A Systematic Literature Review of Cognitive Biases in Workplace Decision-Making

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Abstract

In this paper, a systematic literature review is performed to identify heuristics and biases of decision-making for employees in the workplace. The research starts by utilizing existing literature reviews until 2022 and then conducts its literature review to bridge the gap to 2025. The literature review is conducted with the help of methods from Kitchenham (2004) and Nightingale (2009). The databases EBSCOhost, Scopus, and Web of Science were used for searching related literature. A precise keyword string is used to search, as well as various filtering, in order to get peer-reviewed journal articles. Initially, 221 articles were found and reviewed, and 70 were included in the literature review. The literature review shows an overwhelming amount of studies in investment and finance settings. However, it further indicates a lack of studies in other areas, especially in the workplace setting, such as in Singapore. Furthermore, it overviews the most prominent biases and recommends that further studies in other settings could utilize similar biases. The biases were overconfidence bias, herding bias, and decision avoidance bias. Thus, further research into other fields and regions could utilize these biases to get new insights into these topics.

Keywords: systematic literature review, biases, decision-making, workplace, overconfidence bias, herding bias

1. Introduction

Decision-making is a fundamental process required in all contexts. However, there are hidden biases influencing choices at every turn, a phenomenon famously demonstrated by Kahneman and Tversky (1973, 1979); Tversky and Kahneman (1974), which led to their Nobel Prize. Their work builds on top of the Bounded Rationality Theory of Simon (1955). These cognitive shortcuts, termed heuristics (Dale, 2015), and biases enable individuals to make quick decisions without exhaustive research. However, their existence can lead to unfavourable outcomes. This has been documented across various real-life contexts. For instance, asylum decisions have been shown to differ substantially between judges, with one judge granting asylum 88% of the time while another judge grants asylum only 5% of the time (Economist, 2021; Ramji-Nogales et al., 2007), to radiologists providing a 64% false positive rate in diagnoses (Economist, 2021), and wine experts rating the same sample differently in a study (Economist, 2021). Moreover, biases are also influenced by environmental factors, as can be seen by judges' rulings being harsher on hotter days or before breaks (Behrer & Bolotnyy, 2024; Economist, 2021). To gain a better understanding of these factors and their influence on decision-making, it is necessary to investigate them further.

Historically, most early studies on decision-making concentrated on the classical Rational Choice Model (RCM), which originated from Adam Smith in 1776 (Smith, 2002). This theoretical framework introduces a "rational actor" who looks at all possible options, free from biases, to arrive at the optimal solution (Gilovich et al., 2002). This model assumes that the decision-maker has complete information and resources, and acts with perfect rationality (Tsoukiàs, 2008). The hypotheses of the RCM describe the decision-maker as someone who thoroughly understands the problem, which they describe as a mere effectiveness or efficiency issue, and that all necessary information and resources are available to determine optimal solutions (Simon, 1955). However, the limitations of this idealised model become clear when considering the Prisoner's Dilemma (Rapoport, 1989), where rational decision-makers would choose individual optimal solutions; however, a better solution can be found through mutual cooperation. Axelrod and Hamilton (1981) showed that mutual cooperation can exist in the real world in contrast to the Prisoner's Dilemma (Sato, 2013).

In the 1950s, Herbert Simon challenged the unrealistic assumption of complete human rationality (Gigerenzer, 2020; Gilovich et al., 2002; Simon, 1955; Tsoukiàs, 2008), proposing the Bounded Rationality Model (BRM). This model assumes that decision-makers have cognitive limitations (Simon, 1955). They choose the first satisfactory solution rather than strive for an unrealistic optimal one (Kosters & Van der Heijden, 2015; Tsoukiàs, 2008). The BRM shows that decision-makers often lack a precise understanding of the problem and seek a satisfying solution or compromise. Furthermore, they are constrained by available resources and information (Tsoukiàs, 2008). Simon (1955) introduced the idea of the "economic man" with limited knowledge and ability, in contrast to the RCM's "rational actor." He also introduced the first heuristic, the "satisfying heuristic", which describes a decision-maker who selects the first satisfactory solution without exploring all possibilities (Gigerenzer, 2016; Simon, 1955). Although Simon did not systematically study heuristics and biases, his work formed the foundation for later developments in this field, particularly those linking decision-making to cognitive limitations (Gigerenzer, 2016).

