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Addressing behavioral biases in financial decision-making: Effective risk management tools for banking institutions

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Abstract

Behavioral biases significantly influence financial decision-making, often leading to suboptimal outcomes that challenge the stability and efficiency of banking institutions. This paper examines the impact of common biases, such as overconfidence, loss aversion, and herd behavior, on financial decisions and explores their implications for risk management frameworks. Traditional tools, while effective for quantifiable risks, often fail to address the psychological dimensions of decision-making. The study highlights the potential of behavioral insights to enhance risk management practices and the role of technological innovations, including artificial intelligence and decision-support systems, in mitigating biases. Additionally, integrating technology-driven training programs and promoting diversity in decision-making are discussed as practical strategies to improve judgment and reduce errors. The paper concludes with actionable recommendations for banks to address these challenges, emphasizing the importance of proactive, adaptive, and inclusive approaches to foster resilience and competitiveness in the financial sector.

Keywords: Behavioral Biases; Financial Decision-Making; Risk Management; Artificial Intelligence; Banking Institutions

1. Introduction

Behavioral biases play a significant role in shaping financial decision-making, often leading individuals and institutions to deviate from rational choices. These biases stem from psychological tendencies and cognitive errors that can cloud judgment, such as overconfidence, loss aversion, and herd behavior (Hirshleifer & Teoh, 2017). In the realm of finance, such biases can have profound implications, influencing investment decisions, credit evaluations, and risk assessments (Shefrin, 2015). Understanding and addressing these biases is crucial for banking institutions operating in highly dynamic and sensitive environments to ensure sound decision-making and robust financial performance.

The impact of behavioral biases on financial decision-making extends beyond individuals to organizational levels. In banking, for instance, biases can affect strategic decisions, lending practices, and portfolio management, potentially exposing institutions to unanticipated risks (Zahera & Bansal, 2018). Misjudged risk assessments driven by biases can lead to losses, regulatory scrutiny, or even systemic crises. Thus, identifying and mitigating these biases is essential for sustainable financial operations and risk management (Condon, 2022).

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Effective risk management serves as a cornerstone for banking institutions, enabling them to navigate uncertainties and safeguard financial stability. Traditionally, risk management has focused on quantifiable aspects such as credit, market, and operational risks. However, incorporating behavioral insights into risk management frameworks has become increasingly important in recent years. Banks can develop more comprehensive strategies to mitigate risks and enhance overall performance by addressing the underlying psychological factors influencing decision-making (Omri, 2022).

This paper explores how behavioral biases impact financial decision-making and examines effective tools for mitigating these biases within the context of banking institutions. The paper also highlights the importance of integrating behavioral insights into risk management practices, providing actionable recommendations to enhance decision-making processes. By doing so, it aims to contribute to the broader discourse on improving financial resilience and stability in the face of cognitive and psychological challenges.

2. Behavioral Biases in Financial Decision-Making

Behavioral biases are systematic deviations from rational decision-making caused by cognitive limitations, emotional responses, and psychological tendencies. These biases affect how individuals and organizations perceive and process information, often leading to suboptimal choices. In financial decision-making, biases manifest through flawed judgments and actions that can undermine the efficiency and effectiveness of investment, lending, and risk management processes. Understanding these biases is crucial, as they have far-reaching implications for both individuals and institutions, particularly in high-stakes environments like banking.

2.1. Definition and Types of Behavioral Biases

Behavioral biases can be categorized into various forms, each with distinct characteristics and effects on decision-making. Among the most prominent are overconfidence, loss aversion, and herd behavior (Zahera & Bansal, 2018). Overconfidence refers to an inflated belief in one's knowledge, abilities, or predictive accuracy. Individuals or decision-makers afflicted by overconfidence may underestimate risks or overestimate the likelihood of favorable outcomes, leading to excessive risk-taking. For instance, an overconfident banker might approve high-risk loans based on an overly optimistic view of market conditions (R. Jain, Jain, & Jain, 2015).

Loss aversion describes the tendency to prioritize avoiding losses over acquiring equivalent gains. This bias can lead to overly cautious behavior, such as holding on to underperforming assets for fear of realizing losses or missing out on growth opportunities by avoiding investments perceived as risky (N. Jain & Kesari, 2020).

Herd behavior arises when individuals or organizations mimic the actions of others, often without independent analysis. This bias is particularly prevalent during financial bubbles or crises, where collective behavior amplifies market trends, exacerbating volatility. A bank might, for example, tighten lending standards simply because other institutions are doing so, even if the data does not warrant such action (Oyster, 2018).

