Research Framework and Hypothesis Development: Investigating Cognitive Biases in Singaporean Workplace Decision-Making

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Abstract

This paper shows the research framework and hypothesis development for a quantitative study on heuristics and biases in employee decision-making in Singaporean workplaces. The underlying theories used are the Bounded Rationality and Prospect Theories. This study addresses research gaps previously identified by a systematic literature review (Ohms, 2025i), particularly focusing on non-investment contexts and Singapore. The study identifies overconfidence, herding, and decision avoidance biases as the independent variables; information evaluation, searching information, and procrastination as the dependent variables; and time pressure and complexity as the moderating variables. These hypotheses establish a rigorous theoretical foundation for investigating the specified relationships, contributing to new knowledge in behavioural economics and organisational practice.

Keywords: overconfidence bias, herding bias, decision avoidance bias, searching information, workplace decision-making, Singapore, cognitive biases, research framework, hypotheses

1. Introduction

Decision-making is a fundamental part of everyday life. These decisions are often influenced by cognitive shortcuts, known as heuristics and biases. These shortcuts, famously shown by Kahneman and Tversky (1973, 1979); Tversky and Kahneman (1974), building upon Herbert Simon's Bounded Rationality Theory, allow decision makers to make fast judgments without exhaustive research (Simon, 1955). However, these biases can lead to unfavourable outcomes, as evidenced by biased judicial asylum grants or high false-positive rates in medical diagnoses (Economist, 2021; Ramji-Nogales et al., 2007).

However, despite the overwhelming theoretical foundation and research in investment-related biases, there is limited research specifically investigating decision-making biases and heuristics among employees within the general workplace context, as shown by Ohms (2025i). Ohms (2025i) identified a research gap in non-financial industries and specific geographical contexts, such as Singapore. Understanding these biases in an organisational setting is important, as their influence can lead to suboptimal decisions and therefore negatively affect achieving a desired outcome.

Consequently, given the scarcity of studies about heuristics in non-financial contexts, Ohms (2025i) conducted a systematic literature review for articles published between 1 January 2022 and 1 July 2025 and analysed existing academic review articles, which gave an insight into publications before 2022. This review highlighted that overconfidence bias, herding bias, and loss aversion bias (closely related to decision avoidance bias) consistently emerged as the most important cognitive biases in recent literature, as well as in literature before 2022.

This paper provides a comprehensive approach to formulate the research framework and develop hypotheses derived from the research aim, objectives, and questions. Based on the research gaps identified by Ohms (2025i), the study defines the research aim, objectives, and research questions. It details the rationale behind each of the outlined hypotheses. The study, therefore, shows an approach to define the research aim with the help of the research gap and derive all the other aspects from it. The research objective is derived from the research aim. The research questions are from the objectives, and the hypotheses are from the questions. Finally, the research framework is based on the hypotheses. This will give an overview for other studies to mirror this approach and serve as the basis for further

research in this field.

2. Theoretical Foundations of Decision-Making Biases

The Rational Choice Model (RCM) serves as the underlying basis of the other fundamental theories to understand decision-making biases. Originating with Adam Smith in 1776, the RCM describes an idealised "rational actor" who possesses complete information and resources, objectively assesses every conceivable option without inherent biases, and consistently selects the optimal solution (Gilovich et al., 2002). The assumptions of this model include the decision-maker's complete understanding of the problem, the problem's describability as an effectiveness or efficiency issue, and the ready availability of all necessary information and resources to achieve an optimal outcome (Tsoukiàs, 2008). However, the limitations of this idealistic framework appear when considering the Prisoner's Dilemma, where individual rational choices can lead to a collective non-optimal solution (Rapoport, 1989).

Following the limitations of Smith's previous model in 1776, Simon (1955) studied its concerns and developed the Bounded Rationality Model (BRM). The BRM describes human decision-makers operating within cognitive limitations (Gigerenzer, 2020; Gilovich et al., 2002; Simon, 1955; Tsoukiàs, 2008). Decision-makers will then choose the first "satisfactory" solution or compromise rather than looking for an ideal solution (Kosters & Van der Heijden, 2015; Tsoukiàs, 2008).

