Algorithms or Instincts? Understanding Bias in Digital Investment Platforms

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ABSTRACT

The rapid evolution of Financial Technology (FinTech) has fundamentally transformed retail investment participation worldwide. Digital trading platforms, robo-advisory systems, cryptocurrency exchanges, and AI-driven portfolio applications have increased market accessibility, reduced transaction costs, and accelerated decision-making processes. While traditional behavioral finance literature has extensively examined psychological biases such as anchoring, herding, overconfidence, risk perception, and emotional bias in conventional financial markets, limited conceptual integration exists regarding how these biases manifest within digitally mediated investment ecosystems. This conceptual paper develops a comprehensive framework integrating behavioral finance theory with digital platform characteristics and financial literacy as moderating variable. Drawing upon Prospect Theory, Heuristic Theory, and technology acceptance perspectives, the proposed model positions psychological biases and digital platform features as key determinants of digital investment decision-making, with financial literacy serving as a moderating factor. The framework contributes theoretically by extending cognitive bias analysis into digital financial contexts and practically by providing insights for FinTech developers, financial advisors and financial educators. The study highlights the importance of responsible interface design and digital financial literacy in mitigating bias amplification within FinTech environments.

Keywords- Behavioral finance, FinTech, psychological bias, financial literacy, digital investing

INTRODUCTION

The digital transformation of financial services has significantly reshaped global capital markets. Financial Technology (FinTech) platforms now enable retail investors to execute trades instantaneously through mobile devices, access algorithm-driven portfolio recommendations, and participate in social trading communities (Othman et al., 2023). These technological innovations have democratized financial participation, particularly among younger and previously underserved investor segments. However, the acceleration and simplification of financial transactions have also altered the cognitive environment in which investment decisions are made. Traditional brokerage models involved delayed information flow, professional intermediaries, and relatively higher transaction barriers (Othman et al., 2024; Rasheed et al., 2018). In contrast, FinTech platforms integrate real-time market data, push notifications, gamified user experiences, and AI-supported advisory systems (Othman et al., 2025). Such features may influence investor cognition by reducing analytical reflection and encouraging rapid decision cycles. Consequently, psychological biases documented in behavioral finance literature may not only persist but intensify within digital ecosystems. Although behavioral finance scholars have challenged the Efficient Market Hypothesis by demonstrating systematic deviations from rational decisionmaking, most empirical studies were conducted in traditional equity markets (Sharma and Kumar, 2020). Limited theoretical integration exists between behavioral finance constructs and digital platform design characteristics. As digital investing continues to expand, a refined conceptual understanding of bias manifestation within FinTech environments becomes increasingly necessary (Jais et al., 2024). This paper aims to develop a comprehensive conceptual framework explaining how psychological biases and digital platform features influence in shaping digital investment decision-making. The study contributes by bridging behavioral

finance and financial innovation research streams by proposing moderating of financial literacy in digital financial ecosystems.

Theoretical Foundation

Prospect Theory (Kahneman & Tversky, 1979) explains how individuals evaluate outcomes relative to reference points rather than absolute wealth positions. Investors display loss aversion, assigning greater weight to losses than equivalent gains. In FinTech contexts, visual dashboards, performance tracking charts, and real-time gainloss indicators may reinforce reference dependence and intensify loss-averse behavior. Heuristic Theory (Tversky & Kahneman, 1974) posits that individuals rely on cognitive shortcuts under uncertainty. Anchoring, herding, and overconfidence help simplify complex decisions but may lead to systematic errors. Digital trading environments, characterized by high-frequency updates and volatile price swings, may increase reliance on heuristics.

Drawing upon the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), this study reconceptualizes digital platform features as multidimensional technological determinants rather than superficial interface elements.

Performance expectancy, effort expectancy, social influence, and facilitating conditions collectively shape investor reliance on FinTech platforms and indirectly influence cognitive processing patterns. By integrating UTAUT with behavioral finance constructs, the framework explains not only how biases occur, but why digital environments intensify or attenuate their impact.

Psychological Biases in Fintech Context

Anchoring bias occurs when investors rely excessively on initial price points or default recommendations (Saivarasan and Lockhade, 2022). Digital interfaces prominently display historical prices and suggested allocations, reinforcing reference dependence (Owusu and Laryea, 2022). Herding bias is amplified by social trading features, copy-trading mechanisms, and visible portfolio rankings (Gavrilakis and Floros, 2021). Observational learning becomes immediate and scalable within digital ecosystems.

Overconfidence bias may intensify in FinTech environments due to simplified analytics and ease of execution. Frequent trading opportunities may create illusions of skill and predictive accuracy (Goyal et al., 2021). Risk perception is shaped by interface framing, volatility indicators, and algorithm-generated risk scores.