Building upon the Bounded Rationality Theory, Daniel Kahneman and Amos Tversky, in the late 1960s and early 1970s, established the Prospect Theory (Kahneman & Tversky, 1979). This theory, for which Kahneman was awarded the Nobel Prize in 2002, provides a more realistic view of decision-making, especially in financial contexts under risk (Kahneman & Tversky, 1979). Kahneman and Tversky demonstrated that people value gains and losses differently (Kahneman & Tversky, 1979, 1984), often exhibiting risk-averse behaviour for gains and risk-seeking behaviour for losses (Kahneman & Tversky, 1979, 1984), leading to biases like the disposition effect (Zahera & Bansal, 2019) and pseudo-certainty effect (Kahneman & Tversky, 1984). The outcomes from the Prospect Theory and the Bounded Rationality Theory have been widely used across various fields, including psychology, economics, law, medicine, and political science (Gilovich et al., 2002). These foundational theories show the existence of biases such as System 1 and System 2 heuristics (fast, automatic vs. slow, analytical thinking) (Dale, 2015) and the availability heuristic (assigning higher probability to easily recalled events) (Dale, 2015). More importantly for this study, Overconfidence Bias (OB), defined as being "too confident in one's own ability" (Scott et al., 2003), and Herding Bias (HB), where decision-makers follow others without independent analysis (Qasim et al., 2019), are identified as some of the most prominent biases influencing decision-making.

The current study is conducted because, despite the extensive theoretical foundational theories and studies in investment settings, there are limited studies investigating decision-making biases and heuristics of employees within the workplace. Understanding these biases in the workplace is crucial, as they can lead to unfavourable decisions. Therefore, this study aims to shed light on the biases and heuristic factors underlying the decision-making process for employees.

The primary research objective (RO1) for this paper is to conduct a systematic literature review to identify relevant factors of decision-making for employees within the workplace in the face of heuristics and biases. This includes synthesizing existing literature on the relevant factors influencing the decision-making process to provide a comprehensive understanding of the current state of biases and heuristics in decision-making. The review will bridge the gap from earlier existing systematic reviews (analysed up to the early 2020s) to the more recent literature published up to 2025. This paper specifically addresses this objective, so that the outcomes can be used for further studies.

2. Methodology

The systematic literature review conducted for this study uses the methods of Kitchenham (2004) and Nightingale (2009). This will make sure that a structured and rigorous approach to performing a systematic literature review is used.

2.1 Database Selection

The EBSCOhost, Scopus, and Web of Science databases were selected to ensure high-quality, peer-reviewed articles.

These databases are widely recognised and recommended in academic research for their peer-reviewed literature. While some sources suggest that databases like Google Scholar or Summon can show similar performance in some circumstances (Ciccone & Vickery, 2015), the use of multiple high-quality databases ensures that all available journal articles are considered (Wanyama et al., 2022; Wilder & Walters, 2021).

2.2 Search Criteria and Filtering

Specific inclusion and exclusion criteria were applied as shown in Table 1. . The articles are filtered by language in order to get English articles. The timeframe is set to articles from January 1, 2022, until July 1, 2025, as multiple existing systematic literature reviews already cover the years before 2022. The filter is set to show only peer-reviewed articles to provide high-quality sources. Furthermore, the filter is set to show only sources with full text available to be

able to analyse the articles. Moreover, a special keyword string is used for the search, as seen in Table 1. , to concentrate on the research objective.

Table 1. Systematic Literature Review Criteria

Criteria	Included
Databases	EBSCOhost, Scopus, Web of Science
Language	English only
Timeframe	From 1 January 2022 until 1 July 2025
Source Type	Peer-reviewed only
	Sources with full text available only
	Sources with access only (Teesside University access rights)
Keyword Field	("decision making" OR "decision-making" OR "make decision" OR “make decisions”) AND (biases OR heuristic OR bias OR heuristics) AND (overconfidence OR herding OR ostrich OR decision-avoidance OR "decision avoidance" OR “loss aversion” OR disposition) AND (quantitative OR qualitative OR “systematic literature review” OR “systematic review” OR empirical OR survey OR questionnaire OR interview OR interviews)

2.3 Article Selection Process

The article selection process followed a process that can be seen in a PRISMA flow diagram in Figure 1, in accordance with Nightingale (2009). The initial search yielded 221 articles for further investigation: 55 articles from EBSCOhost, 82 from Scopus, and 84 from Web of Science. Furthermore, 65 article duplications were found and removed, ensuring that each unique publication was considered only once. Following duplicate removal, a screening process was conducted. During this phase, articles were assessed for their relevance to the study's research objective on workplace decision-making and cognitive biases. After screening the articles, 86 articles were excluded. Common reasons for exclusion included articles focusing on specific medical conditions, theoretical models unrelated to human decision-making, or articles entirely outside the scope of workplace or human decision-making. The remaining 70 articles were included in the systematic literature review. The specific details, of which articles were included or excluded, along with the reasons, were documented and included in the author’s doctoral dissertation.

