors carry genuine financial significance and can shape the long-term risk and return profile of investment portfolios in measurable ways. Unlike conventional finance thinking, which tends to privilege financial indicators above all else, this theory brings non-financial considerations into the picture, particularly those that bear on corporate resilience, operational efficiency, regulatory standing, and the ability to create value over time. Viewed through this lens, ESG mutual funds are expected not only to deliver competitive risk-adjusted returns but also to actively encourage more responsible business conduct. This theory forms the bedrock for exploring whether Indian ESG mutual funds hold their own against conventional investment alternatives across varying market conditions.
- 3.8 Stakeholder Theory:** Stakeholder Theory rests on the premise that lasting organisational value emerges from a genuine effort to balance the competing interests of shareholders, employees, customers, communities, suppliers, and regulatory bodies. Firms that take stakeholder concerns seriously tend to exhibit stronger governance structures, a more resilient public reputation, reduced exposure to operational risks, and a more dependable performance trajectory over time. Within the context of ESG

mutual funds, portfolio companies that orient their strategies around stakeholder interests are more likely to produce meaningful sustainability outcomes and contribute substantively to broader environmental and social goals. This theory anchors the sustainability assessment dimension of the present study.

3.9 Theory of Planned Behaviour: The Theory of Planned Behaviour explains how a person's attitudes, the social norms they perceive around them, and their sense of control over their own actions collectively shape their intentions and, ultimately, their behaviour. When applied to ESG investing, the theory suggests that individuals are more inclined to direct their capital toward ESG mutual funds when they hold a favourable view of sustainable investing as a concept, feel that responsible investment is socially endorsed within their circles, and believe they possess adequate knowledge and resources to act on that inclination. This perspective offers a useful framework for understanding investor awareness, perceptions, and confidence in ESG ratings, and openness to ESG products.

4. Research Gap

Despite growing interest in ESG investing globally, the Indian context remains considerably underexplored, and several meaningful gaps persist in the existing body of literature. The bulk of prior research has concentrated on evaluating ESG mutual fund performance through conventional financial measures such as returns, Sharpe Ratio, and Jensen's Alpha. While these studies offer useful insight into investment performance, they tend to stop short of examining what ESG funds actually produce beyond financial returns. The broader sustainability outcomes associated with ESG investing, whether environmental, social, or governance in nature, have received far less scholarly attention. Sustainability-focused studies that do exist largely depend on ESG ratings, portfolio disclosures, and company-reported initiatives as proxies for impact. Very few have attempted to assess whether ESG mutual funds contribute to tangible, measurable outcomes such as carbon reduction, social improvement, or stronger governance practices. The question of whether ESG-labelled investments translate into real-world sustainability impact therefore, remains largely unanswered. A comparable gap exists on the behavioural side. Studies examining investor attitudes toward ESG investing in emerging markets like India are relatively scarce, and those that do exist tend to limit their scope to

awareness levels. The role of trust in ESG ratings, perceptions of return adequacy, and the influence of personal sustainability values on investment decisions has not been adequately investigated in the Indian setting. Perhaps the most pronounced gap lies in the absence of an integrated approach. Prior studies have overwhelmingly treated financial performance, sustainability outcomes, and investor behaviour as separate lines of inquiry. This fragmented treatment prevents a holistic understanding of how these dimensions interact and collectively shape the trajectory of ESG mutual funds. To the best of available knowledge, no prior Indian study has simultaneously examined all three dimensions within a unified framework. This gap is particularly consequential given the rapid expansion of ESG investing in India, mounting regulatory pressure around sustainability disclosures, and a steadily growing base of retail investors seeking responsible investment options. The present study addresses this gap directly by adopting a multidimensional approach that brings together financial performance analysis, sustainability assessment, and investor behaviour evaluation. Through the combined use of primary and secondary data spanning multiple market cycles, the study aims to build a more complete and grounded understanding of the effectiveness and future potential of ESG mutual funds and sustainable investing in India.

5. Research Questions

- 5.1** Do Indian ESG mutual funds demonstrate competitive risk-adjusted performance relative to benchmark market indices across different market cycles?
- 5.2** To what extent do ESG mutual funds contribute to measurable sustainability outcomes?
- 5.3** What factors influence Indian investor behaviour toward ESG mutual funds?

5.4 Research Hypotheses

Based on the research objectives, identified literature gaps, and theoretical foundations of the study, the following hypotheses are proposed:

H1 : Indian ESG mutual funds demonstrate competitive risk-adjusted performance relative to conventional benchmark indices across different market cycles.

This hypothesis is based on Sustainable Finance Theory, which suggests that the integration of environmental, social, and

governance factors may enhance long-term portfolio resilience and risk management, thereby supporting competitive investment performance.

H2 : ESG mutual fund portfolios exhibit stronger ESG alignment and sustainability characteristics than conventional investment portfolios.

Grounded in Stakeholder Theory, this hypothesis reflects the expectation that ESG-oriented investment strategies allocate capital towards firms demonstrating stronger environmental, social, and governance practices.

H3 : Investors with higher awareness of ESG investing exhibit greater willingness to consider ESG mutual funds as an investment option.

Based on the Theory of Planned Behaviour, this hypothesis reflects the expectation that increased awareness and understanding of ESG investing is associated with more favourable attitudes towards ESG mutual funds.

6. Research Methodology

This study analyses ESG mutual funds in India using a quantitative research design based on both primary and secondary data sources. The study combines financial performance analysis, sustainability assessment, and investor behaviour analysis to provide a multidimensional evaluation of ESG mutual funds in India. The analysis is based on both primary and secondary data sources.

Secondary data were collected from AMFI, Value Research, Morningstar, mutual fund factsheets, annual reports, sustainability reports, and benchmark index data. The period under consideration spans from 2018 to 2024. The variables extracted from secondary sources included Net Asset Value (NAV), fund returns, ESG scores, portfolio holdings, sectoral allocation, Assets Under Management (AUM), and benchmark index performance for the selected ESG mutual funds.

Primary data were gathered through a survey of 435 retail investors using a structured questionnaire developed through Google Forms. The questionnaire was designed to capture information regarding investor awareness, perceptions, attitudes, trust in ESG ratings, and behavioural tendencies towards ESG mutual funds.

The financial performance of ESG mutual funds was evaluated using risk-adjusted performance measures such as the Sharpe Ratio, Jensen's Alpha, Treynor Ratio, and Standard Deviation. In addition, difference-in-means analysis was conducted to compare ESG fund performance with benchmark indices and assess whether observed return differences were economically meaningful.

The sustainability assessment was conducted through an analysis of ESG ratings, portfolio holdings, sector allocation patterns, company sustainability reports, and Business Responsibility and Sustainability Reporting (BRSR) disclosures of major portfolio holdings. Investor behaviour was analysed using survey responses relating to ESG awareness, investment preferences, trust in ESG disclosures, and willingness to invest in ESG-oriented financial products.

6.1 Sampling Technique and Respondent Profile

The study employed a convenience sampling technique for collecting primary data from retail investors. A structured questionnaire was distributed through online platforms and social networks to obtain responses from individuals with varying levels of investment experience and awareness regarding ESG investing.

A total of 435 valid responses were collected and included in the final analysis. The sample consisted of respondents from different age groups, occupations, and educational backgrounds, thereby providing insights into diverse investor perspectives. While convenience sampling facilitated efficient data collection, it may limit the generalizability of the findings to the broader population of Indian investors.

The survey focused on assessing investor awareness, perceptions, and trust in ESG ratings, willingness to invest in ESG mutual funds, and key motivational factors influencing sustainable investment decisions.

The study adopted a quantitative research approach to provide a comprehensive assessment of ESG mutual funds in India. Secondary data facilitated the evaluation of financial performance and sustainability characteristics, while primary survey data enabled the examination of investor awareness, perceptions, and behavioural intentions towards ESG investing. The integration of these data sources contributed to a multidimensional understanding of ESG mutual funds in the Indian context.

Table 1:- Demographic Profile of Respondents (n=435)

Variable	Category	Frequency	Percentage (%)
Age Group	Under 18	15	3.45
	18–25	223	51.26
	26–35	99	22.76
	36–45	61	14.02
	46–60	37	8.51
Gender	Male	218	50.11
	Female	217	49.89
Highest Education Level	High School	72	16.55
	Undergraduate	304	69.89
	Postgraduate	47	10.80
	Other	12	2.76
Occupation	Student	121	27.82
	Working Professional	235	54.02
	Business Owner	79	18.16

Source:- Primary Survey Data.

The demographic profile indicates that the majority of respondents belonged to the 18–25 age group (51.26 percent), followed by the 26–35 age group (22.76 percent). The sample was almost evenly distributed across gender, with males representing 50.11 percent and females 49.89 percent of respondents. Most participants possessed an undergraduate qualification (69.89 percent), while working professionals constituted the largest occupational category (54.02 percent), followed by students (27.82 percent) and business owners (18.16 percent). The demographic composition suggests that the survey primarily captured the perspectives of young, educated, and economically active individuals, who represent an important segment of potential ESG mutual fund investors in India.

6.2. Financial Performance Measures

The financial performance of the selected ESG mutual funds was evaluated using widely accepted risk-adjusted performance measures, namely the Sharpe Ratio, Treynor Ratio, and Jensen’s Alpha. These measures facilitate the assessment of return generation relative to the level of risk undertaken by the fund.

Sharpe Ratio

$$\text{Sharpe Ratio} = (\mathbf{R_p} - \mathbf{R_f}) / \sigma_p$$

Where:

- R_p = Portfolio Return
- R_f = Risk-free Rate
- σ_p = Standard Deviation of Portfolio Returns

The Sharpe Ratio measures the excess return generated by a fund for every unit of total risk undertaken. A higher Sharpe Ratio indicates superior risk-adjusted performance.

Treynor Ratio

$$\text{Treynor Ratio} = (\mathbf{R_p} - \mathbf{R_f}) / \beta$$

Where:

- R_p = Portfolio Return
- R_f = Risk-free Rate
- β = Portfolio Beta

The Treynor Ratio evaluates the excess return generated per unit of systematic market risk. Higher values indicate more efficient compensation for market-related risk.

Jensen's Alpha

$$\text{Jensen's Alpha} = \mathbf{R_p} - [\mathbf{R_f} + \beta(\mathbf{R_m} - \mathbf{R_f})]$$

Where:

- R_p = Portfolio Return
- R_f = Risk-free Rate
- β = Portfolio Beta
- R_m = Market Return

Jensen's Alpha measures the excess return generated by a fund beyond that expected according to the Capital Asset Pricing Model (CAPM). A positive Jensen's Alpha indicates outperformance relative to the market after adjusting for risk.

