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Technology-Driven Financial Decision-Making in the Age of Artificial Intelligence: A Structured Review of Evidence from Financial Markets

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Abstract: The rapid integration of digital technologies and artificial intelligence (AI) into financial markets has revolutionized the way investors, institutions, and other market participants make financial decisions. AI-enabled trading platforms, data analytics tools, and automated decision-support systems have reshaped information processing, decision speed, and behavioral responses in modern markets. This paper presents a structured review of the academic literature on technology-driven financial decision-making in the age of artificial intelligence. Using a methodical and transparent review approach, relevant studies published between 2011 and 2025 were identified from major academic databases using clearly defined search terms and inclusion criteria. This review focuses on peer-reviewed research examining the role of AI and digital technologies in financial decision-making in market settings. The selected studies are synthesized thematically to highlight AI-supported investment decision processes, the impact of digitalization on information flow and decision speed, behavioral implications for investors and market-level outcomes such as volatility and price responsiveness. The findings indicate that AI and digital trading technologies have enhanced access to information, accelerated financial decision-making, and influenced investor behavior and market efficiency. Simultaneously, the literature highlights challenges such as increased market sensitivity, overreliance on automated tools, transparency concerns, and uneven access to technology among investor groups. By consolidating and organizing existing evidence, this study identifies key research gaps and future directions, offering insights for researchers, policymakers, and practitioners seeking to understand the implications of artificial intelligence for financial decision-making in contemporary markets.

Keywords **- Artificial intelligence, technology-driven decision-making, financial markets, digital trading platforms, investor behavior, FinTech; Market efficiency.**

I. INTRODUCTION

Artificial intelligence and digital technologies have become integral to modern financial markets. Research shows that machine learning and deep learning techniques are embedded in trading activities, including signal generation, risk assessment and execution [5,12]. Studies on algorithmic trading indicate that automated systems increasingly complement or substitute human judgment in portfolio and execution decisions [12,20]. Simultaneously, the expansion of FinTech platforms has changed how investors in emerging economies, such as India, access markets and implement investment strategies [9,19].

In India, these developments interact with a retail-dominated market structure and evolving regulatory oversight. Empirical evidence indicates that algorithmic trading has become an important component of trading on Indian exchanges, with implications for liquidity, bid–ask spreads and short-term volatility [10,14,17,20]. Studies on online and mobile trading systems show that digital channels have transformed how Indian retail investors monitor the markets and execute trades [2,4,8,11]. Behavioral finance research further documents that Indian investors exhibit systematic biases such as herding, anchoring, and overconfidence, which shape their trading behavior and risk-taking [1,13,16,18].

Despite growing research on individual technologies, limited work integrates evidence across AI-based trading, digital platforms, behavioral responses, and market outcomes in the Indian context. This review addresses this gap by synthesizing the literature on four themes: AI-supported investment decision-making, digitalization and information flows, behavioral implications for investors, and market outcomes related to volatility, liquidity, and efficiency.

II. CONCEPTUAL BACKGROUND

2.1 ARTIFICIAL INTELLIGENCE IN FINANCE

Systematic reviews of AI in financial trading show the extensive use of neural networks, ensemble models, and hybrid techniques for prediction and strategy design [5,12]. Deep learning models are particularly prominent and often integrate forecasting with automated execution [12,17,20]. Conceptual studies suggest that AI systems are effective in processing high-frequency and alternative data, thereby supporting faster decision-making and risk management [12,17,20].

In emerging markets, including India, research highlights both efficiency gains and the potential risks. Indian studies suggest that AI-based strategies can improve predictive accuracy and market responsiveness while raising concerns about model opacity, fairness, and systemic risk [10,14,17,20].

2.2 Digital Trading Platforms and FinTech Growth in India

The growth of fintech and digital trading platforms in India has been widely documented. Empirical studies report the rapid expansion of mobile banking, payment applications, and investment platforms, driven by digital infrastructure and changing consumer preferences [9,19]. Adoption research identifies perceived usefulness, ease of use, trust, and financial literacy as key determinants of uptake [8,9,21].

Online and mobile brokerage platforms have reshaped retail participation by enabling real-time access to information and remote order placements [11]. Studies on mobile trading applications indicate that younger and urban investors are more likely to engage in app-based investing, with social influence and platform security shaping their continued use [2,4,8]. Digital platforms also simplify account opening and transaction processes, thereby supporting broader participation [19,21].

2.3 Financial Decision-Making and Behavioural Finance

Behavioral finance research in India consistently shows that investors deviate from the rational benchmarks. Empirical studies have documented the influence of herding, anchoring, representativeness, and overconfidence on investment decisions [1,13,16]. Other studies highlight the role of loss aversion and gender-related differences in behavioral biases [18].

These behavioral patterns persist in technology-mediated environments. Studies on digital trading apps indicate that behavioral intentions are shaped by performance expectancy, effort expectancy, social influence, and perceived risk [2,4,8]. Evidence suggests that constant information flow and social cues embedded in digital platforms may amplify overtrading and heuristic-based decision-making [1,6,16].