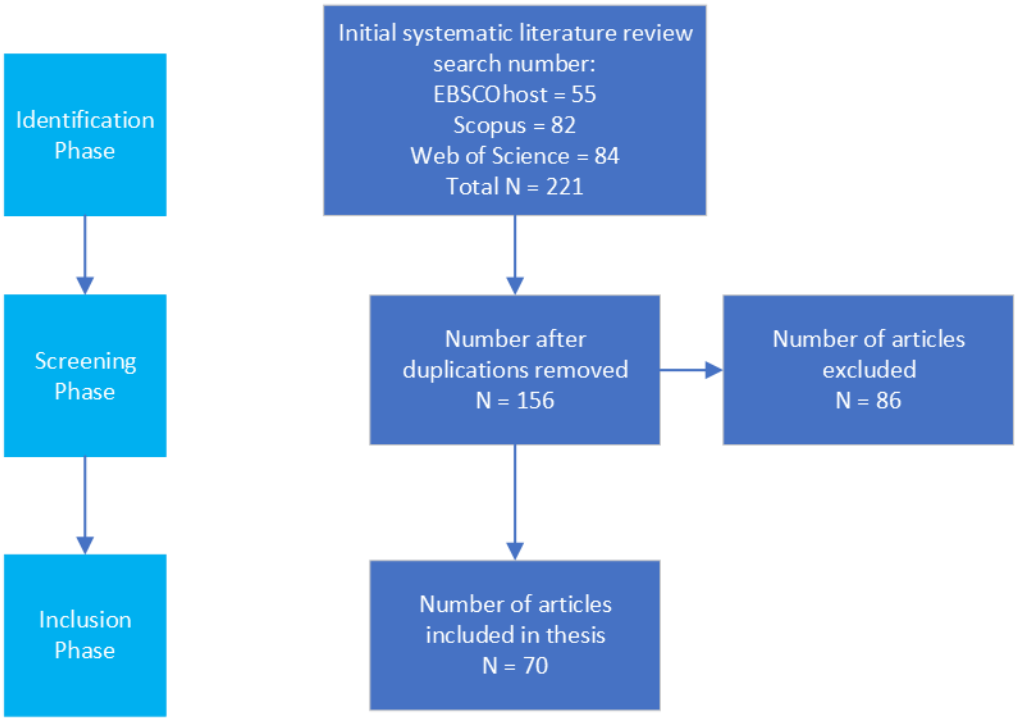

Figure 1. PRISMA Flow Diagram

2.4 Keywords Visualization

To gain a better understanding of the articles and identify prominent themes, VOSViewer software was used to create a visual representation of keywords. This visualisation in Figure 2 clearly demonstrated that "overconfidence bias" was the most frequently appearing keyword, significantly outweighing other keywords. It was followed by "herding bias" and "loss aversion bias," indicating their importance in the recent literature on decision-making as well. This visual analysis provided initial insights into the appearance of specific biases keywords within the researched articles.