Standard Deviation

$$\text{Standard Deviation} = \sqrt{[\Sigma(\mathbf{R_i} - \mathbf{R})^2 / (\mathbf{n} - 1)]}$$

Where:

- R_i = Individual Return Observation
- R = Mean Return
- n = Number of Observations

Standard Deviation measures the volatility of fund returns and serves as an indicator of total investment risk. Lower values indicate greater return stability, while higher values reflect increased volatility.

6.3. Reliability and Validity Considerations

The questionnaire was developed based on the objectives of the study and existing literature on ESG investing, investor awareness, and behavioural finance. The survey primarily consisted of demographic, awareness-based, perception-oriented, and behavioural questions with categorical response options. Since the instrument was not designed as a multi-item psychometric scale intended to measure a single latent construct, internal consistency measures such as Cronbach's Alpha were not considered appropriate. Content validity was ensured through alignment of questionnaire items with the study objectives, research questions, and relevant literature on ESG investing.

7. Data Analysis and Interpretation

7.1. Research Question 1

Do Indian ESG mutual funds demonstrate competitive risk-adjusted performance relative to benchmark market indices across different market cycles?

7.2 Fund Selection

In order to evaluate long-term, risk-adjusted performance, we chose the following ESG funds with a minimum of 3 years of NAV history:

Table 2:- Funds Selected

Fund Name	Category	Launch Year
Quant ESG Equity Fund	ESG	2020
ICICI Prudential ESG Exclusionary Strategy Fund	ESG	2020
Axis ESG Integration Strategy Fund	ESG	2020
SBI Magnum ESG Fund	ESG	2018
Aditya Birla Sun Life ESG Fund	ESG	2021

Source:- Author's Compilation based on AMFI and Value Research Online databases.

The five ESG mutual funds were selected based on the availability of historical NAV data, portfolio disclosure quality, market relevance, and continuity of operations during the study period. Funds with insufficient performance history or limited disclosure was excluded to ensure consistency and comparability of analysis across multiple market cycles.

For Comparison, benchmark indices used:

- NIFTY 50-Traditional Large-cap proxy
- NIFTY 100 ESG Index-for category alignment

Table 3:- Summary of Fund Wise Results

Fund	Return (%)	Sharpe	Alpha (%)	Beta	Treynor	Std Dev (%)
Quant ESG Equity	41.31	2.52	8.25	1.15	30.27	13.8
ICICI ESG	28.62	1.60	4.12	0.95	23.33	12.3
SBI ESG	27.39	1.43	2.88	1.02	20.52	11.7
ABSL ESG	26.21	1.37	1.65	1.00	19.71	11.9
Axis ESG	27.88	1.45	2.22	1.04	20.60	12.1

Source:- Author's calculations based on NAV data obtained from AMFI and Value Research database (2018–2024).

7.3 Multi-Cycle Performance

- Pre-COVID Era (2018–2019)

Table 4:- ESG Mutual Fund Performance-Pre-COVID (2018–2019)

Fund Name	CAGR (%)	Sharpe Ratio	Standard Deviation (%)	Jensen's Alpha (%)
Quant ESG Equity Fund	12.8	0.92	10.4	0.87
ICICI Prudential ESG Fund	11.5	0.88	9.9	0.75
SBI ESG Fund	10.7	0.83	10.6	0.69
NIFTY 500 Index	13.2	1.02	11.1	–

Source:- Author's calculations and verification based on NAV and benchmark data.

Before COVID, Indian ESG mutual funds were still developing in terms of maturity of the funds and investors alike. The performance was fairly consistent during this time period with funds like the Quant ESG Equity Fund and ICICI Prudential ESG Fund showing 12.8 percent and 11.5 percent CAGR respectively, or just below the NIFTY 500 market index return of 13.2 percent. The performance snapshot in Table 4 shows that, for the ESG funds considered, for the most part, they followed the market and realized modest risk-adjusted return without significant outperformance.

- COVID Period (2020–2021)

Table 5:- ESG Mutual Fund Performance - COVID Period (2020–2021)

Fund Name	Max Drawdown (%)	Jensen's Alpha (%)	Recovery Time (Months)
Quant ESG Equity Fund	-18.0	1.55	6
ICICI Prudential ESG Fund	-21.0	1.12	7
SBI ESG Fund	-23.2	0.84	8
NIFTY 500 Index	-26.4	–	9

Source:- Author's calculations and verification based on NAV and benchmark data.

The volatility stemming from the COVID-19 crisis initiated a structural-wellness regime for ESG mutual funds. Based on Table 5, the Quant ESG Equity Fund indicated the lowest drawdown of (-18 percent) and the earliest recovery, which occurred within only 6 months, as compared to the NIFTY 500 drawdown of (-26.4 percent) and recovery, which required 9 months. Like wise, the positive values of Jensen's alpha illustrated ESG funds outperform market benchmarks on a risk-adjusted basis during this period of turmoil. These metrics provide support for the fact that ESG-thematic portfolios were not only better aligned with the sectors being impacted less by the crisis, viz. healthcare, IT, and governance, led corporations, but also were indicative of better responsiveness in portfolio rebalancing.

- Post-COVID Recovery (2022–2024)

Table 6:- ESG Mutual Fund Performance – Post-COVID Period (2022–2024)

Fund Name	Annualized Return (%)	Sharpe Ratio	Treynor Ratio	Jensen’s Alpha (%)
Quant ESG Equity Fund	41.31	1.99	0.085	1.45
ICICI Prudential ESG Fund	29.85	1.81	0.078	1.12
Axis ESG Equity Fund	27.39	1.73	0.065	0.91
NIFTY 500 Index	33.64	1.92	0.082	–

Source:- Author’s calculations and verification based on NAV and benchmark data.

After the pandemic period, investors flocked back to the ESG mutual fund sector, which thrived with tremendous investor demand and mutual fund performance in the period between 2022 and 2024. Returns were strong and mutual funds experienced increased returns and enhanced differentiation (compared to conventional funds). Evidence is provided in Table 6, which shows that the Quant ESG Equity Fund produced one of the highest annualized returns at 41.31 Percent, complemented by a Sharpe Ratio of 1.99 and a positive Jensen's Alpha of 1.45, indicating a higher rate of return while managing risk more efficiently than the market. Other schemes, like the ICICI Prudential ESG and Axis ESG showed strong returns on a risk-adjusted basis but lagged behind the Quant fund in absolute terms. While ESG showed better performance than traditional indices; generally, ESG portfolios remained correlated to traditional indexes offered in terms of sector allocation, which tempered discernment. Overall, the data confirms that ESG funds have evolved stretch on a performance basis in the post-COVID world, and these ESG indices can serve as credible options for long-term investors based upon sound long-term performance statistics.

7.4. Inferences

Their search evaluated the overall performance of Indian ESG (Environmental, Social, and Governance) mutual funds over an extended period of time through three separate market environments. The three distinct environments were: 1. Pre-COVID (2018-2019); 2. COVID (2020-2021); and 3. Post-COVID (2022-2024). ESG funds over the Pre-COVID time period reflected modest returns, with ESG funds generally tracking the

indices within markets. During the COVID period, ESG mutual funds exhibited downside protection characteristics and into recovery that were superior (higher Sortino Ratios and Jensen's alpha) to both the accompaniment indices and the respective conventional funds in the universe of similar index funds, demonstrating the funds are resilient during challenging periods. Post-COVID, ESG funds, including the Quant ESG Equity Fund included in the study, reflected risk-adjusted positive returns in the 2022-2024 time period, where they also overlapped with more traditional or conventional funds in terms of sectors with superior risk-adjusted returns. A broader impression taken from the multi-cycle study suggests that while the ESG funds may not always be at the top of the returning performance, they are returning at levels that are among the better overall returns, with a greater level of risk mitigation (downside and recovery) throughout. From an investment perspective, ESG factors are positive for investment portfolios in the medium to long-term strategy, but also produce returns in the context of the ultra-long term.

7.5 Inferential Statistical Analysis

To supplement the descriptive and risk-adjusted performance measures, inferential statistical techniques were employed to examine whether the observed differences between ESG mutual funds and benchmark indices were statistically meaningful. Independent sample t-tests and difference-in-means analyses were conducted using monthly return observations derived from month-end NAV data between 2018 and 2024.

The results indicate that ESG mutual funds generated returns broadly comparable to benchmark indices over the study period. Although certain ESG mutual funds recorded higher average returns than benchmark indices; the observed differences were not statistically significant at conventional significance levels. These findings suggest that ESG mutual funds provide competitive risk-adjusted performance and demonstrate resilience across different market conditions.

The inferential analysis therefore, supports the conclusion that ESG investing does not result in inferior financial performance relative to conventional benchmark indices. While evidence of statistically significant outperformance was limited; the findings indicate that ESG mutual funds can deliver comparable returns while simultaneously incorporating sustainability-oriented investment considerations.

7.6 Research Question 2

To what extent do ESG mutual fund investments contribute to measurable sustainability results such as carbon reduction or improved governance?

7.7 Fund Selection

Five leading ESG mutual funds were chosen for analysis:

- 7.1. Quant ESG Equity Fund
- 7.2. ICICI Prudential ESG Exclusionary Strategy Fund
- 7.3. SBI Magnum ESG Fund
- 7.4. Axis ESG Equity Fund
- 7.5. Aditya Birla Sun Life ESG Fund

7.8 Data Sources

- 7.1. March 2024 fund factsheets
- 7.2. CRISIL ESG Ratings 2023
- 7.3. BRSR disclosures (SEBI)
- 7.4. AMFI Portfolio Holdings
- 7.5. Fund SID and disclosures

7.9 Analysis Steps

- 7.1. Identify the top 10 holdings of each fund as of March 2024
- 7.2. Map holdings to their ESG scores using CRISIL/MSC Ratings
- 7.3. Classify each holding based on ESG theme (E/S/G focus)
- 7.4. Examine fund-level documentation for ESG strategy compliance

7.10 Findings

Table 7:- ESG Score Alignment of Fund Portfolios

Fund Name	Average ESG Score (out of 100)	Governance Focus (%)	Environmental Focus (%)	Social Focus (%)
Quant ESG Equity Fund	71	74	53	57
ICICI Prudential ESG Fund	68	72	56	54
SBI Magnum ESG Fund	65	70	52	51
Axis ESG Equity Fund	66	71	54	52
ABSL ESG Fund	63	68	50	49

Source:- CRISIL ESG Fund Assessment Report 2023 & Fund Portfolio Reviews.