III. Methodological Approach of the Review

This study adopts a structured literature review approach. Peer-reviewed, open-access studies published between 2011 and 2025 were selected based on their relevance to AI, digital platforms, financial decision-making and Indian financial markets. Greater emphasis was placed on studies published after 2018, reflecting the accelerated adoption of AI and FinTech applications in India [8,9,19].

The inclusion criteria required that the studies examine financial decision-making or market outcomes in settings where technology played a substantive role. The selected literature was organized thematically into four categories: AI-supported decision-making, digitalization and information flow, behavioral implications, and market outcomes related to volatility, liquidity, and efficiency. Given the diversity of research methods, the synthesis was qualitative and thematic [5,9,13,19].

IV. Thematic Review of Literature

4.1 AI-Supported Investment Decision-Making

Research indicates that AI-driven analytics influence stock selection, timing, and risk management among institutional and sophisticated retail investors in India [20]. Empirical studies show that algorithmic trading contributes to higher trading volumes, improved liquidity, and faster incorporation of information into prices [10,14]. However, evidence also suggests uneven benefits across market segments and increased sensitivity to short-term volatility, particularly for small-cap stocks [10,14,17]. Research on robo-advisory services suggests that automated advice can support diversification and reduce costs, although trust and behavioral factors remain constraints [7,15].

4.2 Digitalisation and Information Flow

Digital trading platforms have altered information dissemination and execution speeds in the Indian markets. Online trading systems provide real-time access to market data and research, thereby reducing search costs [11]. Studies on mobile trading applications indicate that digital interfaces enable faster decision-making and more frequent portfolio monitoring among active users [2,4,8]. FinTech adoption research also highlights persistent digital divides across demographic and regional groups [9,19,21].

4.3 Behavioural Implications for Investors

Behavioral biases continue to influence technology-driven investments. Evidence shows that herding, overconfidence, anchoring, and loss aversion shape investment decisions in traditional and digital settings [1,2,6,13,18]. Research suggests that the convenience of digital platforms may encourage frequent trading and short-term speculation, particularly among novice investors [6,16]. Robo-advisory studies indicate that while rule-based allocation may mitigate some biases, emotional and contextual factors remain important [7,15].

4.4 Market Outcomes: Volatility, Liquidity, and Efficiency

Market microstructure studies provide evidence that AI and algorithmic trading generally improve liquidity and narrow bid–ask spreads while accelerating price adjustments to information [10,14,17]. At the same time, increased sensitivity to order flow shocks and heterogeneous effects across stocks and market conditions remain a concern [12,17,20]. Behavioral evidence highlights the tension between improved price efficiency and persistent inefficiencies in investor decision-making [1,13,16,18].

V. Key Insights and Research Gaps

The literature converges on several points: AI and digital technologies expand the analytical and execution capabilities of market participants [5,12,17,20]. Digital platforms lower access barriers and reshape participation patterns in the Indian market [8,9,11,19,21]. Behavioral biases remain influential in technology-rich environments [1,2,4,6,13,18]. Market microstructure

evidence suggests that algorithmic trading enhances liquidity and efficiency while increasing the speed of shock transmission [3,10,14,17,20].

However, gaps remain regarding long-term investor outcomes, heterogeneity across demographic segments, and the empirical assessment of AI transparency and governance in Indian financial markets [12,15,17,19].

VI. Implications for Policy and Practice

For regulators, the evidence suggests that balancing innovation with stability and investor protection is the key. The oversight of algorithmic trading, testing requirements, and monitoring mechanisms is important for managing volatility and systemic risk [10,12,14,17,20]. Research on robo-advisory highlights the need for clear guidelines on suitability, disclosure, and accountability [7,15]. Behavioral evidence also supports the role of financial literacy initiatives and behavioral safeguards on digital platforms [1,2,4,6,13,18].

For financial institutions and FinTech firms, studies emphasize the integration of AI capabilities with robust risk management, transparent communication, and explainable models to build trust and adoption [2,4,7,8,15,19,21]. For investors, the literature suggests that AI and digital tools are most effective when used as decision-support systems rather than substitutes for informed judgement, combined with an awareness of behavioral biases [1,2,6,13,18].

VII. Conclusion

This structured review examines how artificial intelligence and digital technologies shape financial decision-making in the Indian market context. Evidence indicates that AI-enabled trading systems, robo-advisors, and digital platforms improve access, information availability, and decision-making speed [5,8,10,11,14,19,20]. Simultaneously, behavioral biases persist and interact with technology-mediated environments [1,2,4,6,13,16,18].

At the market level, AI and algorithmic trading enhance liquidity and efficiency in many segments while increasing sensitivity to shocks and raising governance concerns [3,10,12,14,17,20]. These findings highlight the importance of responsible innovation, effective regulation, and continued research to ensure that technology-driven finance supports efficiency, stability, and inclusion in the Indian financial markets.

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