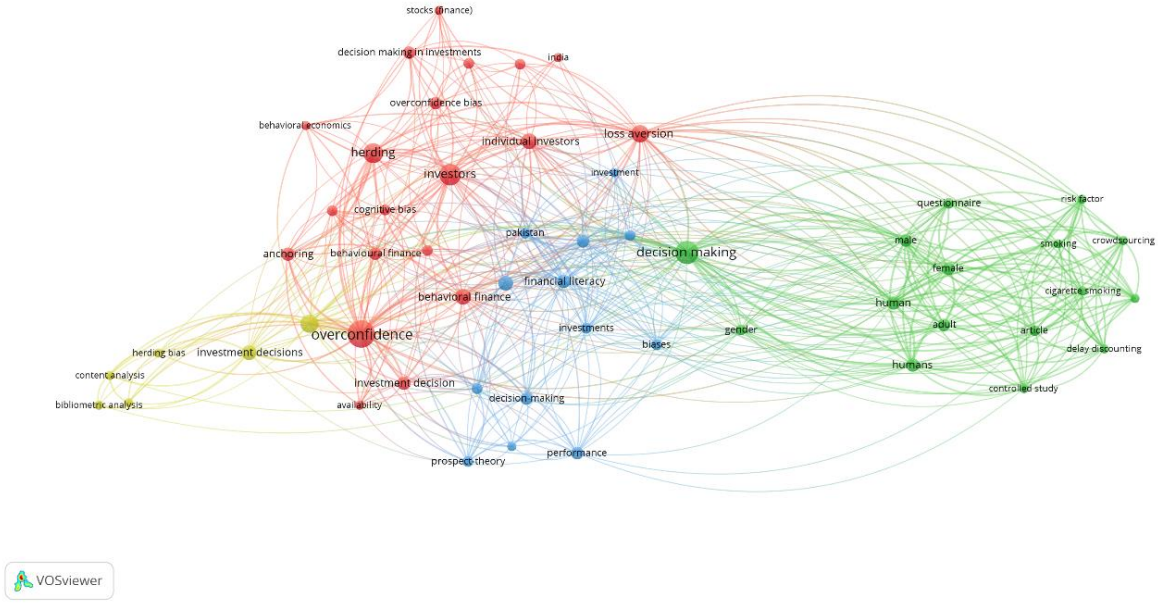

Figure 2. VOSViewer Keyword Visualization

3. Review of Prior Systematic Literature Reviews (Pre-2022)

Before conducting the systematic literature review for this study (covering 2022-2025), it is crucial to analyze prior reviews. These earlier reviews, concentrating on articles published in the 2010s and early 2020s, but some also including articles as far back as 1970, provide a broad understanding of the research conducted prior to the current study's timeframe and help to define the research gaps that this present review aims to establish. The reviews mentioned in this chapter, which were published post-2022, were also part of the outcome of the systematic literature review of the next chapter, but were summarized in this chapter along with other existing systematic literature reviews.

3.1 Identified Biases in Prior Reviews

Shah et al. (2021) conducted a systematic literature review on the effect of cognitive biases on financial decision-making, analysing 29 studies published between 2010 and 2020. Their findings showed overconfidence bias as the most common (appearing 18 times), followed by anchoring bias (11 times), herding effect (10 times), and loss aversion (9 times). The studies reviewed were split evenly between quantitative surveys and qualitative/mixed-method approaches, consistently concluding that these biases significantly influence financial decision-making. A limitation of this study is that it is limited to the investment area. This pointed to a clear research gap (RG).

RG1: Broaden the field of research further to include other areas than investment.

Similarly, Gatabi et al. (2023) performed a systematic review of biases in financial decision-making, including 51 articles after exclusions. While their review focused on a limited number of biases—survivorship bias, selective perception bias, blind spot bias, availability heuristics bias, bandwagon bias, choice support bias, ostrich bias (also known as decision avoidance bias), outcome bias, and placebo bias—they concluded that these biases affect financial decision-making, often leading to sub-optimal outcomes. Consistent with Shah et al. (2021), Gatabi et al. (2023) also acknowledged the limitation of focusing solely on investment decisions, thereby confirming Research Gap 1 (RG1).

Gatabi (2023) and Shah (2021) provided a valid premise on RG1, hence, to strengthen the relevance of the research gap, Upashi and Kadakol (2023) performed another systematic literature review, examining behavioural biases impacting investor decision-making, based on 32 publications from 2010 to 2011. They identified numerous biases,

with the most frequently appearing being overconfidence bias, anchoring bias, herding bias, regret aversion bias, loss aversion bias, and mental accounting. Their study has similar limitations to the previous ones, as it is concentrated exclusively on investment decisions.

Consequently, in line with capital allocation judgment, Rosyidah and Pratikto (2022) conducted another systematic literature review on financial decision-making literature from 2018 to 2022, incorporating 51 publications. They found seven most commonly used biases: Heuristic Bias, Self-Attribution Bias, Framing Bias, Herding Bias, Aversion Bias, Disposition Effect, and Overconfidence Bias. Their study was limited by its singular focus on finance, again supporting RG1.

Furthermore, Karki et al. (2024) reviewed 92 articles over 20 years focusing on overconfidence bias, noting its relation to hindsight and confirmation bias. Moreover, Singh, Malik and Jha (2024) focused on overconfidence bias in investment decisions through a systematic literature review of 137 Scopus publications. They found that demographics, personality traits, knowledge/experience, and investor type contribute to overconfidence. Furthermore, they emphasised that other fields would also benefit from detailed studies of decision-making biases, explicitly supporting RG1.