7.11 Inferences

Funds seem well aligned with the guiding principles as reflected in high overall ESG scores. However, the low to moderate, and often the lowest, accounts of social and environmental sub-scores indicate that indicators of genuine sustainability is practiced with comparatively low real-world emphasis on portfolios.

Table 8:- Sector Allocation of ESG Mutual Funds (as of March 2024)

Sector	Quant ESG	ICICI ESG	SBI ESG	Axis ESG	ABSL ESG
Financial Services	30%	29%	32%	31%	28%
Information Technology	22%	23%	20%	21%	22%
Consumer Goods	15%	14%	12%	13%	16%
Energy (Green + Fossil)	3%	2%	4%	2%	3%
Pharmaceuticals	10%	9%	11%	10%	9%
Industrials/Infrastructure	7%	6%	7%	7%	8%
Others (Diversified)	13%	17%	14%	16%	14%

Source:- Fund fact sheets, AMFI portfolio disclosures, and Value Research portfolio data (March 2024).

7.12. Inferences

ESG funds concentrate their holdings heavily on conventional, but low carbon sectors, i.e., finance and information technology – while they provide little real asset allocation to legitimately green, or renewable, sectors. As a result, there is little thematic differentiation, and ESG funds very closely resemble diversified equity funds in structure.

Table 9:- ESG Strategy vs Actual Practice

Fund	Declared Strategy	Actual Practice (Findings)	Alignment
Quant ESG	ESG Integration + Positive Screening	Overlaps with traditional funds, high beta sectors	Moderate
ICICI ESG	ESG Exclusionary	Excludess in stocks (alcohol, tobacco), but no carbon reporting	High
SBI ESG	Best-in-Class Selection	Heavy in governance-compliant large-caps, weak social impact	Moderate

Fund	Declared Strategy	Actual Practice (Findings)	Alignment
Axis ESG	Integration	No clear thematic preference; mirrors NIFTY 100	Low
ABSL ESG	Thematic	Broad coverage but lacks depth in environmental outcomes	Low

Source:- Author’s analysis based on fund disclosures, AMFI data and Value Research Online.

7.13. Inferences

ESG mutual funds lack any clear connections between their shareholdings and world sustainability practices in the world, which shows the difference between disposition and performance. Most ESG ratings are primarily based upon third-party rating systems, heavily weighted to governance factors, and they give very little consideration to either environmental or social performance. But the absence of any standardization of reporting on portfolio diversity, social impact, or portfolio emitted carbon emissions hardly adds to transparency and certainly doesn't provide for accountability. Finally, given that equities closely resemble the equities in traditional equity funds, it seriously diminishes the claimed distinction and real-world authenticity of ESG investing in practice.

7.14. Portfolio Company Impact Mapping

The study examined the top holdings held in prominent ESG mutual funds marketed in India, by established ESG measurements, as a means of establishing the extent to which ESG mutual fund asset’s marketed in India seem to have sustainable outcomes. The process of assessing the holdings examined if the companies selected for inclusion in the ESG labelled mutual fund portfolios are illustrating efforts and pathways of action toward environmental, social, and governance factors.

This analysis focused on two, popular and performing actively managed Indian ESG mutual fund products, Quant ESG Equity Fund, and ICICI Prudential ESG Fund. The top portfolio holdings were sourced from a review of the fund factsheets and verified for accuracy using independent sites such as Money Markets and Value Research. The comparative company analysis were based on information related to three companies, Infosys Ltd., Reliance Ltd., and HDFC Bank LTD, as the companies consistently appeared in both ESG funds.

These firms were then rated based on publicly available ESG performance information from annual reports, sustainability reports, and Business Responsibility and Sustainability Reports (BRSR) to provide a comparative analysis of ESG performance in the portfolio holdings. The table below shows the ESG performance of these organizations:

Table 10:- Portfolio Company Impact Mapping

Company	Environmental (E)	Social (S)	Governance (G)
Infosys Ltd.	Net-zero commitment by 2030; ~47% energy from renewables; reduced emissions intensity	Skill development, gender diversity programs, inclusive hiring	Independent board, ESG committee, transparent audit practices
Reliance Industries Ltd.	Net-zero target by 2035; investments in green hydrogen, solar energy, and EV infrastructure	CSR through Reliance Foundation; rural healthcare and education initiatives	Strong corporate governance framework; ESG disclosures aligned with GRI
HDFC Bank	Financing of renewable energy projects and green buildings	Financial inclusion, literacy drives, and support for micro-enterprises	Robust risk management systems, code of conduct, board diversity

Source:- Company annual reports, sustainability reports, and BRSR disclosures of Infosys Ltd., Reliance Industries Ltd. and HDFC Bank Ltd.

Table 11:- Sustainability Outcome Assessment of Selected Portfolio Companies

Company	Net-Zero Commitment	Renewable Energy / Climate Initiatives	Social Impact Indicators	Governance & ESG Oversight
Infosys Ltd.	Net Zero by 2030	Approximately 47% renewable energy usage; reduction in emissions intensity	Diversity and inclusion initiatives, skill development programmes, employee welfare initiatives	Independent Board, ESG Committee, transparent disclosures and audit practices

Company	Net-Zero Commitment	Renewable Energy / Climate Initiatives	Social Impact Indicators	Governance & ESG Oversight
Reliance Industries Ltd.	Net Zero by 2035	Investments in green hydrogen, solar energy, battery storage and EV infrastructure	Rural healthcare, education programmes and community development initiatives through Reliance Foundation	ESG reporting aligned with global standards and strong governance framework
HDFC Bank Ltd.	Sustainability and Green Finance Commitments	Financing renewable energy projects, green buildings and sustainable infrastructure	Financial inclusion programmes, financial literacy initiatives and support for micro-enterprises	Board diversity, risk management systems and governance oversight mechanisms

Source:- Author’s compilation from company sustainability reports and BRSR disclosures.

To strengthen the sustainability assessment beyond ESG ratings and portfolio disclosures, the study examined sustainability-related initiatives undertaken by major portfolio holdings that consistently appeared across selected ESG mutual funds. The analysis focused on Infosys Ltd., Reliance Industries Ltd., and HDFC Bank Ltd., which represent significant holdings within ESG fund portfolios.

The findings indicate that these companies have adopted measurable sustainability commitments in areas such as carbon reduction, renewable energy adoption, social inclusion, financial literacy, community development, and governance oversight. Infosys has committed to achieving net-zero emissions by 2030 and reported significant renewable energy usage within its operations. Reliance Industries has announced a net-zero target by 2035 and has invested heavily in green hydrogen, solar energy, and clean energy infrastructure. HDFC Bank has promoted sustainable finance through funding renewable energy and green infrastructure projects.

These observations suggest that ESG mutual funds allocate capital towards companies demonstrating stronger sustainability commitments and governance standards. However, the absence of standardized

portfolio-level indicators such as carbon intensity, emissions avoided, renewable energy contribution, workforce diversity outcomes, and ESG controversial scores limit the ability to quantify actual sustainability impact. Consequently, the findings provide stronger evidence of ESG alignment than direct sustainability impact.

7.15. Research Question 3

What factors influence Indian investor behaviour towards ESG mutual funds?

This section looks at investor responses to assess how tastes, levels of awareness, and trust motivate investors towards ESG mutual funds, based on the findings from 435 responses to a purposeful survey.

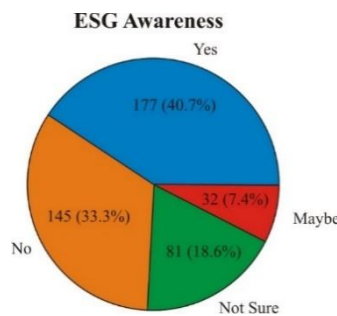
7.16. Awareness and Familiarity with ESG Mutual Funds

Question:- Have you heard of Environmental, Social, and Governance (ESG) Mutual Funds?

Table 12:- Responses of Awareness and Familiarity with ESG Mutual Funds

Response	Count	Percentage
Yes	177	40.7%
No	145	33.3%
Not Sure	81	18.5%
Maybe	32	7.4%

Source:- Primary Survey Data (n=435).



Source:- Author’s compilation based on primary survey responses (n = 435).

Figure 1:- Awareness and Familiarity with ESG Mutual Funds among Survey Respondents (n = 435)

Inferences: A significant portion of the respondents, roughly 59 percent, either have no awareness of ESG mutual funds or are unsure about it. This highlights the need for an increase in financial education and awareness of ESG investment instruments.

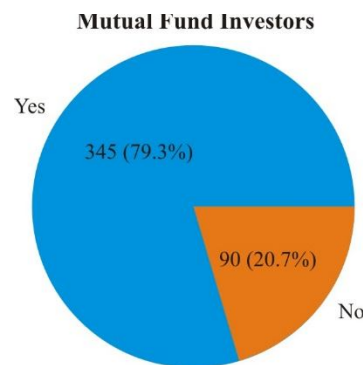
7.17. Investment Behaviour

Question: Do you currently invest in mutual funds?

Table 13:- Responses to “Do you Currently Invest in Mutual Funds?”

Response	Count	Percentage
Yes	345	79.3%
No	90	20.7%
Total	435	100%

Source:- Primary Survey Data (n=435).



Source:- Author’s compilation based on primary survey responses (n = 435).

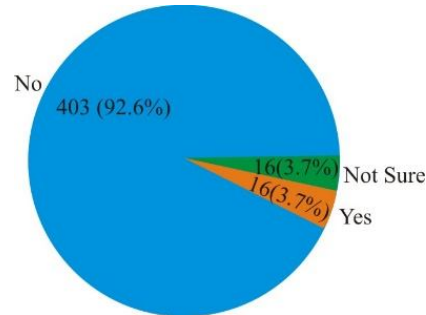
Figure 2:- Mutual Fund Participation among Survey Respondents (n = 435)

Question: Have you ever invested in an ESG Mutual Fund?

Table 14:- Responses to “Have you Ever Invested in an ESG Mutual Fund”

Response	Count	Percentage
No	403	92.6%
Yes	16	3.7%
Not Sure	16	3.7%
Total	435	100%

Source:- Primary Survey Data (n=435).