Building on these foundations, Kahneman and Tversky (1979) developed the Prospect Theory from the Bounded Rationality Theory (Gigerenzer, 2016). This theory provides a realistic presumption of decision-making. It illustrates that people value gains and losses differently, often showing risk-averse behaviour for gains and risk-seeking behaviour for losses (Kahneman & Tversky, 1979, 1984). Thus, the Prospect and Bounded Rationality theories can be used to understand cognitive heuristics and biases. These biases and heuristics are mental shortcuts that influence decision-making (Dale, 2015).

2.1 Biases and Heuristics

From these theories, this study focuses on three important cognitive biases that have been extensively discussed in the literature and are crucial to workplace decision-making (Ohms, 2025i). Ohms (2025i) showed that these three cognitive biases frequently exist in recent literature.

Overconfidence Bias (OB) appeared as the predominant cognitive bias in the workplace. This bias describes someone as "too confident in one's ability" (Scott et al., 2003). Empirical studies have observed it among entrepreneurs, professional forecasters, and managers. It can lead to suboptimal decisions (Ohms, 2025i).

In contrast with OB, the second most prevailing bias is known as Herding Bias (HB). This bias describes the behaviour of decision-makers who follow others without analysing the decision in detail. For example, in the financial sector, investors choose stock A because others also selected it, and the investor follows without creating his/her own strategy (Qasim et al., 2019).

While OB and HB are biases that can nonetheless lead to a judgment, Decision Avoidance Bias (AB), also called Ostrich Bias, shows that people avoid making decisions or seeking information when presented with bad or ambiguous news (Karlsson et al., 2009). It is closely related to loss aversion bias, endowment, and disposition effects. All the effects are avoiding hurt from losses or bad news. Furthermore, it is also linked to the status quo bias, as both biases tend to avoid making a decision and stay with the current status quo.

In addition to these biases, the study also examines the stages of the decision-making process, which are often influenced by these biases. These stages are outlined by Mayne et al. (1992) and Yazdani et al. (2019), and this study adopts the most relevant stages of their decision-making process.

The first stage is Searching Information (SI), wherein the decision-maker gathers information for various alternative solutions. After gathering the information, the decision-maker evaluates and weighs the alternatives against each other—the pros and cons are analysed, and then a decision is made; this process is called Evaluating Information (EI). The final stage is Procrastination (PR). This phase refers to the delay in making decisions during the decision-making process (Klingsieck, 2013).

2.2 Moderating Factors

Biases influence decision-making processes, but each bias in the decision-making stages is influenced by moderating factors as well. These factors can either increase or decrease the effects of these biases. This study specifically assesses Time Pressure (TP) and Complexity (CO) as moderating variables. As studied by Phillips-Wren and Adya (2020), these factors are considered stressors impacting decision quality and outcomes.

Time Pressure (TP) is a perceived stress caused by limited time to make a decision. Zhou et al. (2024) describe how, under time pressure, individuals adopt a relatively intuitive, emotional, fast, and effortless approach to decision-making. However, there is a tendency to focus on negative information and ignore holistic aspects (Phillips-Wren & Adya, 2020). Svenson and Edland (1987) also noted that negative aspects have more influence on people. Nevertheless, they observed that people tend to accentuate the importance of previously important aspects and even devalue the factors of lesser importance. Hence, according to Capraro and Cococcioni (2016), this action increases selfishness if participants are forced to make quick choices.

In addition, Complexity (CO) is explored in this study. This factor refers to the perceived difficulty of a task or decision. Phillips-Wren and Adya (2020) stated that an increase in complexity decreases the performance of the decision outcome. Thus, they further observed that the decision-makers will choose less optimal alternatives under complexity (Phillips-Wren & Adya, 2020; Wallace et al., 2008). Chan et al. (2015) also point out that complexity impairs the quality of the decisions. They note that decision makers spend more time on complex but lower-quality decisions.

These moderating factors and the identified biases and decision-making stages form the basis for the study's research framework and hypotheses.

3. Research Gaps and the Systematic Literature Review

The present research is driven by the gaps identified through a systematic literature review by Ohms (2025i). This review, covering academic articles published from 1 January 2022 to 1 July 2025, bridges the gap from existing systematic reviews (analysed up to the early 2020s) to more recent literature. The methodology for this systematic review employed methods from Kitchenham (2004) and Nightingale (2009) to ensure a structured approach. It involved searching academic databases, including EBSCOhost, Scopus, and Web of Science, using a precisely defined keyword string and various filtering criteria to select peer-reviewed journal articles. Out of an initial 221 articles, 70 were ultimately selected for inclusion in the review.