Overconfidence bias was also demonstrated by Paul and Sundaram (2023), who reviewed 109 articles (1980-2022) on investment biases. They found consistent evidence for overconfidence, anchoring, and loss aversion biases, which were observed in various settings. It was also shown as crucial in the publication of Singh, Malik, Jain, et al. (2024). They reviewed 132 articles, further underlining the vital role of overconfidence in decision-making studies, suggesting that this specific bias should be included in future research.

Moreover, Ahmad (2024), in a review of 176 papers (1970-2021) on biases and investment management, concluded that most investors are prone to biases such as overconfidence, herding, anchoring, representativeness, availability, disposition, and mental accounting biases. Similarly, Kunz and Sonnenholzner (2023) specifically reviewed 100 papers on managerial overconfidence, confirming its existence to different extents.

Lastly, Shah and Butt (2024), reviewing 131 publications (1970-2022), observed an increasing trend in publications on overconfidence bias, alongside other biases like representativeness and anchoring. This is also shown in the study of Sathya and Gayathiri (2024).

3.2 Summary of Prior Review Findings and Identified Gaps

The evidence from these prior systematic literature reviews consistently demonstrates that overconfidence bias, herding bias, anchoring bias, and loss aversion bias (closely related to decision avoidance bias) are the most prominent and frequently studied cognitive biases in decision-making. However, a limitation across nearly all these reviews is their focus on investment decision-making. There is a clear research gap (RG1) highlighting the need to broaden the field of research to include other areas than investment. Furthermore, most studies lacked a broader focus on various industries and geographical locations.

4. Findings of the Systematic Literature Review (2022-2025)

This section presents the detailed findings of the systematic literature review conducted for this study, covering articles published from January 1, 2022 until July 1, 2025. The review aimed to analyze recent journal papers in decision-making and to further extrapolate research gaps, building on the outcomes from earlier reviews. Out of 221 initial articles, 70 were ultimately included for analysis. A VOSViewer visualisation (Figure 2) confirmed that overconfidence bias was the most common keyword in these publications, followed by herding bias and loss aversion bias.

The articles included for analysis can be categorised by the biases or decision contexts they investigate.

4.1 General Workplace Decision-Making Studies

The primary objective of this review was to identify studies outside the investment context. While still limited, some recent publications did offer insights into broader workplace or general decision-making.

Initially, Tovmasyan (2023) surveyed 100 participants in the United States, concluding that behavioural biases affect employees' work performance. The study found that most individuals were unaware of experiencing these biases in their decision-making and therefore did nothing to mitigate them. This highlights the importance of understanding biases in the work environment and shows that further research is required.

On the other hand, Tommasi et al. (2024) conducted a cross-sectional study of 639 entrepreneurs and 512 managers in Italy, focusing on overconfidence and sunk cost bias. They found that overconfidence significantly influenced the

decision-making of entrepreneurs more than managers. However, their study focused exclusively on managers and entrepreneurs in Italy and examined only three biases; thus, they suggest the need for additional research in other regions and considering other biases.

Supporting the earlier work of Tommasi et al. (2024), Sharma (2024) put a new context in her qualitative research study, demonstrating the existence of overconfidence bias and herding bias in farmers' decision-making in India. This study explicitly shows these biases operating in a non-investment, non-financial context, thus addressing part of the RG1.

In a similar study, Kim and Nguyen (2024) supported Sharma (2024) as they found the existence of loss aversion among 623 company owners; they also showed its important role in the decision-making processes of both young and old managers. This again points towards biases in general organisational settings rather than just investment.

4.2 Overconfidence Bias (OB) in Recent Literature

Overconfidence bias consistently appears in many recent publications and can be seen as a crucial factor in decision-making, as can be seen in the studies in this chapter. Ilieva et al. (2022) found that most entrepreneurs from Austria and North Macedonia showed overconfidence in their general knowledge when surveyed. They recommended further research in other geographic locations and decision-making fields beyond entrepreneurship, introducing RG2 (considering other industries and countries).

Overconfidence bias was also shown in the study of Chaves Nobre et al. (2022). They observed optimism, overconfidence, and loss aversion biases among eight (8) participants, comprised of both entrepreneurs and managers, with other biases less prominent. The study recommended future research with larger and more diverse samples in terms of company size, structure, and environment, supporting the need for studies with a broader context.

Another study was conducted by Campbell and Moore (2024). They investigated overconfidence among professional forecasters, analysing 16 559 forecasts. Their findings showed significant overconfidence, as forecasters reported confidence in 53% of their forecasts, yet only 23% were accurate. Although limited to forecasters, this study reinforced the importance of overconfidence bias in decision-making.