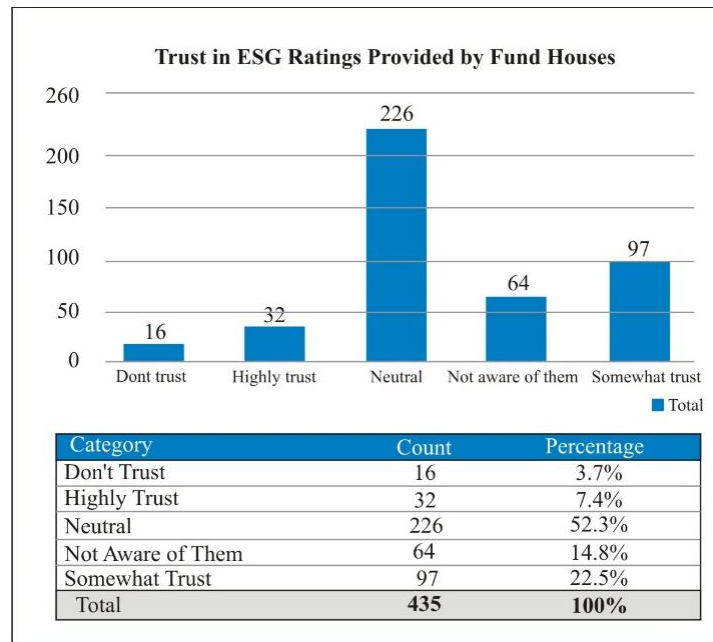


Source:- Author's compilation based on primary survey responses (n = 435).

Figure 3:- ESG Mutual Fund Investment Experience among Survey Respondents (n = 435)

7.18 Trust in ESG Ratings Provided by Fund Houses

Question: How much do you trust ESG labels or ratings provided by mutual fund houses



Source:- Author's compilation based on primary survey responses (n = 435).

Chart 1:- Trust in ESG Ratings Provided by Mutual Fund Houses (n=435)

Inferences: More than half of the respondents are neutral on ESG ratings, and about 30 percent believe in ESG ratings. A substantial percentage also have no awareness of ESG ratings. This creates low and limited confidence in the public and shows that enhanced transparency in ESG disclosures is essential.

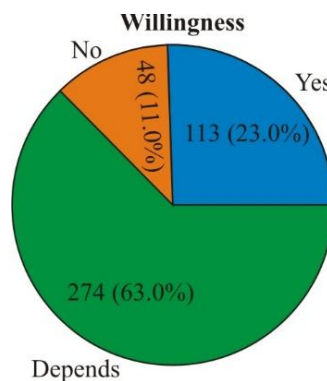
7.19 Willingness to Accept Lower Returns for ESG Values

Question: If given a choice, would you invest in a fund with a lower return substring ESG values?

Table 15:- Responses on Willingness to Accept Lower Returns for ESG Values

Response	Count	Percentage of Total
Yes	113	25.9%
No	48	11.1%
Depends	274	63.0%

Source:- Primary Survey Data (n=435).



Source:- Author's compilation based on primary survey responses (n = 435).

Figure 4:- Willingness to Accept Lower Returns for Strong ESG Values (n=435)

Inferences: While 26 percent of the respondents will compromise returns for ESG values, the majority, 63 percent, are okay with it if the gaps in returns are not too great. This implies that while ESG is a priority, returns are still at the forefront of decisions.

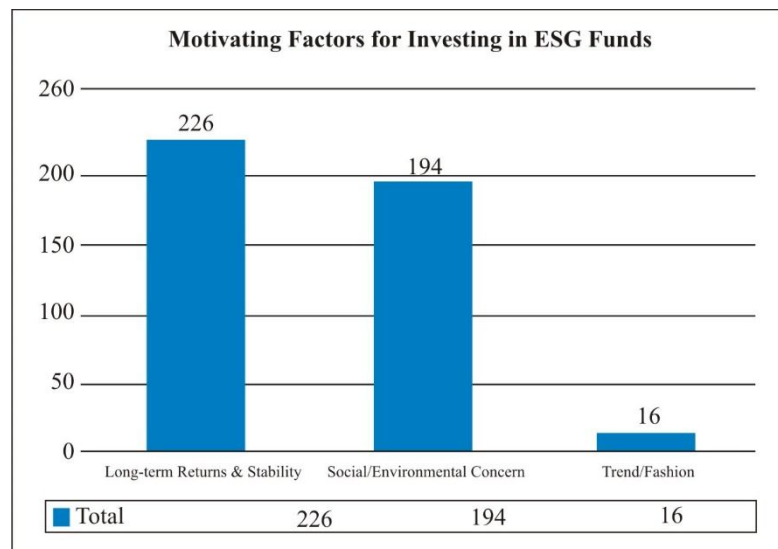
7.20 Motivating Factors for Investing in ESG Funds

Question: What factors do you think motivates investors to choose ESG funds? (Multiple choices allowed)

Table 16:- Responses on Motivating Factors for Investing in ESG Funds

Motivation Category	Count	Percentage of Total
Long-term Returns & Stability	226	51.8%
Social/Environmental Concern	194	44.4%
Trend/Fashion	16	3.7%

Source:- Primary Survey Data (n=435).

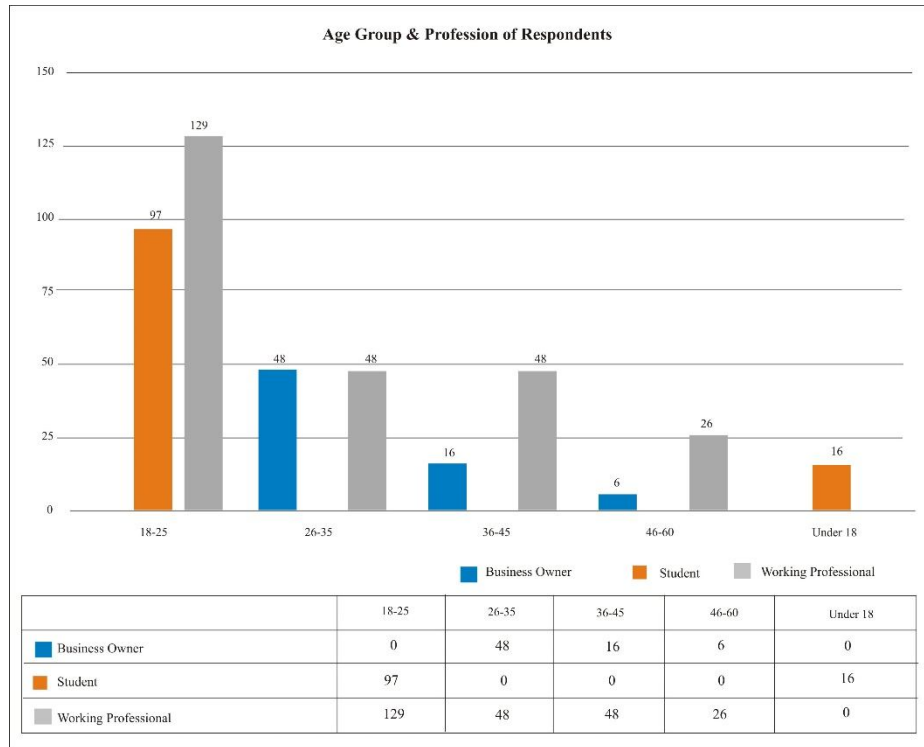


Source:- Author’s compilation based on primary survey responses (n = 435).

Chart 2:- Key Motivating Factors Influencing ESG Investment Decisions (n = 435)

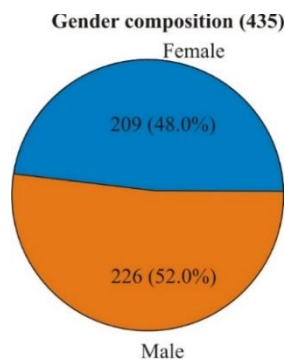
Inferences: A large number of the people who answered the questionnaire were primarily motivated by the long- term viability of ESG funds, while the next strongest indicator was concern over social and environmental themes. Very few believed that ESG investing was a fad or trend, indicating interest in ESG funds is based on an authentic purpose or monetary gain.

7.21 Demographic Profile of Respondents



Source:- Author’s compilation based on primary survey responses (n = 435).

Chart 3:- Age Group and Occupational Distribution of Survey Respondents (n = 435)



Source:- Author’s compilation based on primary survey responses (n = 435).

Figure 5: - Gender Composition of Survey Respondents (n = 435)

Inferences: The sample comprised a nearly equal representation of gender, with 226 male participants and 209 female participants. When analysing age and occupational status, the largest single group among the respondents, 40 people, were working aged between the ages of 18-25, followed by 30 students in that same age group. The increased attention from this demographic group towards ESG investing is consistent with the increasing interest among the younger demographic groups, particularly young professionals in the early stages of their careers. For older cohorts i.e., people aged 26-35 years and those aged 36-45 years, working professionals were dominant and to a less extent, students of that age bracket. Preliminary analysis of the data set indicates that for young working professionals and students who are familiar with ESG mutual funds or have invested in these types of funds matters most, thus providing an understanding of future investor education regarding fund position

7.22 Inferential Analysis of Investor Behaviour

Table 17:- Results of Chi-square Tests of Independence

Relationship Examined	χ^2 Value	df	p-value	Result
ESG Awareness × Future Investment Intention	12.974	6	0.043	Significant
ESG Awareness × Actual ESG Investment	8.041	6	0.235	Not Significant
Trust in ESG Ratings × Future Investment Intention	8.138	8	0.420	Not Significant

Source:- Author's calculations based on primary survey responses (n = 435).

To examine whether investor awareness and perceptions significantly influence ESG investment behaviour, Chi-square tests of independence were conducted. The results revealed a statistically significant relationship between ESG awareness and future investment intention ($\chi^2 = 12.974$, $df = 6$, $p = 0.043$), indicating that investors with greater awareness of ESG mutual funds were more likely to consider ESG investments in the future. However, no statistically significant relationship was found between ESG awareness and actual ESG mutual fund investment ($\chi^2 = 8.041$, $df = 6$, $p = 0.235$). Similarly, trust in ESG ratings was not significantly associated with future investment intention ($\chi^2 = 8.138$, $df = 8$, $p = 0.420$). These findings suggest that while awareness plays an important role in shaping future behavioural intentions, actual investment decisions are influenced by additional factors such as return expectations, risk perceptions, and product accessibility.