The findings of the systematic literature review (Ohms, 2025i) identified several research gaps as presented in the published study of Ohms (2025i).

The first identified gap is the overwhelming concentration on investment decision-making. This gap was the most crucial research gap because it focuses immensely on investment decision-making. Thus, this study actively searched for non-investment publications; however, studies in other industries were limited. This shows a strong trend of research towards financial markets in current research. Hence, this suggests that studies of general workplace decision-making biases are rare.

Another gap is the Limited Geographical and Industrial Diversity. The review also showed a lack of research on specific geographical locations beyond the few well-researched countries, such as India. This fact shows a need for more research in other countries, as regional differences can influence the strength of biases shown by Rafinda et al. (2024).

Moreover, the study of Ohms (2025i) showed a Specific Gap—limited research on Workplace Decision-Making, especially in Singapore. The systematic literature review identified a research gap in studies examining decision-making biases and heuristics among general workplace employees, particularly in Singapore. This lack of research in a non-investment industry setting in Singapore is one of the key motivations for this study. Understanding these biases in a non-investment setting is crucial to improving decision quality.

Ohms (2025i) also noted that, since most publications included the three mentioned biases, such as overconfidence, herding, and decision avoidance bias, it is crucial to include these biases in further analysis because it has been shown that they affect decision-making to a significant degree.

In summary, the systematic literature review of Ohms (2025i) justified the focus of this research. In particular, to investigate overconfidence bias, herding bias, and decision avoidance bias together with the stages of decision-making, searching information, evaluating information, and procrastination, within the Singaporean workplace context and under the moderating factors of time pressure and complexity.

4. Research Aim, Objectives, and Questions

The Research Aim (RA) for the study can be described as:

> Research Aim: To investigate the heuristics and biases of decision-making for employees within the Singaporean workplace. A particular focus is given on understanding the cognitive biases and heuristics that influence the decision-making process.

This RA seeks to gain a deeper understanding of the underlying factors influencing employee decision-making in the workplace, offering insights for future research.

Accordingly, three (3) specific Research Objectives (RO) were established and introduced to achieve this aim.

> RO1: 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. Furthermore, this objective 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.
>
> RO2: To conduct statistical analysis on the determined factors. This includes identifying patterns in the data. Moreover, statistical evidence shall be provided for proper data handling and analysis.
>
> RO3: To assess the relationship of the chosen factors. This includes discussing the factors in light of primary and secondary data sources to give a comprehensive and holistic view of the relationships between the chosen factors.

The three research objectives are designed to investigate the heuristics and biases of decision-making for employees within the workplace in Singapore. By achieving these objectives, the study will provide insight into the field for further research. Furthermore, by achieving these objectives, the research contributes to new knowledge in the field and a better understanding of organisational practice.

RO1 was already addressed through the study of Ohms (2025i), which was summarized in the chapter above. This literature review serves as the foundation for a deeper study into the RO2 and RO3. The study seeks to give a strong basis for further research to achieve these two objectives.

Based on this aim and the objectives, four Research Questions (RQ) were formulated to guide the investigation.

> RQ1: Is there a significant relationship between overconfidence bias, herding bias, decision avoidance bias, and evaluating information?
>
> RQ2: Is there a significant relationship between overconfidence bias, herding bias, decision avoidance bias, and searching for information?
>
> RQ3: Is there a significant relationship between overconfidence bias, herding bias, decision avoidance bias, and procrastination?
>
> RQ4: Do time pressure and complexity moderate the relationship between cognitive biases and the decision-making process?

These research questions are derived from the research aim and objectives and serve as a foundation to develop the hypotheses and research framework, ultimately contributing new knowledge to workplace decision-making.

5. Hypotheses Development

A set of hypotheses was developed from the research questions and the theoretical foundations discussed. These hypotheses show the direct relationships between the cognitive biases (overconfidence bias, herding bias, decision avoidance bias) and the stages of decision-making (evaluating information, searching information, procrastination) and the moderating effects of time pressure and complexity on these relationships.