Similarly, Mundi and Nagpal (2022) showed that overconfidence among finance managers in India impacts their ability to accurately forecast market returns, often leading them to choose narrow confidence intervals. While focusing on finance, this study demonstrated the need for a broader geographical and industrial scope, aligning with RG1 and RG2.

In line with these findings, Fadhiil and Fariska (2024) demonstrated the importance of overconfidence bias (alongside herding bias) in the investment decisions of 489 Generation Z individuals in Indonesia. Like many others, this study was limited by its focus on a specific country and investment context. The findings align with Sharma et al. (2025).

Further supporting the role of overconfidence, Al Rahahleh (2024) found that overconfidence bias and anchoring bias significantly affect decision-making for 598 investors in the Saudi stock market, however, the study was geographically and industrially limited. Complementing the previous results, Nur Aeni et al. (2023) in a quantitative study of 120 Indonesian investors, found that financial literacy and overconfidence bias influenced investment decisions.

Consequently, to establish the critical geographic function of OB at a more experimental level, Cavalan et al. (2023) conducted experiments with 31 participants, demonstrating that overconfidence plays an important role in decision-making at both local and global levels.

Alongside the previous results from Cavalan *et al* (2023), Khajiev and Turgunov (2022) surveyed 196 global investors. They found that overconfidence bias and representation bias were the most significant in investment decisions. In addition, Bihari et al. (2023), in an empirical investigation of 337 Indian retail investors, identified overconfidence bias as one of the most influential biases, alongside the fear of making mistakes (regret aversion) and loss aversion. While acknowledging these results, Aljifri (2023) study suggested that while overconfidence bias might not directly influence searching for information, it has an indirect impact through the disposition effect on decision-making. This finding is in contrasts with much of the research that considers overconfidence a one of the most important biases affecting decision-making.

Moreover, Shunmugasundaram and Sinha (2024) found a significant relationship between overconfidence and decision-making in life insurance investments among 501 policyholders, but the disposition effect could also be seen.

Echoing these results, Ghani et al. (2023), through interviews with seven (7) victims of Ponzi schemes, found a significant relationship between overconfidence bias and investment decisions in such schemes. These studies show the importance of overconfidence bias and the need to include overconfidence bias in future behavioural bias studies across other fields.

In addition, Nepal and Gyawali (2023) surveyed 132 investors in Nepal, confirming the existence of overconfidence, anchoring, herding, loss aversion, and hindsight biases to varying degrees based on demographics. Overconfidence bias was observed across all demographics.

In the same vein, Sutejo et al. (2023) showed that 500 young investors from Generation Y in Indonesia showed both overconfidence and herding biases to different extents, demonstrating their importance in behavioural bias studies.

Subsequently, Shahzad et al. (2024) demonstrated the existence of overconfidence bias and herding bias in financial decision-making, showing a moderate impact for these biases compared to panic and greed. This aligns with the study of Spytska (2024).

In a related study, Gurung et al. (2024) surveyed 379 Nepalese investors, suggesting that overconfidence, anchoring, and regret aversion biases significantly influence decision-making, while herding bias was less dominant.

Extending the scope to the Indian stock market, Lachhwani and Oza (2024) and Bathia et al. (2025) looked at the Indian stock market and showed that overconfidence bias, herding bias, and other biases as well are influencing the investors. Hence, from a different geographical perspective, Rooh and Hussain (2022) conducted a study in Pakistan, and they showed that herding, loss aversion, and mental accounting bias have an insignificant effect on the investment decisions and ESG performance. While overconfidence bias shows a significant relationship.

Some studies offered a contrasting view on the strength of overconfidence. Benayad and Aasri (2023) focusing on SMEs managers in Morocco, found overconfidence bias has a negligible effect on decision-making, in contrast to other prominent biases. This is aligned with Mer and Vishwakarma (2024) and El Oubani (2023).

Chwolka and Raith (2023) critically analyzed overconfidence in entrepreneurial financial decisions, suggesting it might not play as strong a role as other studies suggest. Still, they acknowledged its effect on decision-making and argue that the impact is smaller than other studies suggest. These views align with Das and Panja (2024) and Mohanty (2023) and Agarwal and Singh (2024). This highlights the need for further research to yield more insight into this aspect.

On the first hand, Ul Abideen et al. (2023) interviewed 600 investors in Pakistan and found that herding bias showed a significant relationship with decision-making, while overconfidence bias did not. However, Begum and Siddiqui (2024) reported a positive effect of overconfidence in Pakistan, showing contrasting views even within the same country.