The findings provide partial support for Hypothesis 3 by demonstrating that investor awareness significantly influences future willingness to invest in ESG mutual funds, although awareness alone does not necessarily translate into actual investment behaviour.

8. Findings of the Study

The financial analysis indicates that Indian ESG mutual funds generated competitive risk-adjusted performance over the study period. The selected ESG mutual funds demonstrated resilience across different market cycles, including the pre-COVID period, the COVID-induced market disruption, and the post-COVID recovery phase. Funds such as the Quant ESG Equity Fund and the ICICI Prudential ESG Fund reported favourable Sharpe Ratios, positive Jensen's Alpha values and competitive risk-adjusted returns indicate effective portfolio management and strong performance relative to the level of risk undertaken. The inferential statistical analysis further suggested that ESG mutual funds performed comparably to benchmark indices, although evidence of statistically significant outperformance was not observed. These findings imply that ESG investing can deliver competitive financial outcomes while simultaneously supporting sustainability-oriented investment objectives. However, sector overlap with conventional diversified equity funds remains significant, limiting the extent to which ESG funds differentiate themselves from traditional investment products. The sustainability assessment revealed that ESG mutual funds exhibit strong alignment with ESG principles through their portfolio construction and investment selection processes. The selected funds consistently invested in companies demonstrating established environmental, social, and governance commitments, including Infosys Ltd., Reliance Industries Ltd., and HDFC Bank Ltd. Portfolio company analysis highlighted initiatives such as net-zero commitments, renewable energy adoption, financial inclusion programmes, diversity initiatives, and strengthened governance practices. However, despite evidence of ESG alignment at the company level, the study identified a substantial gap between ESG positioning and measurable sustainability outcomes. Most ESG mutual funds continue to rely on ESG ratings, portfolio disclosures, and company-reported initiatives as indicators of sustainability performance. The absence of standardized portfolio-level metrics such as carbon intensity, emissions reduction, renewable energy contribution, workforce diversity outcomes, and ESG controversy scores limits the ability to quantify actual sustainability impact. Consequently, the findings provide stronger evidence of ESG alignment than direct sustainability impact

and underscore the need for greater transparency and standardization in sustainability reporting.

The behavioural analysis, based on responses from 435 investors, revealed that awareness and adoption of ESG mutual funds in India remain at a developing stage. While a majority of respondents were familiar with mutual funds investing, awareness of ESG-specific investment products remained relatively limited. Investor interest in ESG investing was found to be higher among younger and professionally active respondents, indicating growing acceptance of sustainable finance among emerging investor segments. The survey further revealed that long-term return potential and portfolio stability were the primary motivations for considering ESG investments, followed by social and environmental concerns. Although respondents generally viewed ESG investing positively trust in ESG ratings and disclosures remained moderate, reflecting concerns regarding transparency and potential greenwashing. Furthermore, most investors indicated that their willingness to invest in ESG funds depended on the extent to which financial returns were affected, suggesting that financial performance continues to remain the dominant consideration in investment decision-making. Overall, the findings indicate that while investor receptiveness towards ESG investing is increasing in India, and broader adoption will depend upon enhanced investor education, improved disclosure standards, stronger regulatory oversight, and greater evidence of measurable sustainability outcomes.

9. Recommendations

The findings of the research emphasize on the need to increase the credibility of ESG mutual funds by improving transparency and standardisation in ESG reporting. To ensure accountability the regulators should not only strengthen disclosure requirements but also increase the supervision, particularly for environmental and social impact metrics. To build investor trust, provisions should be introduced for asset management companies to communicate their ESG strategies and demonstrate both quantitative and qualitative outcomes in the form of impact matrix analysis and various other financial instruments. Additionally, the focus should be on financial literacy initiatives to increase investor awareness that can encourage wider adoption of ESG investment products. Moreover, Efforts should be made to ensure that the gap between the ESG labelling and actual portfolio practices is reduced and ESG funds fulfil the main objective of genuine sustainable impact along with delivering financial returns.

10. Limitations of the Study

There are some limitations to the research. Firstly, the research uses a small sample size of ESG mutual funds and therefore, may not fully account for all aspects of ESG investments in India. Moreover, the research uses secondary sources of data, which may lead to inconsistency in the evaluation of sustainability because of discrepancies in the ESG rating process. Secondly, the survey uses convenience sampling and therefore, may limit the generalization of the findings. Additionally, the study examined only five ESG mutual funds and compared them against only two benchmark indices, which may not be sufficient to draw broad conclusions about the performance of ESG investing in India as a whole. Furthermore, since ESG mutual funds in India are relatively new, with most data available only from 2018 onwards, the study could not assess fund performance over longer market cycles, which limits the strength of any long-term return conclusions. The study also relied on self-reported data such as annual reports and company disclosures, which may be subject to selective reporting in the absence of third-party verification. Lastly, the survey sample of 435 respondents was largely drawn from urban and younger populations, which may not fully represent the wider Indian mutual fund investor base, thereby limiting how broadly the behavioural findings can be applied.

While the study incorporated inferential statistical techniques to strengthen the financial analysis, the absence of standardized fund-level sustainability indicators such as carbon intensity, emissions reduction metrics, and renewable energy contribution, workforce diversity outcomes, and ESG controversy scores restricted the ability to evaluate measurable sustainability outcomes comprehensively. Future research may address these limitations through the use of standardized sustainability impact measures and broader sustainability datasets.

11. Future Research Directions

Future research should consider increasing the number of ESG mutual funds studied and considered a wider range of time periods to analyse their performances. Comparative analyses of the ESG mutual funds vis-à-vis regular mutual funds in various countries will shed more light on the performance trends of ESGs globally. Future research could consider designing ways to measure the true sustainability benefits of ESG investments. Future research could also consider adopting advanced analytical tools and behaviour models to comprehend investors' decisions within the context of sustainable finance.

12. References

1. Bhattacharya, K. (2025). ESG-linked Mutual Fund in India: An Empirical Analysis of Risk, Return, and Growth. *International Journal of Creative Research Thoughts (IJCRT)*. <https://ijcrt.org/papers/IJCRT2506179.pdf>
2. CRISIL. (2023). *How India's Nine ESG Mutual Funds Stack Up*. CRISIL ESG Insights. <https://www.personalfn.com/dwl/Mutual-Funds/clearer-sailing-for-esginvestors-change-in-names-of-4-esg-funds-after-sebi-regulations>
3. Global Sustainable Investment Alliance. (2018). *Global Sustainable Investment Review 2018*. http://www.gsi-alliance.org/wp-content/uploads/2019/03/GSIR_Review2018.3.28.pdf
4. Grand View Research. (2024). *ESG Investing Market Size, Share & Trends Analysis Report*. <https://www.grandviewresearch.com/industry-analysis/esg-investing-market-report>
5. Menon, S. (2007). When Norway Dropped Walmart from its Global Portfolio. *Economic and Political Weekly*, 42(17).
6. Paripex. (2022). A Study on Investor Behaviour towards Investment ESG funds. Paripex – *Indian Journal of Research*. https://www.worldwidejournals.com/paripex/recent_issues_pdf/2022/May/a-study-on-investor-behaviour-towards-investment-esg-funds_May_2022_3649161235_1509048.pdf
7. Sarkar, S. (2025). *Evaluating ESG Mutual Funds in India: A Data-driven Approach to Performance Evaluation*. Management Paper. <https://www.managementpaper.net/archives/2025/vol7issue1/PartD/7-1-54-569.pdf>
8. SEBI. (2021). *SEBI Proposes New Norms for Mutual Funds' ESG Investments*. *Moneylife*. <https://mas360.moneylife.in/article/sebi-proposes-new-norms-for-mutual-funds-and-rsquo-esg-investments/3853.html>
9. SEBI. (2023). SEBI Introduces Six New Mutual Fund Strategies under ESG Theme. <https://www.climate-change.in/media/sebi-introduces-6-new-mutual-fund-strategies-under-esg-theme>
10. Shirodkar, S.N. (2023). *A Study on the Financial Performance of ESG Mutual Funds in India*. *Goa University*. <http://iqac.unigoa.ac.in/criterion1/1.3.4-22-23-INT-MBAFS-47.pdf>
11. Singh, S. (2023). Assessing the Performance of ESG Mutual Funds. *International Journal of Research Publication and Reviews*. https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID4623502_code6266748.pdf?abstractid=4623502&mirid=1

Interrelationship between Job, Professional, and Organizational Commitment: An Empirical Study of the Indian Automotive Industry

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Abstract

Study examines the interrelationship between job, professional and organizational commitment and their impact on employee performance. Using a case-study method approach, data is collected through semi- structured interviews conducted in four automotive industries situated in India (NCR). The findings reveal a strong positive relationship among the three dimensions of commitment, indicating that they are mutually reinforcing. Employees with higher commitment levels demonstrate better performance, engagement, and alignment with organizational goals. The study emphasizes the interrelationship between three dimensions of commitment and the role of effective human resource practices in fostering commitment and enhancing organizational effectiveness.

Keywords

Professional commitment, Job commitment, Organisational commitment, Employee performance, and Indian automatic industries.

1. Introduction

Numerous studies in organizational behavior and human resource management often link employee engagement and job satisfaction to productivity, retention, and overall organizational effectiveness. India's industrial development was shaped by a socialist framework, where the public sector dominated and private manufacturing was regulated through licensing policies. Consequently, the automobile industry remained limited in scale, with restricted product variety, outdated models, and long waiting periods. A major transformation occurred in the 1990s with the introduction of economic liberalization policies. After the removal of trade barriers and the industrial licensing facilitated foreign

investment and the entry of global automobile manufacturers. This led to technological advancement, increased competition, and expansion of domestic production.