Simplified risk metrics may distort comprehensive risk evaluation (Bairagi & Chakraborty, 2018). Emotional bias is triggered by color-coded gains and losses, performance animations, and push notifications (Jaiyeoba et al., 2018). Immediate feedback loops may intensify fear and greed cycles. Gamification elements such as badges, rewards, and trading streaks increase engagement intensity.

While enhancing user experience, these mechanisms may encourage excessive trading. Instant execution capability reduces deliberation time. Personalized notifications and AI-generated alerts may prompt impulsive responses. Social feeds enable investors to observe and replicate others' strategies, reinforcing collective behavior (Zhao and Zhang, 2021).

Financial Literacy as Moderator

Financial literacy enhances understanding of diversification, compounding, and risk-return trade-offs. Higher literacy levels may mitigate heuristic reliance and emotional reactions (Baker et al., 2019). However, digital overconfidence effects may persist even among knowledgeable investors (Adil et al., 2021).

Proposed Conceptual Framework

Figure 1 represent the proposed framework positions psychological biases and digital platform feature as independent variables influencing digital investment decision-making. Financial literacy moderates the strength of bias effects. The model (Figure 1) integrates behavioral finance and technological determinants into a unified digital behavioral finance perspective.

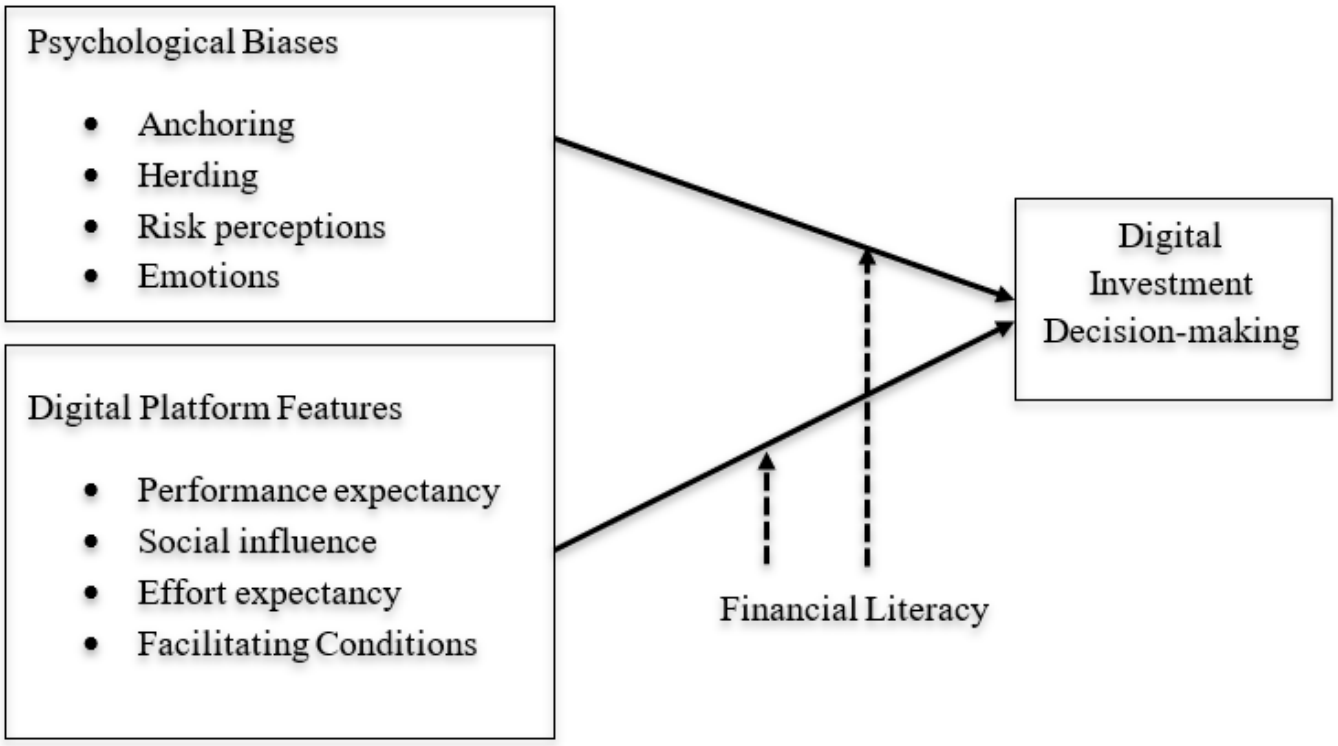

Figure 1 Proposed Conceptual Framework

CONCLUSION AND IMPLICATIONS

The framework extends behavioral finance theory into digital ecosystems, contributes to algorithmic trust literature, and informs regulatory policy regarding investor protection. FinTech developers may design interfaces that reduce impulsive trading and promote reflective decision-making. FinTech has redefined investment decision environments by embedding algorithmic systems and digital engagement mechanisms. Understanding how psychological biases interact with digital platform design is critical for sustainable financial innovation. The proposed framework provides a foundation for future empirical validation and policy development.

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