5.1 Base Model Hypotheses (Direct Relationships)

The following hypotheses analyse the direct influence of overconfidence bias, herding bias, and decision avoidance bias on searching information, evaluating information, and procrastination:

Overconfidence bias has been shown to affect the decision-making process, as seen by Pereira et al. (2020). Similarly, Lin (2011) showed that overconfidence bias and evaluating information have a significant relationship. However, Lin (2011) evaluated the effect of biases on decision-making in the face of investment decisions. The study showed that overconfidence bias and evaluation information have a significant positive relationship. Furthermore, the study showed that overconfidence bias and searching for information have a significant negative relationship. On the other hand, Kumar and Goyal (2016) showed that overconfidence bias and evaluating information have a significant positive relationship, while overconfidence bias and searching information have no significant relationship. This result leads to the first three hypotheses.

> Hypothesis 1 (H1): Overconfidence bias has a significant relationship with evaluating information.
>
> Hypothesis 2 (H2): Overconfidence bias has a significant relationship with searching information.

Hypothesis 3 (H3): Overconfidence bias has a significant relationship with procrastination.

The relationship between herding bias and the decision-making stages can be described with the help of Lin (2011). The study argues that no significant relationship exists between the decision-making stages and herding bias. The study further suggests that herding bias is independent of the decision-making process. Kumar and Goyal (2016) support this result but also find no significant relationship. Likewise, Sharma and Firoz (2020) reported similar results. However, all the mentioned studies evaluate biases in investment decisions. While stating that there are no relationships, it must be noted that the correlations in these studies show a very weak correlation.

On the other hand, Gupta and Shrivastava (2021) describe that there is no clear consensus on the influence of herding bias on investment decisions, and some studies show a relationship, while do not. However, their study also confirmed no significant relationship between herding bias and investment decisions. This leads to the following three hypotheses.

Hypothesis 4 (H4): Herding bias has no significant relationship with evaluating information.

Hypothesis 5 (H5): Herding bias has no significant relationship with searching information.

Hypothesis 6 (H6): Herding bias has no significant relationship with procrastination.

The following three hypotheses are related to decision avoidance bias, closely related to disposition effect and loss aversion bias. Lin (2011) reported a significantly negative relationship between disposition and evaluating information, while there is no significant relationship between searching information and disposition, even though the study reported a weak correlation. Similarly, Kumar and Goyal (2016) showed a significant relationship between disposition effect and evaluation information, while no significant relationship between disposition effect and searching information. Gupta and Shrivastava (2021) showed that there is a significant relationship between loss aversion and investment decisions. Sharma and Firoz (2020) reported a significant relationship between disposition effect and evaluating information, while no significant relationship between disposition effect and searching information; however, the study reported a weak correlation. This leads to the following three hypotheses.

Hypothesis 7 (H7): Decision avoidance bias has a significant relationship with evaluating information.

Hypothesis 8 (H8): Decision avoidance bias has no significant relationship with searching information.

Hypothesis 9 (H9): Decision avoidance bias has no significant relationship with procrastination.

The above hypotheses can also be seen in Table 1 for better visualization.

Table 1. Hypotheses of Base Model

Bias	**Evaluating Information**	**Searching Information**	**Procrastination**
Overconfidence	H1: Significant relationship	H2: Significant relationship	H3: Significant relationship
Herding	H4: No significant relationship	H5: No significant relationship	H6: No significant relationship
Decision Avoidance	H7: Significant relationship	H8: No significant relationship	H9: No significant relationship

5.2 Hypotheses Under Time Pressure Moderation

In this chapter, the hypotheses about time pressure as a moderator in the decision-making process in the workplace are developed. Zhou et al. (2024) describe how, under time pressure, individuals adopt a relatively intuitive, emotional, fast, and effortless way to make decisions. They may also concentrate on the negative information and ignore holistic aspects (Phillips-Wren & Adya, 2020). Thus, when these occurrences happen, according to Svenson and Edland (1987), the negative aspects have more influence on people. Since pessimism has taken over the decision-maker, they are more likely to become selfish (Capraro and Cococcioni (2016) as they are forced to make quick choices. As evidenced by Svenson et al (1987), people tend to increase the importance of previously important aspects and decrease the importance of less important ones even more.

This leads to the assumption that time pressure will reduce the time and quality spent on searching and evaluating information. The cognitive biases will be amplified while the quality and time spent on outcomes will decrease (Phillips-Wren & Adya, 2020). On the other hand, procrastination will be reduced as time pressure forces action and

makes delaying decisions harder (Kühnel et al., 2023; Phillips-Wren & Adya, 2020).