2.2. Influence of Biases on Financial Decision-Making

Behavioral biases significantly influence financial decision-making by distorting perceptions, shaping choices, and altering risk assessments. These effects can manifest at both the individual and organizational levels. At the individual level, biases such as overconfidence can lead investors to overtrade, resulting in higher transaction costs and reduced returns. Similarly, loss aversion may drive an investor to sell winning assets prematurely while holding onto losing ones, a phenomenon known as the disposition effect (VanderPal & Brazie, 2022).

At the institutional level, biases can skew strategic and operational decisions. Overconfidence among senior executives might result in ambitious expansion strategies or aggressive lending policies that fail to account for downside risks (Barzuza & Talley, 2020). Conversely, loss aversion may discourage banks from exploring innovative financial products or entering new markets, stifling growth and competitiveness. Herd behavior, particularly during periods of market turbulence, can lead to irrational decision-making, such as widespread asset liquidation, which exacerbates downward price spirals and undermines market stability (Kim, 2021).

The interconnected nature of financial systems further compounds the influence of biases. Decisions driven by biases in one institution can ripple through the industry, amplifying systemic risks. For example, suppose multiple banks succumb to herd behavior during a market downturn. In that case, the resulting credit crunch can have cascading effects on businesses, consumers, and the broader economy.

2.3. Challenges Posed by Biases for Banking Institutions

For banking institutions, behavioral biases present multifaceted challenges that complicate risk management, decision-making, and operational efficiency. One key challenge lies in detecting and mitigating biases, as they often operate subconsciously and are deeply ingrained in human psychology. Identifying overconfidence or herd behavior in real time requires sophisticated monitoring systems and a culture of introspection, which are not always present in traditional banking environments (Stingl & Geraldi, 2017).

Another challenge is the potential for biases to undermine regulatory compliance. For instance, overconfidence in risk models or assumptions might lead to inadequate capital buffers, exposing banks to regulatory penalties or financial distress during adverse market conditions. Similarly, herd behavior can result in industry-wide vulnerabilities that regulators struggle to address effectively (Power, Cyphert, & Roth, 2019).

Biases also complicate the design and implementation of risk management frameworks. Traditional frameworks tend to focus on quantifiable risks, such as credit defaults or market volatility, while neglecting the qualitative and psychological dimensions of decision-making. As a result, banks may fail to account for the true extent of their exposure to biases, leaving them vulnerable to errors and misjudgments (A. Hofmann & Scordis, 2018).

Moreover, biases can erode stakeholder trust and confidence. Poor decision-making influenced by biases, such as approving loans to uncreditworthy borrowers or engaging in speculative investments, can lead to financial losses, reputational damage, and diminished client loyalty. These outcomes can have severe long-term consequences in a highly competitive and regulated industry (Mashrur, Luo, Zaidi, & Robles-Kelly, 2020).

To address these challenges, banking institutions must prioritize the integration of behavioral insights into their operational and strategic frameworks. By fostering awareness of biases and their implications, banks can enhance decision-making quality and reduce the risks associated with cognitive errors. Strategies such as implementing structured decision-making protocols, promoting diversity of thought, and leveraging technology to identify and mitigate biases can help institutions build resilience and adaptability in an increasingly complex financial landscape.

In conclusion, behavioral biases are an inherent aspect of human psychology that significantly influences financial decision-making. While their effects can be detrimental, a deep understanding of these biases and proactive mitigation strategies can empower banking institutions to navigate challenges effectively and achieve sustainable success.

3. Risk Management Frameworks in the Context of Biases

Effective risk management is the backbone of stability and resilience in banking institutions, designed to identify, assess, and mitigate potential threats to financial health. Traditional frameworks primarily rely on quantitative risk management tools, such as credit scoring models, stress tests, and capital adequacy assessments. However, while essential, these tools are often limited in addressing decision-making's qualitative and psychological dimensions, including behavioral biases. This limitation highlights the need for an evolved approach integrating behavioral insights into risk management practices.

3.1. Traditional Risk Management Tools and Their Limitations

Traditional risk management tools focus on measurable factors such as market volatility, creditworthiness, and operational vulnerabilities. These tools utilize historical data, statistical models, and predictive algorithms to quantitatively understand risks. For example, credit scoring systems assess a borrower's likelihood of default based on financial history, while stress tests simulate adverse economic scenarios to evaluate a bank's resilience (McNeil, Frey, & Embrechts, 2015).

While highly effective in managing quantifiable risks, these tools often fail to account for the human element of decision-making. Behavioral biases, which influence judgment and perception, are not readily measurable using conventional methodologies. For instance, overconfidence in financial forecasts or loss aversion in portfolio decisions may lead to outcomes that deviate significantly from the predictions of risk models. These biases can skew decision-making at both individual and institutional levels, rendering traditional tools insufficient in capturing the full spectrum of risks (Zekos & Zekos, 2021).