On the other hand, Wolski et al. (2023) showed very different results; a survey of 25 professional investors in Poland found that while biases were present, they did not affect decisions related to central bank communications. This finding contrasts with most other studies and may have been influence by the small sample size of the study.

4.3 Herding Bias (HB) in Recent Literature

Herding bias was frequently discussed, often together with overconfidence bias, though its influence varied.

Awais et al. (2023) conducted a qualitative study in the financial markets with 19 participants in the USA, Turkey, and Pakistan, concluding that herding bias comes from factors like individual behaviour, perception, forecasting ability, and macro-economic variables.

In contrast to the previous results, Moya-Ponce and Madrazo-Lemaroy (2023) observed signs of non-herding behaviour, attributing it to mistrust in government and reliance on professional advice as they interviewed 31 undergraduate students in Mexico in financial decision-making.

However, in a recent study by Fadhiil and Fariska (2024), they identified the importance of herding bias for Generation Z investment decisions in Indonesia. This aligns with the study of Zuraidah et al. (2024), which was also conducted in Indonesia.

Another study from Bushra et al. (2023) proved that herding is the most noticeable bias. In their research, they surveyed 184 investors in India, and the participants demonstrated the existence of anchoring, mental accounting, overconfidence, herding, and loss aversion. Nevertheless, they found herding to be the most salient bias, followed by overconfidence. This contrasts with Ige and Adebayo (2024), who found the representativeness heuristic to have the highest influence.

This bias was also significant in the study of Mulasi et al. (2023) and Hussain et al. (2023). Mulasi et al. (2023) looked at herding bias in investment decision-making as well. They send surveys out to Indian investors. The study concentrated on herding bias, conservatism bias, and financial self-efficacy. The results show a significant negative relationship between decision-making and herding bias. This shows that herding bias is one of the major biases affecting decision-making.

Whilst Hussain et al. (2023) also showed the importance of herding bias in investment decision-making. They surveyed 251 investors in Pakistan and focused on loss aversion, herding bias, and cognitive dissonance. The results showed a significant relationship between herding bias and decision-making, as well as loss aversion and decision-making.

On the contrary, Mahmood et al. (2024) disagreed with previous positions. According to his study, which involved 261 investors in the Pakistan Stock Exchange, there is a significant negative relationship between decision-making and herding bias. Ahmad and Wu (2022) also looked at herding bias in Pakistani investors, confirming its presence.

In the context of cryptocurrencies, Ballis and Verousis (2022) used a quantitative approach with 112 investors, showing a significant relationship between herding bias and investment decisions. Handoko et al. (2024) similarly found a significant relationship in cryptocurrency, though with less strength than the previous study.

Moreover, Gurung et al. (2024), while identifying overconfidence, anchoring, and regret aversion as significant, suggested that herding bias was weaker in Nepalese investment decisions, showing that its influence is not the same everywhere. This shows that further research is needed to provide explanations for the varied influence of herding bias.

Supporting the varied influence of herding bias, Schulz (2023) investigated the effect of biases on investors in Germany. He conducted a quantitative study of 342 German investors, 181 male and 161 female participants. Using a questionnaire that asked respondents to evaluate their investment decisions based on best and worst statements, the study focused on three biases: overconfidence, herding, and anchoring. It revealed that women exhibited a stronger tendency toward herding bias, whereas men demonstrated higher levels of overconfidence and anchoring bias.

Lastly, Sebastian and Seetharam (2024) concentrated on South Africa. They looked at 20 analysts through a qualitative interview and found evidence for herding, availability, and overconfidence and disposition effect. This aligns with the study of Ige and Adebayo (2024).

4.4 Decision Avoidance Bias (AB) / Loss Aversion Bias in Recent Literature

Decision avoidance, often linked to loss aversion, also appears in recent studies.

In their review of financial decision-making, Gatabi et al. (2023) included "ostrich bias," which can be identified as synonymous with decision avoidance bias. Similarly, da Silva and Lautert (2022) conducted a qualitative analysis with 99 Brazilian students, showing loss aversion bias in financial situations.

Accordingly, in a series of studies by Thrailkill, Desarno, and Higgins (Thrailkill et al., 2022, 2023a, 2023b) investigated loss aversion bias in the context of cigarette addiction, finding a significant relationship between loss aversion and the decision to smoke or not. These studies show the importance of loss aversion bias beyond financial contexts.