This leads to the following Hypotheses:

Hypothesis 10 (H10): Time pressure moderates the relationship between overconfidence bias and evaluating information, such that the effect of overconfidence bias on evaluating information is stronger under high time pressure.

Hypothesis 11 (H11): Time pressure moderates the relationship between overconfidence bias and searching information, such that the effect of overconfidence bias on searching information is stronger under high time pressure.

Hypothesis 12 (H12): Time pressure moderates the relationship between overconfidence bias and procrastination, such that the effect of overconfidence bias on procrastination is weaker under high time pressure.

Hypothesis 13 (H13): Time pressure moderates the relationship between herding bias and evaluating information, such that the effect of herding bias on evaluating information is stronger under high time pressure.

Hypothesis 14 (H14): Time pressure moderates the relationship between herding bias and searching information, such that the effect of herding bias on searching information is stronger under high time pressure.

Hypothesis 15 (H15): Time pressure moderates the relationship between herding bias and procrastination, such that the effect of herding bias on procrastination is weaker under high time pressure.

Hypothesis 16 (H16): Time pressure moderates the relationship between decision avoidance bias and evaluating information, such that the effect of decision avoidance bias on evaluating information is stronger under high time pressure.

Hypothesis 17 (H17): Time pressure moderates the relationship between decision avoidance bias and searching information, such that the effect of decision avoidance bias on searching information is stronger under high time pressure.

Hypothesis 18 (H18): Time pressure moderates the relationship between decision avoidance bias and procrastination, such that the effect of decision avoidance bias on procrastination is weaker under high time pressure.

The above hypotheses can also be seen in Table 2 for better visualization.

Table 2. Hypotheses under Time Pressure Moderation

Bias	**Evaluating Information**	**Searching Information**	**Procrastination**
Overconfidence	H10: ↑ Negative distortion	H11: ↑ Negative distortion	H12: ↓ Positive distortion
Herding	H13: ↑ Negative distortion	H14: ↑ Negative distortion	H15: ↓ Positive distortion
Decision Avoidance	H16: ↑ Negative distortion	H17: ↑ Negative distortion	H18: ↓ Positive distortion

5.3 Hypotheses Under Complexity Moderation

In this chapter, the hypotheses regarding complexity as a moderator in the decision-making process in the workplace are developed. Phillips-Wren and Adya (2020) stated that an increase in complexity decreases the performance of the decision outcome. They further note that the decision-makers will choose less optimal choices under complexity (Phillips-Wren & Adya, 2020; Wallace et al., 2008). In support of the aforementioned assertions, Chan et al. (2015) also mention that complexity impairs the quality of the decisions. Their study shows decision-makers spend more time on complex but lower-quality decisions.

This leads to the following Hypotheses:

Hypothesis 19 (H19): Complexity moderates the relationship between overconfidence bias and evaluating information, such that the effect of overconfidence bias on evaluating information is stronger under high complexity.

Hypothesis 20 (H20): Complexity moderates the relationship between overconfidence bias and searching information, such that the effect of overconfidence bias on searching information is stronger under high complexity.

Hypothesis 21 (H21): Complexity moderates the relationship between overconfidence bias and procrastination, such that the effect of overconfidence bias on procrastination is stronger under high complexity.

Hypothesis 22 (H22): Complexity moderates the relationship between herding bias and evaluating information, such that the effect of herding bias on evaluating information is stronger under high complexity.

Hypothesis 23 (H23): Complexity moderates the relationship between herding bias and searching information, such that the effect of herding bias on searching information is stronger under high complexity.

Hypothesis 24 (H24): Complexity moderates the relationship between herding bias and procrastination, such that the effect of herding bias on procrastination is stronger under high complexity.

Hypothesis 25 (H25): Complexity moderates the relationship between decision avoidance bias and evaluating information, such that the effect of decision avoidance bias on evaluating information is stronger under high complexity.

Hypothesis 26 (H26): Complexity moderates the relationship between decision avoidance bias and searching information, such that the effect of decision avoidance bias on searching information is stronger under high complexity.

Hypothesis 27 (H27): Complexity moderates the relationship between decision avoidance bias and procrastination, such that the effect of decision avoidance bias on procrastination is stronger under high complexity.

The above hypotheses can also be seen in Table 3 for better visualization.