To support economic growth and improve transportation infrastructure, the Government of India launched the National Highway Development Programme (NHDP), one of the largest highway development initiatives in the country (Government of India, 2018). Major projects under the programme, including the Golden Quadrilateral and the North-South and East-West Corridors, significantly enhanced national connectivity and improved logistics efficiency (National Highways Authority of India [NHAI], 2020). Improved road infrastructure has facilitated the movement of goods and passengers, reduced travel time, and strengthened regional economic integration (World Bank, 2019). Furthermore, the continued expansion of highways, expressways, and rural road networks has contributed to increased mobility and has positively influenced the demand for automobiles in India (Society of Indian Automobile Manufacturers [SIAM], 2023). As a result, India has emerged as a major global hub for automobile and auto-component manufacturing. Growth in passenger vehicles, commercial vehicles, and two-wheelers has been driven by rising incomes, urbanization, and improved connectivity. The auto-component industry, in particular, has gained international recognition for its quality and cost competitiveness. However, despite these favorable growth conditions, the sustainability of the automotive sector is increasingly dependent on organizational factors, particularly employee-related dimensions i.e., employee commitment—comprising job commitment, professional commitment, and organizational commitment—plays a crucial role in influencing organizational performance. Studies have consistently shown that higher levels of commitment lead to improved productivity, stronger alignment with organizational goals, and reduced employee turnover. Additionally, factors such as trust, communication, and organizational support have been identified as key aspects of commitment. In the context of the Indian automotive industry, most instances of labor unrest and employee dissatisfaction highlight gaps in managing these commitment dimensions effectively. This suggests that, despite strong economic and infrastructural growth, organizational success cannot be sustained without addressing employee attitudes and relationships within the workplace. Research by Prahiawan, Sulastri, and Arthawati (2023) confirmed that organizational commitment has a positive and significant effect on

employee performance. The study concluded that employees with stronger commitment levels perform their duties more effectively and contribute positively to organizational objectives. In an empirical investigation, Jogdand and Magar (2023) studied employees in the manufacturing sector and reported a positive relationship between employee commitment and organizational performance. Their findings suggested that commitment is closely associated with job involvement, motivation, and job satisfaction, all of which contribute to improve employee performance.

Therefore, it can be inferred that the long-term competitiveness and performance of the automotive sector depends not only on external growth drivers but also on the effective management of employee commitment. This establishes the foundation for the present study, which examines the interrelationship between job commitment, professional commitment, and organisational commitment within the industry.

2. Review of the Literature

Employee commitment has become one of the most extensively studied constructs in organizational behavior because of its significant influence on employee performance, organizational effectiveness, and long-term sustainability. Organizations increasingly recognize that committed employees demonstrate higher productivity, stronger organizational citizenship behaviour, lower turnover intentions, and greater willingness to contribute toward organizational goals (Meyer & Allen, 1997; Mowday et al., 1979). Recent systematic reviews have further confirmed that organizational commitment remains a critical determinant of organizational success and employee retention. Commitment has been defined as an employee's psychological attachment to different aspects of work (Muthuveloo & Rose, 2002). Meyer and Allen (2001) conceptualized commitment as a multidimensional construct comprising job commitment, professional (occupational) commitment, and organizational commitment. Although these dimensions represent different targets of commitment, empirical evidence suggests that they are closely interconnected and mutually reinforcing, collectively influencing employee behaviour and organizational performance.

2.1 Job Commitment

Job commitment refers to an employee's dedication, involvement, and responsibility toward the tasks associated with a specific job. Employees

with higher job commitment exhibit greater motivation, persistence, and willingness to exert extra effort in accomplishing organizational objectives. Earlier studies found that job commitment enhances job satisfaction, reduces absenteeism, and improves employee performance (Steers, 1977; Mowday et al., 1979). Contemporary research further demonstrates that job commitment is strengthened by meaningful work, supportive leadership, organizational support, favourable working conditions, and employee engagement. Prahiawan et al. (2023) reported that employees with higher organizational commitment display greater motivation and active involvement in organizational activities, which ultimately improves employee performance. Similarly, Jogdand, and Magar (2023) found that employee commitment enhances organizational performance by increasing job involvement, job satisfaction, and work motivation. These findings suggest that strengthening employees' commitment to their jobs positively influences both individual and organizational performance.

2.2 Professional Commitment

Professional commitment, also referred to as occupational or career commitment, reflects an individual's identification with and dedication to his or her profession (Cacioppe, 2000; Adler & Corson, 2003). Employees with strong professional commitment, continuously seek professional development, skill enhancement, and career advancement opportunities. Earlier researchers debated whether professional commitment competes with organizational commitment (Aranya & Ferris, 1984; Gunz & Gunz, 1994); however, subsequent studies demonstrated that both forms of commitment can coexist and positively reinforce each other (Wallace, 1993; Rahman & Hanafiah, 2002). More recent evidence suggests that workplace environment, compensation, job responsibilities, organizational support, and career development opportunities significantly strengthen professional commitment (Viernes et al., 2024). Likewise, Espra et al. (2025) observed that equitable reward systems, supportive leadership, employee recognition, and opportunities for career advancement substantially enhance employees' professional commitment. These findings indicate that organizations can strengthen professional commitment by creating supportive work environments and investing in employees' professional growth.

2.3 Organizational Commitment

Organizational commitment represents an employee's psychological attachment, loyalty, and identification with the employing organization (Allen & Meyer, 1990; O'Reilly & Chatman, 1986). Meyer and Allen's (1997) three-component model—affectionive, continuance, and normative commitment—continues to provide the dominant theoretical framework for Understanding Employee Commitment. Numerous studies have reported that organizational commitment positively influences employee performance, organizational citizenship behaviour, innovation, job satisfaction, and retention while reducing absenteeism and turnover intentions (Chen et al., 2002; Khan et al., 2010). Recent literature has expanded this perspective by emphasizing that employee commitment is influenced by both organizational and individual factors. Employees with higher self-efficacy and intrinsic work motivation is more likely to develop stronger organizational commitment when supported by meaningful work, fair reward systems, supportive leadership, organizational support, and career development opportunities (Devi & Attri, 2017; Prahiawan et al., 2023; Viernes et al., 2024). Such organizational practices not only strengthen employees' psychological attachment to the organization, but also improve employee performance, retention, and long-term organizational effectiveness.

2.4 Interrelationship among Job, Professional, and Organizational Commitment

Although job commitment, professional commitment, and organizational commitment represents distinct dimensions of employee commitment, previous research suggests that they are closely interrelated. Employees who are committed to their jobs are generally more motivated to develop professionally, while organizations that provide supportive leadership, career development opportunities, meaningful work, and employee participation simultaneously strengthens professional and organizational commitment. Consequently, these three dimensions complement one another and collectively enhance employee performance, organizational effectiveness, and employee retention.

Despite the growing body of literature, most previous studies have examined job commitment, professional commitment, and organizational commitment independently and predominantly through quantitative

research designs. Limited qualitative evidence exists regarding how these three dimensions interact within the Indian automotive industry, particularly from the perspective of senior management. Addressing this gap, the present study explores the interrelationship among job commitment, professional commitment, and organizational commitment and examines their collective influence on employee performance.

Proposed Conceptual Framework:

- **Independent Variables**
 - Job Commitment
 - Professional Commitment
 - Organizational Commitment
- **Antecedent Factors**
 - Leadership Support
 - Organizational Support
 - Career Development Opportunities
 - Reward and Recognition
 - Workplace Environment
 - Self-efficacy
 - Work Motivation
- **Outcome Variables**
 - Employee Performance
 - Organizational Effectiveness

Proposed Relationship



Source:- Author’s compilation on the basis of literature review.

Figure 1:- Interrelationship between Job, Professional, and Organizational Commitment with Employees Performance and Organisational Effectiveness

3. Research Questions

- 3.1. What factors influence job commitment, professional commitment, and organizational commitment among employees in the Indian automotive industry?
- 3.2. How are job commitment, professional commitment, and organizational commitment interrelated?
- 3.3. How do these dimensions of employee commitment influence employee performance and organizational effectiveness?

4. Research Objectives of the Study

- 4.1. To identify the factors influencing job commitment, professional commitment, and organizational commitment among employees in the Indian automotive industry.
- 4.2. To explore the interrelationship among job commitment, professional commitment, and organizational commitment.
- 4.3. To examine the influence of employee commitment on employee performance and organizational effectiveness.

5. Research Methodology

The present study adopts a qualitative multiple-case exploratory research design to examine the interrelationship among job commitment, professional commitment, and organizational commitment and their influence on employee performance in the Indian automotive industry. A qualitative approach was considered appropriate because it facilitates an in-depth understanding of the senior management executives' perceptions, experiences, and organizational practices related to employee commitment. The multiple-case study design enabled the comparison of perspectives across different organizations, thereby enhancing the depth and credibility of the findings (Yin, 2018).

5.1 Sample Description

The study was conducted in four leading automotive manufacturing companies located in the National Capital Region (NCR) of India, namely Honda Cars India Ltd. (Greater Noida), Yamaha Motor India Pvt. Ltd. (Greater Noida), Maruti Suzuki India Limited (Gurugram), and Motherson Sumi Systems Limited (Noida). A total of five senior management executives participated in the study. The participants possessed

approximately 10–15 years of managerial experience and were directly involved in human resource management, employee development, and strategic decision-making. Their extensive professional experience enabled them to provide rich insights into employee commitment and its impact on organizational performance.

5.2 Sampling Technique

A purposive sampling technique was employed to select participants with substantial managerial experience and expertise in employee management. Purposive sampling is widely recommended in qualitative research because it enables researchers to select information-rich participants who possess relevant knowledge and practical experience regarding the phenomenon under investigation.

5.3 Data Collection

Primary data were collected through semi-structured face-to-face interviews with senior management executives. An interview guide comprising open-ended questions was developed based on the existing literature on job commitment, professional commitment, organizational commitment, and employee performance. The semi-structured format allowed the researcher to maintain consistency across interviews while providing participants with the flexibility to share their experiences and perspectives in detail. Each interview lasted approximately 45–60 minutes. With participants' informed consent, all interviews were audio-recorded and subsequently transcribed for analysis.

5.4 Variables of the Study

Although the present study follows a qualitative research approach, the conceptual framework was developed around key variables identified from the literature.

Antecedent Factors

- Leadership Support
- Organizational Support
- Career Development Opportunities
- Reward and Recognition
- Workplace Environment

- Self-efficacy
- Work Motivation

Core Variables

- Job Commitment
- Professional Commitment
- Organizational Commitment

Outcome Variables

- Employee Performance
- Organizational Effectiveness

These variables guided the development of the interview schedule and served as the basis for coding and thematic analysis.

5.5 Interview Protocol

A structured interview protocol was prepared to ensure consistency throughout the data collection process. The protocol included questions related to participants' understanding of employee commitment, factors influencing job, professional, and organizational commitment, the interrelationship among these dimensions, their impact on the employee performance, and organizational practices adopted to strengthen employee commitment. Prior to each interview, participants were informed about the purpose of the study, assured of confidentiality and anonymity, and informed consent was obtained.