Another limitation is the static nature of many risk management tools, which rely on historical data and fixed assumptions. Behavioral biases, by contrast, are dynamic and context-dependent, influenced by factors such as market sentiment, organizational culture, and individual psychology. As a result, traditional frameworks often struggle to adapt

to rapidly changing conditions, particularly during periods of market turbulence or economic uncertainty when biases are most pronounced (Emblemsvåg, 2020).

3.2. Role of Behavioral Insights in Enhancing Risk Management Frameworks

Incorporating behavioral insights into risk management frameworks offers a way to address these limitations by accounting for the psychological factors that influence decision-making. Behavioral insights draw on psychology, economics, and neuroscience findings to understand how biases affect perceptions, judgments, and actions. By integrating these insights, banks can develop more comprehensive and adaptive risk management strategies (Brown-Liburd, Issa, & Lombardi, 2015).

One key area where behavioral insights add value is identifying biased behavior patterns. For example, analysis of decision-making processes may reveal systematic overconfidence in risk assessments or herd behavior in investment strategies. By recognizing these patterns, banks can implement targeted interventions to mitigate their impact.

Another benefit of behavioral insights is their ability to enhance the design of risk management tools and processes. For instance, decision-making protocols can be structured to minimize the influence of biases. Techniques such as requiring multiple layers of review, using diverse perspectives, and incorporating objective benchmarks can help counteract tendencies like overconfidence or loss aversion. Similarly, behavioral nudges—subtle changes in the way information is presented or choices are framed—can guide decision-makers toward more rational outcomes (Yoe, 2019).

Behavioral insights also contribute to building a culture of awareness and accountability within organizations. Training programs that educate employees about common biases and their effects can foster more deliberate and informed decision-making. Such programs can be tailored to specific roles and responsibilities, ensuring relevance and practical applicability (Onyeador, Hudson, & Lewis Jr, 2021).

3.3. Integration of Behavioral Analysis into Banking Operations

Banking institutions must integrate behavioral analysis into their operational frameworks to fully leverage behavioral insights. This integration involves embedding behavioral considerations into processes, systems, and organizational structures. One approach is to incorporate behavioral metrics into existing risk assessment tools (Nuthalapati, 2022). For example, lending platforms can include indicators of borrower psychology, such as risk tolerance or decision-making patterns, alongside traditional financial metrics. Similarly, portfolio management systems can flag potential biases, such as overconcentration in specific assets or excessive trading driven by short-term market trends (Ben Mansour, 2016).

Technology plays a pivotal role in enabling this integration. Advanced analytics tools powered by machine learning and artificial intelligence can process large volumes of data to identify behavioral patterns and anomalies. These tools can provide real-time feedback to decision-makers, highlighting potential biases and suggesting corrective actions. For instance, a system might alert a credit officer to signs of overconfidence in loan approvals or recommend a more balanced approach to asset allocation (Sharma, 2019).

Organizational structures and policies can also be adapted to support behavioral analysis. Establishing cross-functional risk committees that include behavioral experts can ensure diverse perspectives and reduce groupthink. Incentive structures that reward long-term thinking and prudent risk-taking can help align individual behavior with organizational goals. Regular audits and reviews of decision-making processes can also identify areas where biases may influence outcomes (D. A. Hofmann, 2015).

The integration of behavioral analysis into banking operations requires a shift in mindset and a commitment to continuous improvement. While the initial investment in tools, training, and infrastructure may be significant, the long-term benefits in terms of enhanced decision-making, reduced risks, and improved performance outweigh the costs.

4. Technological Innovations for Bias Mitigation

4.1. Emerging Tools to Detect and Mitigate Biases

AI and ML have emerged as transformative tools to mitigate behavioral biases. These technologies excel at analyzing vast amounts of data to identify patterns and anomalies that may signal the presence of biases in decision-making processes. For example, AI algorithms can detect signs of overconfidence by analyzing a decision-maker's historical patterns, such as overly optimistic revenue forecasts or repeated approval of high-risk loans. Similarly, ML models can

identify loss aversion in portfolio management by assessing the tendency to hold underperforming assets or avoid potentially lucrative but perceived risky opportunities. By flagging these biases, AI and ML empower decision-makers to make more balanced, data-driven choices (Mirete-Ferrer, Garcia-Garcia, Baixauli-Soler, & Prats, 2022).

Additionally, these technologies can continuously learn and adapt, making them particularly suited for dynamic and complex environments. Unlike static models, ML systems evolve with new data, making them relevant and effective in identifying emerging biases. For instance, during market volatility, these tools can quickly adjust to detect herd behavior, providing timely insights to mitigate collective actions that may exacerbate instability (Davis, 2022).