Table 3. Hypotheses under Complexity Moderation

Bias	**Evaluating Information**	**Searching Information**	**Procrastination**
Overconfidence	H19: ↑ Negative distortion	H20: ↑ Negative distortion	H21: ↑ Negative distortion
Herding	H22: ↑ Negative distortion	H23: ↑ Negative distortion	H24: ↑ Negative distortion
Decision Avoidance	H25: ↑ Negative distortion	H26: ↑ Negative distortion	H27: ↑ Negative distortion

6. Research Framework

The hypotheses detailed above are visually represented in a series of research framework models. These frameworks illustrate the proposed direct and moderated relationships between the cognitive biases, the stages of decision-making, and the moderating factors of time pressure and complexity. The base model can be seen in Figure 1, while the extended model 1 under Time Pressure as a moderating factor can be seen in Figure 2. The extended model 2 under complexity can be seen in Figure 3.

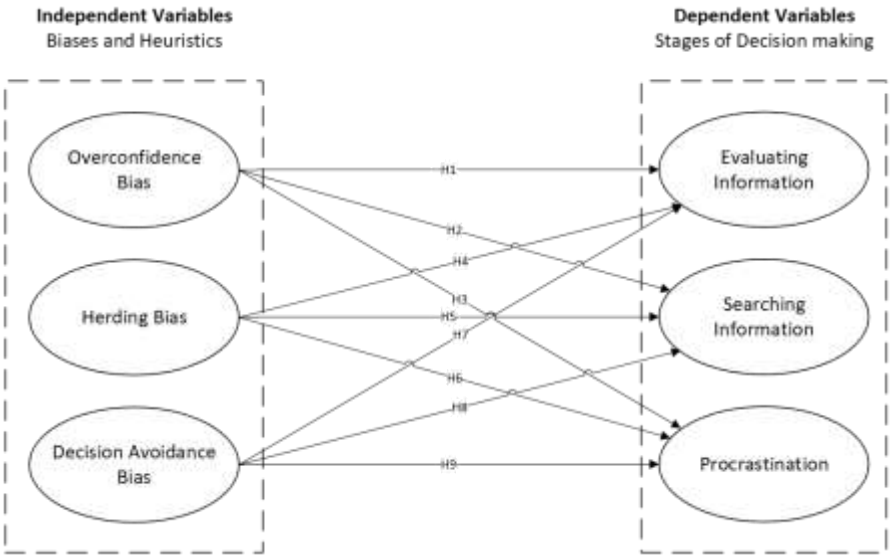

Figure 1. Base Model

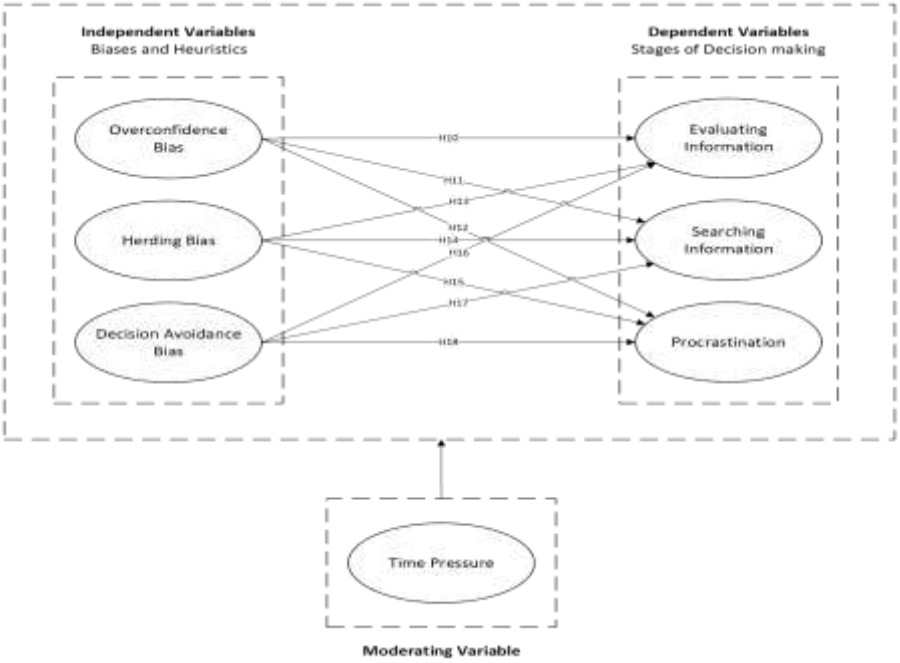

Figure 2. Extended Model 1 under time pressure

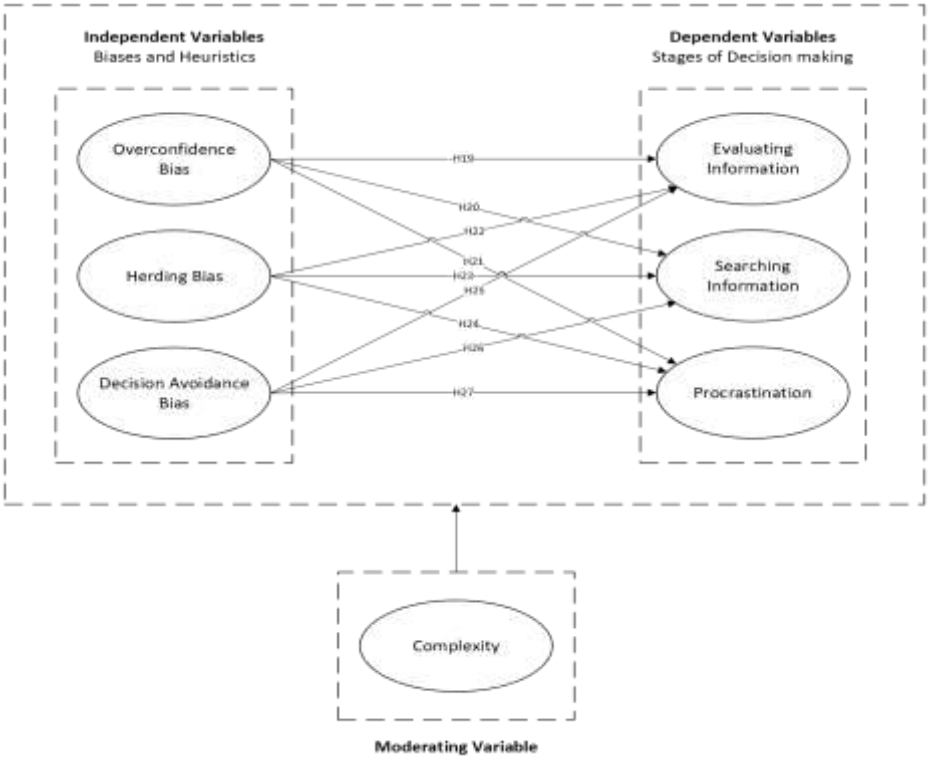

Figure 3. Extended Model 2 under complexity

The Base Model illustrates the direct relationships of the variables. In the model, Overconfidence Bias (OB), Herding Bias (HB), and Decision Avoidance Bias (AB) are represented as independent variables. Their influence on the decision-making stages is directly shown on the three (3) dependent variables: Evaluating Information (EI), Searching Information (SI), and Procrastination (PR). This model forms the foundation for understanding the interactions without external influences.