5.6 Data Analysis

The interview data were analysed using thematic analysis, following the six-phase framework proposed by Braun and Clarke (2006). The analysis involved: (i) familiarization with the interview transcripts through repeated reading; (ii) generation of initial codes; (iii) identification of potential themes; (iv) reviewing and refining themes; (v) defining and naming themes; and (vi) interpreting and reporting the findings. Thematic analysis enabled the identification of recurring patterns and relationships regarding job commitment, professional commitment, organizational commitment, and their influence on employee performance and organizational effectiveness across the participating organizations.

6. Findings and Analysis

Our semi-structured interviews were focused on understanding the views of senior management executives regarding the employees' commitment and its impact on industrial relationships and organizational performance. Although all five senior managers of four companies view employee commitment is the pivotal variable affecting various organizational outcomes. However, it was also found that noticeable differences exist between the conceptual understanding of these officials regarding various issues such as the inter-relationship between the various sub-sets of employees commitment, viz., organizational commitment, professional commitment and job commitment, and their impact on performance outcomes. The Unit Head of Company C was of the opinion that organizational commitment, job commitment and professional commitment are more or less the same thing, and the difference, if any, is of an academic nature only. He stated that- "an employee's commitment refers to his professional and personal loyalty towards his employer". He further explained that "when an employee joins our company, he explains in detail the requirements of the job, the expectations of the company, and also about the company's traditions of maintaining a strict discipline. Compared to similar companies in the market we pay our employees well. Since every employee carries some cost to the company, it is natural that we expect that he would display an unqualified commitment towards his work, profession, and seniors. Of course work commitment is a precursor to an employee's career-commitment and organizational commitment. The career commitment and organizational commitment are also inter-related aspects of employees commitment. In fact, the employees that are retained by our company are mostly those who are perfectly loyal to the company and are obedient towards their supervisors and managers. We have a culture of disciplined behavior and perfection in work in our company. This is how Japanese companies have earned such a high reputation in the world market".

The GM (HR) of Company B, an experienced and well-qualified person having higher degrees in engineering and management, viewed professional and organizational commitment as two distinct aspects of employees' attitudes and behavioural acts that are directed respectively, towards their career aspirations and organizational goals. He stated that-"during the long years I have spent in the automotive industry. I have always found that the majority of employees

working in such organizations have a keen interest in their work and the responsibility assigned. But it does not mean that they possess the same level of commitment towards the long-term goals and values of the company. There are definitely other factors also which determine the employees' sense of identification with the organizational objectives". He further elaborated his view-point saying that- "in this company, the employees who have moved up well in their careers are usually those who have joined the company in early years and have continued to maintain a robust sense of duty towards their work. This category of the employees remains disciplined, respectful, and obedient towards their superiors. If necessity arises, they happily work even beyond their duty hours. We consider such workers as 'organizationally committed". On our asking whether it may be assumed that such category of employees do not have many career aspirations and do not bother about their promotions etc., he replied-"of course, such employees also have career aspirations like other employees and are also anxious regarding their feedback and promotions but they essentially believe that their first and foremost duty is to achieve company's objectives and maintain its image. There are other types of employees who are mainly interested in their own career progression and the company's requirements or objectives are of secondary importance to them. Moreover, they consider that 'promotion' is their natural right rather than a privilege to be earned through disciplined behavior and outstanding performance. Such career-committed employees usually belong to the younger age group (below 40 years). They may leave their job as and when they get a better opportunity without being worried about its consequences for the company's performance. My experience suggests that if such a type of an (over ambitious) employee stays in the company for a long period (say more than 5-6 years) and do not get his rightful (in his own opinion) promotion, he would develop a tendency of discovering and cultivating grievances in all matters concerning his work or welfare and would thus become a potential source of spreading dissatisfaction among other employees also. Usually there are few employees like that, but they behave as if they were the legitimate representatives of all other employees and their demands are not related to their interests but to give vent to the suppressed opinions of the 'silent majority'. If due to any reason the acts of such self-appointed 'masihis' are ignored and the grievances of the employees, (usually of 'manufactured natures') are not

addressed by the management at the initial stage itself, the situation may take an ugly turn resulting in mass protests at work.”

At this stage, we raised another question to understand whether the career aspirations of an individual could be treated as a positive personality trait that can be utilized for achieving organizational goals through appropriate policies and programs to which our respondent replied “I totally agree that genuine career aspirations could adequately be taken care of through appropriate job training, an increase in wages, regularization of services or other measures depending on an individual’s performance and conduct (this company arranges training programs for its employees as per their job requirements). However, in the absence of any organizational commitment the career commitment of an employee may become detrimental to the interests of the company. In my opinion, the job commitment, professional commitment, and organizational commitment are independent factors that are required to be integrated and properly oriented for achieving the organizational objectives.” As part of the case study, a semi-structured interview was conducted with the Assistant General Manager (AGM) of Company A, who was also responsible for human resource functions. The respondent explained that a large proportion of workers in the automobile industry are initially employed on short-term contracts, which may be renewed based on their performance and conduct.

The respondent expressed the view that job security plays an important role in shaping employee commitment and career aspirations. According to the respondent, employees who perceive greater employment stability are more likely to invest effort in their work, pursue long-term career goals, and demonstrate higher levels of commitment toward organizational objectives. The interview further suggested that career commitment is most effective when it is aligned with organizational values and goals. In such circumstances, employees are more likely to perceive their personal growth and career progression as closely linked to the success of the organization.

The respondent also emphasized that job commitment, professional commitment, and organizational commitment may collectively contribute more strongly to organizational outcomes than any one form of commitment in isolation. However, the effectiveness of these commitments depends on several contextual factors, particularly employees' trust in organizational leadership and management decisions. The respondent further argued that organizations should

strive to develop a work culture that fosters commitment, responsibility, and long-term employee engagement.

While the respondent referred to work cultures observed in countries such as Japan and South Korea, the present study does not assume that practices successful in one national context can be directly transferred to another. Differences in cultural, social, economic, and institutional environments may influence the effectiveness of such practices. Nevertheless, the views expressed by the respondent provides valuable insights into management perspectives and offer a basis for comparing managerial viewpoints with employees' perceptions regarding commitment and career development.

A semi-structured interview was conducted with the General Manager (HR and Administration) of Company D to understand managerial perspectives on the relationship among job commitment, career commitment, and organizational commitment. The respondent emphasized that job commitment serves as the foundation for other forms of employee commitment. According to the respondent, employees who demonstrate strong commitment to their jobs are more likely to develop career aspirations and exhibit higher levels of organizational commitment.

The respondent further noted that career commitment reflects an employee's desire for professional growth and skill development. Employees with clear career aspirations are generally more willing to undertake challenging assignments, participate in training and development activities, and contribute to organizational objectives. In contrast, employees who lack both job commitment and career aspirations may be less likely to develop a strong attachment to the organization.

The interview findings also suggested that job commitment and career commitment acts as an important antecedent of organizational commitment. From a managerial perspective, retaining employees who demonstrate dedication to their work and a willingness to grow professionally is likely to contribute positively to organizational performance and long-term sustainability.

Based on the views expressed by senior managers across the case organizations, the findings indicate the existence of a positive and mutually reinforcing relationship among job commitment, career commitment, and organizational commitment. These observations provide qualitative support for Hypothesis H1:

H1: Job commitment, career/professional commitment, and organizational commitment are positively associated with one another.

The respondents also highlighted that the strength of these relationships may be influenced by organizational factors such as managerial support, operational autonomy, career development opportunities, and a work environment that encourages innovation and initiative. Furthermore, external factors, including economic conditions, regulatory frameworks, and broader institutional environments, may affect organizational outcomes. Although such factors are often beyond the direct control of organizations, effective management practices can help mitigate their adverse effects and strengthen employee commitment. The semi-structured interactions with senior managers from four automotive industries revealed that employee commitment is viewed as a reciprocal exchange relationship between employers and employees. Although the respondents expressed varying opinions regarding the interrelationship among job commitment, professional commitment, and organizational commitment, they unanimously agreed that each dimension positively influences the others.

The findings indicate that job commitment serves as the foundation for strengthening professional and organizational commitment. Furthermore, the combined effect of these three forms of commitment on organizational outcomes is greater than their individual impacts. Managers also observed that some employees place a higher priority on career advancement than on organizational objectives. If their career aspirations are not adequately addressed, it may lead to dissatisfaction and negatively influence other employees. However, concern for career growth and self-esteem should not be interpreted as a sign of indiscipline or dissatisfaction.

The study highlights the need for automotive organizations to develop effective HR policies and practices that align employees' needs, capabilities, and career aspirations with organizational goals. Such alignment can enhance multiple forms of commitment and contribute to sustainable productivity. Overall, the respondents acknowledged that commitment toward one's job, profession, and organization positively affects employee attitudes, behavior, and performance. They also recognized that occasional conflicts may arise between professional aspirations and organizational objectives, emphasizing the importance of appropriate managerial interventions to resolve such contradictions and maintain a committed workforce.

7. Conclusion

The findings from the semi-structured interviews conducted with senior managers across four automotive organizations indicate that job commitment, professional (career) commitment, and organizational commitment are distinct yet closely interconnected dimensions of employee commitment. Although, respondents differed in their conceptual understanding of these constructs, there was broad agreement that each form of commitment contributes positively to employee performance and organizational effectiveness.

The study suggests that job commitment serves as a fundamental building block for the development of both professional and organizational commitment. Employees who demonstrate dedication to their work are more likely to pursue career development opportunities and develop a stronger sense of attachment to organizational goals and values. At the same time, the findings reveal that professional commitment and organizational commitment do not always develop simultaneously. Employees with strong career aspirations may prioritize personal advancement over organizational interests, particularly when opportunities for growth and recognition are perceived to be limited. The interviews further highlight the critical role of organizational factors such as job security, managerial support, training and development opportunities, fair reward systems, and a culture of trust in shaping employee commitment. Senior managers emphasized that employee commitment is best understood as a reciprocal relationship in which organizations must actively support employees' professional growth while employees contribute to the achievement of organizational objectives.

Overall, the study provides qualitative support for the proposition that job commitment, professional commitment, and organizational commitment are positively associated and mutually reinforcing. The findings suggest that organizations can enhance employee performance and long-term sustainability by implementing human resource practices that align employees' career aspirations with organizational goals. Future research may extend these findings through larger empirical studies involving employees across different industries and organizational contexts.