In addition, Kim and Nguyen (2024) found a significant relationship between loss aversion bias and decision-making among company owners, demonstrating its role in managerial decisions.

Furthermore, Joshi et al. (2022) sent a questionnaire to 378 investors in India and found the most important bias as loss aversion bias. This was also shown in a study by Lal et al. (2024) and Srinivasan and Karthikeyan (2023).

4.5 Identified Research Gaps From This Systematic Literature Review (Post-2022 Literature)

Based on the analysis of the 70 included articles published between 2022 and 2025, the following critical research gaps appeared in alignment with those from prior reviews.

First, Overwhelming Concentration on Investment Decision-Making: The most significant and persistent gap remains the focus of research on investment decision-making. While this review specifically searched for non-investment contexts, they were limited, showing a strong bias towards financial markets in current publications.

Second, Limited Geographical and Industrial Diversity: Most analysed studies lacked a broader focus on various industries and geographical locations beyond the typical financial sector and a few well-researched countries, such as India. This indicates a need for more research in different countries and regions, as this will affect the strength of each bias, as shown by Rafinda et al. (2024).

Third, Specific Gap: Workplace Decision-Making in Singapore: This systematic review critically highlighted limited studies on decision-making biases and heuristics of employees in the general workplace, and in particular, no research in Singapore. This gap is important because understanding these biases in a professional, non-investment context is crucial for organisational practice and decision quality.

Fourth, Under-researched Biases/Stages: While some biases (e.g., overconfidence, herding, loss aversion) were in most publications, the review showed that a vast range of biases and their interaction with different stages of decision-making (beyond just evaluating and searching information, and including less favourable outcomes like procrastination) were not consistently covered in the recent literature. However, this also shows that these biases are crucial to include in further research, as they have been shown to affect decision-making to a greater degree.

5. Conclusion

This systematic literature review successfully achieved its primary objective of analyzing the most recent academic literature (from January 1, 2022 to July, 2025) about heuristics and biases in decision-making and identifying research gaps. By using the rigorous methodologies of Kitchenham (2004) and Nightingale (2009) and defining a comprehensive search strategy across leading academic databases (EBSCOhost, Scopus, Web of Science), this review provides an up-to-date understanding of the field's current state.

The review showed that overconfidence bias, herding bias, anchoring bias, and loss aversion bias (closely related to decision avoidance bias) remain the most consistently identified and studied cognitive biases in recent years. These biases frequently appeared across the 70 articles in the analysis, showing their continued relevance in understanding human decision processes.

However, the most crucial finding of this systematic review is the overwhelming focus on investment decision-making within the existing literature on cognitive biases. Even though this study searches actively for studies in other domains, the majority of relevant publications are within the financial industry. This concentration showed a limitation in the current state of knowledge. Furthermore, another research gap was the limited number of studies in many geographical locations, which provided the need for more studies in other countries, areas, and industries.

Furthermore, this systematic review specifically identified a research gap in decision-making biases and heuristics among general employees within the workplace context, particularly within Singapore. This means there is a gap in understanding the practical implications of cognitive biases for day-to-day organisational decisions beyond the investment industry. The study demonstrates that while theoretical theories of biases are well established, their application and empirical investigation in the general workplace are limited.

6. Future Outlook

Based on the gaps identified in this systematic literature review, several future research studies can be proposed.

Starting with “Expand Beyond Investment Contexts”: Future studies should explore the influence of cognitive biases and heuristics in non-financial industries and professional settings beyond the focus on investment. This would provide a more holistic and applicable understanding of these biases in organisational practice.

Second, Diversify Geographical Scope: Research should be expanded to include more geographical locations, moving beyond traditionally studied regions to provide more insights into the impact of cognitive biases between different cultures and countries. The specific gap of studies in Singapore, identified by this review, showed an opportunity for future research.

Furthermore, Investigate Broader Range of Biases and Decision Stages: While this review identified the most important biases, future research could look at other biases (e.g., anchoring bias, confirmation bias) and explore how they affect stages of the decision-making process. This would provide a better understanding of how different biases affect decision-making.

Lastly, Explore Moderating/Mediating Factors: Other factors such as time pressure, complexity, emotional intelligence, personality traits, or organisational culture could be used as potential moderators or mediators to show the relationship between these, the biases, and the decision outcomes in the workplace.

By looking at these gaps, future research can enhance our theoretical understanding of cognitive biases in real-world workplace settings and develop more effective ways to improve organizational decision-making. This systematic literature review provides a foundation by analysing the current knowledge and showing different future research paths.

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