The Extended Model 1 builds upon the base model by adding Time Pressure (TP) as a moderating factor. In this model, Time Pressure (TP) influences the strength and direction of the relationships between the three biases (OB, HB, AB) and the three (3) decision-making stages (EI, SI, PR).

The Extended Model 2 further modifies the base research framework by introducing Complexity (CO) as another moderating variable. Like time pressure, complexity influences the relationships between the biases (OB, HB, AB) and the decision-making stages (EI, SI, PR).

These research frameworks guided further investigation and created the bases for the methodology section and the design of the questionnaire, the selection of statistical analyses (including multiple regression and Structural Equation Modelling), and the interpretation of findings, providing a clear, structured way for conducting research and investigating the research questions.

7. Conclusion

This paper has built a theoretical and conceptual foundation for a quantitative study on heuristics and biases in employee decision-making within the Singaporean workplace. By showing the development of decision-making theories from the Rational Choice Model to the Bounded Rationality and Prospect Theories, the study has established the basis for understanding cognitive biases and heuristics.

Furthermore, this study builds on top of the significant research gaps identified by a systematic literature review of Ohms (2025i), particularly the overwhelming focus on investment contexts and the limited number of studies in the general workplace industry setting, especially in Singapore. This research gap shows the unique contribution of this research study.