8. References

1. Adler, P. S., & Corson, M. S. (2003). Career Salience and Commitment. *Journal of Vocational Behavior*.
2. Adler, P. S., & Kwon, S. W. (2002). Social Capital: Prospects for a New Concept. *Academy of Management Review*, 27(1), 17–40.
3. Allen, N. J., & Meyer, J. P. (1990). The Measurement and Antecedents of Affective, Continuance and Normative Commitment to the Organization. *Journal of Occupational Psychology*, 63(1), 1–18. <https://doi.org/10.1111/j.2044-8325.1990.tb00506.x>
4. Allen, N. J., & Meyer, J. P. (1997). *Commitment in the Workplace: Theory, Research, and Application*. Sage Publications.
5. Aranya, N., & Ferris, K. R. (1984). A Re-examination of Accountants' Organizational–Professional Conflict. *The Accounting Review*, 59(1), 1–15.
6. Balushi K. A, Thumiki R. V., Nawaz N. & Jurcic A., (2022), 'Role of Organizational Commitment in Career Growth and Turnover Intention in Public Sector of Oman', Research Article.
7. Boopathi R., (2020), "Professional Work Commitment towards the Teaching of School Teachers, *International Journal of Early Children Special Education*, Vol 12, Issue 01, DOI: 10.48047, ISSN :1308-5581.
8. Bucata G., Virca I., & Popescu, (2022), 'Organizational Commitment, Motivation and Job Satisfaction, *Management and Economics*, DOI: 10.2478.
9. Cacioppe, R. (2000). Creating Spirit at Work: Re-visioning Organization Development and Leadership. *The Leadership & Organization Development Journal*, 21(1), 48–54.
10. Chen, Z. X., Tsui, A. S., & Farh, J. L. (2002). Loyalty to Supervisor Versus Organizational Commitment: Relationships to Employee Performance in China. *Journal of Occupational and Organizational Psychology*, 75(3), 339–356.
11. Cohen, A. (2007). Commitment Before and After: An Evaluation and Reconceptualization of Organizational Commitment. *Human Resource Management Review*, 17(3), 336–354.
12. Cook, J., & Wall, T. (1980). New Work Attitude Measures of Trust, Organizational Commitment, and Personal need Fulfillment. *Journal of Occupational Psychology*.

13. Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing among Five Approaches* (4th ed.). Sage Publications.
14. Devi N. & Attri K. A. (2017), “Professional Commitment of Secondary Teachers Educators in Relation to their Self-efficacy and Work Motivation”, *An International peer Reviewed and Referred Scholarly Research Journal for Interdisciplinary Studies*, ISSN-2278-8808.
15. Devi, U., & Attri, A. K. (2017). Professional Commitment among Teachers in Relation to Self-efficacy and Work Motivation. *International Journal of Applied Research*, 3(6), 120–124.
16. Espra, Z. R., & Valle, A. M. (2025). Job Satisfaction and Professional Commitment of Teachers. *International Journal of Multidisciplinary Research and Analysis*, 8(5). <https://doi.org/10.47191/IJMRA>
17. Fukami, C. V., & Larson, E. W. (1984). Commitment to Company and Union: Parallel Models. *Journal of Applied Psychology*.
18. Gratton, L. (2004). *The Democratic Enterprise: Liberating your Business with Freedom, Flexibility, and Commitment*. Financial Times/Prentice Hall.
19. Gunz, H. P., & Gunz, S. P. (1994). Professional/organizational Commitment and Job Satisfaction for Employed Lawyers. *Human Relations*, 47(7), 801–828.
20. Herscovitch, L. (2001). Commitment in the Workplace: Toward a General Model.
21. Herscovitch, L., & Meyer, J. P. (2002). Commitment to Organizational Change: Extension of a Three-component Model. *Journal of Applied Psychology*.
22. Hosen S., Hamzah R. S. Ismail A., Alias N. S., Aziz A., & Rahmam M. (2024), ‘Training & Development, Career Development, and Organizational as the Predictor of Work Performace’, *Science Direct*, vol 10, Issue 1.
23. Jeffrey, A., & Arthur, J. B. (1994). Effects of Human Resource Systems on Manufacturing Performance and Turnover. *Academy of Management Journal*.
24. Jogdand, A., & Magar, A. (2023). An Investigation into the Relationship between the Commitment of Employees and their Performance. *International Journal of Indian Psychology*, 11(3).

25. Kanter, R. M. (2001). *Evolve!: Succeeding in the Digital Culture of Tomorrow*. Harvard Business School Press.
26. Khan, M. R., Ziauddin, Jam, F. A., & Ramay, M. I. (2010). The Impacts of Organizational Commitment on Employee Job Performance. *European Journal of Social Sciences*, 15(3), 292–298.
27. Kvale, S., & Brinkmann, S. (2009). *Inter Views: Learning the Craft of Qualitative Research Interviewing* (2nd ed.). Sage Publications.
28. Lee, C. H., & Bruvold, N. T. (2003). Creating Value for Employees: Investment in Employee Development. *Human Resource Management*.
29. Lee, K., Carswell, J. J., & Allen, N. J. (2000). A Meta-analytic Review of Occupational Commitment. *Journal of Vocational Behavior*.
30. Lee, S. H., & Olshfski, D. (2002). Employee Commitment and Performance. *Public Administration Review*.
31. Malhotra, N., & Mukherjee, A. (2004). The Relative Influence of Organizational Commitment and Job Satisfaction on Service Quality. *Journal of Services Marketing*.
32. Martin, T. N., & O’Laughlin, J. (1984). Predictors of Organizational Commitment.
33. Meixner, W. F., & Bline, D. M. (1989). Professional-organizational Commitment.
34. Meyer, J. P., & Allen, N. J. (1997). *Commitment in the Workplace: Theory, Research, and Application*. Sage Publications.
35. Meyer, J. P., & Allen, N. J. (2001). A Three-component Conceptualization of Organizational Commitment. *Human Resource Management Review*.
36. Meyer, J. P., & Herscovitch, L. (2001). Commitment in the Workplace: Toward a General Model. *Human Resource Management Review*.
37. Mottaz, C. J. (1988). *Determinants of Organizational Commitment*. Human Relations.
38. Mowday, R. T., Porter, L. W., & Steers, R. M. (1982). Employee–Organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover. *Academic Press*.
39. Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The Measurement of Organizational Commitment. *Journal of Vocational Behavior*, 14(2), 224–247.
40. Muthuveloo, R., & Rose, R. C. (2002). Typology of Organizational Commitment. *American Journal of Applied Sciences*.

41. Muthuveloo, R., & Rose, R. C. (2005). Typology of Organizational Commitment. *American Journal of Applied Sciences*, 2(6), 1078–1081.
42. Nithya & Samson M., (2021), A Study on Impact on Employees Commitment towards Organization Growth in Textile Industry., *International Journal of Creative Research Thoughts*, vol 9, Issue 5, ISSN: 2320-2882.
43. O'Reilly, C. A., III, & Chatman, J. (1986). Organizational Commitment and Psychological Attachment: The Effects of Compliance, Identification, and Internalization on Prosocial Behavior. *Journal of Applied Psychology*, 71(3), 492–499.
44. Pangaribuan, L., & Satrya, A. (2024). The Role of Knowledge Management, Transformational Leadership, and Organizational Commitment on Employee Performance: Empirical Study in the Public Sector. *Journal of Theoretical and Applied Management*, 17(3).
45. Parnell, J. A., & Crandall, W. R. (2003). Propensity for Participative Decision-making. *Management Decision*.
46. Prahiawan, W., Sulastri, S., & Arthawati, S. N. (2023). The Influence of Intrinsic Motivation, Organizational Commitment, and Transformational Leadership on Employee Performance. *Management Science Research Journal*, 2(1), 69–75.
47. Rahman, N. M. N. A., & Hanafiah, M. H. (2002). Commitment among Research Scientists in Malaysia. *Journal of Management Development*.
48. Ramlall, S. (2004). A Review of Employee Motivation Theories. *Journal of American Academy of Business*.
49. Rashid, Z. A., et al. (2003). Organizational Commitment and Financial Performance.
50. Riketta, M., & Landerer, A. (2002). Organizational Commitment and Job Attitudes.
51. Rodelyn Z. Espra Z. R., & Azel M. Valle M. A., (2025), “Job Satisfaction and Professional Commitment of Teachers”, *International Journal of Multidisciplinary Research and Analysis*, DOI:10.47191, vol 8, Issue 05, ISSN: 2643-9840.
52. Saud R. T., (2020), ' The Effect of Job Characteristics on Organizational Commitment: *The Role of Growth need Strength in Nepal IT Companies*, *Journal of Business and Management Research*, vol 3, no 1, pp-39-56, ISSN: 2382-5219.

53. Sezgin, F., & Agar, B. (2012). Relationship between Organizational and Occupational Commitment.
54. Singh L., Singh S. (2018), “Professional Commitment: An Essential Link between the Curriculum and Educational System to Enhance Performance”, *Journal of Advances and Scholarly Researches in Allied Education*, Vol. 15, Issue No. 8, (Special Issue) September-2018, ISSN 2230-7540.
55. Singh, J. (1990). Predictors of Organizational Commitment. *Journal of Applied Psychology*.
56. Steers, R. M. (1974). Antecedents and Outcomes of Organizational Commitment. *Administrative Science Quarterly*.
57. Steers, R. M. (1977). Antecedents and Outcomes of Organizational Commitment. *Administrative Science Quarterly*, 22(1), 46–56.
58. Suharto, Suyanto, & Hendri N., (2019), ‘The Impact of Organizational Commitment on Job Performance’, *International Journal of Economics and Business Administration*, vol 7, issue 2.
59. Sunita J. N., & Kalaivani S. (2023), ‘Professional Commitment of Teachers in Relation to their Work Motivation and Job Stress, *The International Journal of Indian Psychology*, ISSN 2348-5396, vol 11, Issue 2.
60. Viernes R. D., Pontillas V. P., Ongcachuy L. B., Corpuz G. G., Samson Jr. V. (2024), ‘Job Commitment, Satisfaction and Teachers’ Performance: Bases for Retention Program, *European Modern Studies Journal*, vol 8, no3, ISSN: 2522-9400.
61. Wallace, J. E. (1993). Professional and Organizational Commitment: Compatible or Incompatible? *Journal of Vocational Behavior*, 42(3), 333–349.
62. Wang G., Strong M., Zhang S., & Liu K. (2021), *Preservice Teacher Professional Commitment: A Conceptual Model and Literature Review*, *Science Direct*, vol 104,
63. Wiener, Y. (1982). *Commitment in Organizations: A Normative View*. Academy of Management
64. Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). Sage Publications.