4.2. Implementation of Decision-Support Systems and Automated Advisory Tools

Decision-support systems (DSS) and automated advisory tools are essential in reducing the influence of biases by introducing structured, objective guidance into decision-making processes. DSS integrates data analytics, visualization tools, and scenario modeling to provide decision-makers with comprehensive information (Rabiee, Aslani, & Rezaei, 2021). This reduces reliance on subjective judgment and counteracts overconfidence or emotional decision-making tendencies. For example, a DSS can generate multiple potential investment scenarios, highlighting risks and rewards based on historical and real-time data. By presenting a range of outcomes, the system encourages decision-makers to consider diverse perspectives rather than relying on instinct or biased heuristics.

Automated advisory tools, often powered by AI, further enhance objectivity by providing algorithm-driven recommendations. These tools are particularly valuable in areas such as credit underwriting and portfolio management. For instance, an automated advisory system can assess loan applications using standardized criteria, reducing the influence of biases like loss aversion or favoritism. In portfolio management, these tools can recommend asset allocations that align with long-term goals while avoiding short-term emotional reactions to market fluctuations (Cummings, 2017). By incorporating these technologies into daily operations, banking institutions can streamline decision-making processes, reduce cognitive overload, and ensure more consistent and rational outcomes.

4.3. Enhancing Training Programs with Technology

Technology can also be critical in improving awareness and judgment through enhanced training programs. Behavioral biases are often subconscious, making education and awareness essential for effective mitigation. However, traditional training methods may fall short of addressing biases' complex and dynamic nature (Gino & Coffman, 2021).

Technology-driven training solutions, such as virtual simulations and gamification, offer engaging and immersive ways to teach employees about biases and their impact. For example, virtual simulations can recreate real-world financial scenarios where participants must decide under pressure. These exercises can reveal how biases influence judgment, providing valuable insights and opportunities for self-reflection.

Gamification techniques, such as quizzes and interactive modules, can make learning about biases more accessible and engaging. Employees can compete in bias-identification challenges or earn rewards for demonstrating improved decision-making skills. This approach enhances learning and encourages continuous improvement and retention of knowledge.

Moreover, technology enables personalized learning experiences tailored to individual needs and roles. Adaptive learning platforms can assess a participant's knowledge and tailor content accordingly, ensuring relevance and effectiveness (Taylor, Yeung, & Bashed, 2021). For instance, a credit officer might focus on recognizing overconfidence in lending decisions, while a portfolio manager might learn strategies to mitigate herd behavior during market shifts. AI-powered analytics can further enhance training effectiveness by tracking progress and providing feedback (Amer-Yahia, 2022). By analyzing participant performance, these systems can identify areas for improvement and recommend targeted interventions. This ensures that training programs remain dynamic and responsive to both individual and organizational needs.

5. Conclusion

Behavioral biases play a significant role in shaping financial decision-making, often leading to deviations from rational judgment that can compromise the effectiveness of risk management and decision-making processes in banking institutions. Biases such as overconfidence, loss aversion, and herd behavior introduce challenges that traditional risk management frameworks, primarily designed to address quantifiable risks, are ill-equipped to handle.

The limitations of conventional tools underscore the need for innovative approaches that integrate behavioral insights into decision-making frameworks. Behavioral analysis offers a nuanced understanding of the psychological factors influencing judgment, enabling more adaptive and comprehensive risk management strategies. Technological advancements, including artificial intelligence, machine learning, and decision-support systems, provide powerful tools to detect, analyze, and mitigate the effects of biases. Additionally, technology-enhanced training programs foster awareness and improve decision-making capabilities among banking professionals, creating a culture of informed and rational judgment.

Recommendations

Banking institutions should adopt a multifaceted approach that combines policy reforms, organizational changes, and technological integration to address the challenges posed by behavioral biases and leverage the opportunities presented by technological innovations.

Banks should revise risk management policies to explicitly account for behavioral factors. This includes embedding behavioral analysis into credit assessments, investment strategies, and operational processes. By recognizing the influence of biases, institutions can develop more robust and resilient frameworks.

Institutions should invest in AI and machine learning tools to identify and address biases in real-time. These technologies can analyze decision-making patterns, detect anomalies, and provide actionable recommendations, enabling proactive management of risks associated with cognitive errors.

Comprehensive training initiatives should be developed to educate employees about common biases and their impact on decision-making. Leveraging virtual simulations, gamification, and adaptive learning platforms can make training more effective and engaging, fostering a deeper understanding of biases and strategies to mitigate them.

Encouraging diversity in thought, experience, and perspectives within decision-making teams can reduce groupthink and mitigate biases. Cross-functional committees, inclusive leadership, and open forums for discussion can foster more balanced and well-informed decisions.

By implementing these recommendations, banking institutions can build a culture of awareness, accountability, and rational decision-making, ultimately enhancing their resilience and competitiveness in an increasingly complex financial landscape. Addressing behavioral biases is not merely a challenge but an opportunity to innovate and lead in the evolving world of finance.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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