The paper has precisely established the research aim, objectives, and questions to investigate the relationships between selected cognitive biases, overconfidence, herding, and decision avoidance and key stages of workplace

decision-making, searching information, evaluating information, and procrastination. Also, the study has developed a comprehensive set of hypotheses built on top of the research aim, objectives and questions. The hypotheses were justified with existing literature while pointing out areas of conflicting relationships. The study aims to set the foundation for further research to clarify such conflicting findings.

In addition, research frameworks were defined by building on the hypotheses. Starting with a base model and two extended models, which used time pressure and complexity as moderating factors. This provides a clear visual and logical representation of the relationships which can be investigated in further studies. This detailed development of the research framework and hypotheses, research aim, objectives and questions establishes a robust theoretical and methodological foundation. This will guide the way for further investigation to generate insights and contribute new knowledge to the fields of behavioural economics and organizational practice in Singapore and beyond.

7.1 Limitations of the Study

The boundaries of this research have been intentionally defined to ensure a focused and manageable scope, and it is important to acknowledge these limitations transparently. The primary limitation is that this paper is purely conceptual and theoretical; it develops a research framework and a set of hypotheses but does not empirically test them. Its purpose is to establish the theoretical groundwork for subsequent quantitative investigation rather than to provide data-driven evidence.

Furthermore, the study has a limited scope of variables. Its focus on three prominent cognitive biases, Overconfidence, Herding, and Decision Avoidance, was a deliberate choice justified by a systematic literature review which found them to be the most consistently studied biases in recent literature. However, this focus necessarily excludes other potentially influential biases also noted in the literature, such as anchoring bias, confirmation bias, and regret aversion. Similarly, the framework is limited to three key stages of the decision-making process (Evaluating Information, Searching Information, and Procrastination) and two moderating factors (Time Pressure and Complexity), which is not an exhaustive list.

The research framework is also limited by its contextual specificity, as it is tailored to the Singaporean workplace to address an identified geographical research gap. While this provides valuable and targeted insights, this focus means the framework's applicability may not be generalisable to other national, cultural, or industrial settings without further validation. Finally, a significant limitation is that many of the hypotheses are derived from existing literature that is overwhelmingly concentrated on investment and financial decision-making.

7.2 Future Research Directions

The limitations of this conceptual study directly inform and create a clear roadmap for future research, much of which is already planned as part of a multi-paper doctoral research programme. The most immediate and direct avenue for future research is the empirical validation of the proposed hypotheses and frameworks. This conceptual paper is a foundational study within a larger research agenda designed to address its limitations systematically.

The subsequent papers in this programme detail the execution of this empirical work. This includes a paper on methodology design (Ohms, 2025h) which specifies the mono-quantitative, cross-sectional survey design and specific papers on the methodologies for moderation analysis (Ohms, 2025e) and Structural Equation Model (SEM) analysis (Ohms, 2025f). This is followed by a paper on data validation and analysis (Ohms, 2025a), which documents the collection of data from 365 employees in Singapore and confirms data integrity through rigorous procedures for outlier detection, normality assessment, and reliability testing. The programme then proceeds to a series of empirical papers that test the framework, including studies on the direct effects of the biases on decision-making (Ohms, 2025b, 2025c), and analyses of the moderated effects of Time Pressure (Ohms, 2025g, 2025j) and Complexity. This entire body of work culminates in a holistic Structural Equation Model, which integrates all direct and moderated effects into a single comprehensive model.

Beyond this immediate research programme, future studies should seek to build a more comprehensive model of workplace decision-making by incorporating variables that were outside this paper's scope, including additional cognitive biases, different decision-making stages, and a wider range of moderating or mediating factors like personality traits or organisational culture.

The Singapore-specific focus also presents a clear opportunity for future comparative and cross-contextual research, where the framework can be tested in different geographical regions and industries to assess its generalisability.

Finally, the quantitative design of this programme, while robust, offers limited insight into the subjective reasons behind these behaviours. This opens an important avenue for future qualitative or mixed-methods studies, such as

interviews or case studies, to provide rich, contextual data explaining why and how these biases manifest in the workplace.

By establishing this theoretical foundation, this paper paves the way for a structured programme of empirical investigation. By transparently acknowledging its conceptual limitations and outlining a clear roadmap for future research, this study not only guides the immediate next steps of its own research agenda but also invites broader scholarly inquiry into the complex interplay of cognitive biases and decision-making in diverse organisational settings

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Authors' contributions

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Competing interests

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of Sciedu Press.

The journal and publisher adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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