



**Probing the Impact of Cognitive Heuristics on Strategic Decision-Making During the COVID-19 Pandemic: Evidence from An Emerging Economy**

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## Probing the Impact of Cognitive Heuristics on Strategic Decision-Making During the COVID-19 Pandemic: Evidence from An Emerging Economy

### Abstract

**Purpose** – This study aims to explore and clarify the mechanism by which cognitive heuristics influence strategic decision-making during the Covid-19 pandemic in an emerging economy.

**Design/methodology/approach** – Data collection was conducted through a survey completed by 213 top-level managers from firms located in the twin cities of Pakistan. **A convenient, purposively sampling technique and snowball method were used for data collection.** To examine the relationship between cognitive heuristics and strategic decision-making, hypotheses were tested by using correlation and regression analysis.

**Findings** – The article provides further insights into the relationship between cognitive heuristics and strategic decision-making during the COVID-19 pandemic. The results suggest that cognitive heuristics (under-confidence, self-attribution, and disposition effect) have a markedly negative influence on the strategic decision-making during the Covid-19 pandemic in an emerging economy.

**Practical implications** – The article encourages strategic decision-makers to avoid relying on cognitive heuristics or their feelings when making strategic decisions. It provides awareness and understanding of cognitive heuristics in strategic decision-making, which could be very useful for business actors such as managers and entire organizations. The findings of this study will help academicians, researchers, and policymakers of emerging countries. Academicians can formulate new behavioural models that can depict the solutions to dealing with an uncertain situation like COVID-19. Policymakers like strategic decision-making teams can formulate crisis management strategies based on behavioural strategy concepts to cope with situations like COVID-19 in the future

**Originality/value** – The paper's novelty is that the authors have explored the mechanism by which cognitive heuristics influence strategic decision-making during the Covid-19 pandemic in an emerging economy. It adds to the literature in strategic management, explicitly probing the impact of cognitive heuristics on strategic decision-making; this field is in its initial stage, even in developed countries, while little work has been done in emerging countries.

**Keywords:** under-confidence, self-attribution, disposition effect and strategic decision-making

### 1. Introduction

Strategic decisions play a pivotal role in achieving the organizational vision and mission effectively. Strategic decision making is the process by which a firm's fundamental decisions are taken by top-level management teams. These strategic decision-making teams (SDMTs) make strategic choices that remain unique, complex, and provide a course of action to effectively achieve the firm's vision and mission (Parayitam & Papenhausen, 2018). Strategic decisions are significant in resource allocation and strategy formulation to effectively accomplish the firm's long-term

goals. Thus, SDMTs generate various strategies and follow specific logical procedures to reach the optimal course of action.

Rational decision theory states that a strategic decision-maker attempts to reach an optimum decision. Strategic management based on sensible planning adheres to the logical approach to strategy development via strategic planning and strategy execution through performance assessment and performance management (George & Desmidt, 2018). Rational planning techniques may infuse decision-making processes focusing on strategic objectives, organizational environment insights, and performance information (Das & Teng, 1999; Tversky & Kahneman, 1989). The normative decision-making model based on rationality always presumes decision-maker as a rationale. However, in practice, a strategic decision-maker often engages in irrational behavior when making strategic decisions because of cognitive and social factors that influence the decision-making process. The widespread criticism about the validity of normative decision-making models based on classical theories has led to the discovery of neo-classical theories, including human cognition (George & Desmidt, 2018). Recent strategic management research has revealed several psychological biases that influence strategic decision-making. According to strategic management researchers, everyone has behavioural biases that impede them from making rational decisions and have negative implications on the strategic decision-making process (Acciarini et al., 2020).

Much of this research is based upon the idea that humans are “boundedly rational” (Simon 1956). Simply said, a human’s information processing capacity is limited, preventing economically rational behavior. One method of dealing with limited processing capacity is to use heuristics, or shortcuts, that simplify decisions but reduce the amount of information that is processed. (Tversky and Kahneman, 1973) which might cause systematic errors in judgment and lead to satisfactory choices related to strategic management, but which do not maximize utility. For many people, the use of heuristics is automatic and occurs prior to cognitive information analysis (Payne et al. (1993). For other people, heuristic use might be situational. In general, when there is pressure to make a quick decision, people will use heuristics by default (Goodie and Crooks, 2004). When confronted with choices under the presence of uncertainty, like the COVID-19 Pandemic, strategic decision-makers frequently employ heuristics, resulting in several heuristic-driven biases in their decisions. Specifically, reliance on under-confidence, self-attribution, and disposition effect leads strategic decision-makers to make less than optimal choices. Literature highlights behavioural biases are the main reason for irrationality in decision-making (Shefrin, 2007).

The basic motivation behind this study is to discuss new perspectives on strategic decision-making and give an extensive perspective of the psychological fundamentals and their applications to strategic decisions. The strategic decision-making process remains a not so well explored idea – all the debate on its various aspects has not yet produced objective rules or theories. To understand and explain strategic decision-making, it is necessary to investigate those behavioural components that influence strategic decision-making as a result, firm’s fail to accomplish the long-term goals. Thus, in the present study, the researchers explore the mechanisms by which cognitive heuristic-driven biases influence strategic decision-making. This article includes three components of heuristics – underconfidence, self-attribution, and disposition effect treats them independently to study their differential effect on strategic decision-making. Understanding the differences between these components may help top-level management understand their strategic decision-making behavior, as well as help them for making better decisions related to strategic management.

Ahmad (2022) emphasized the scarcity of studies on heuristics in developing economies. He also highlighted that an emerging market contains more conditions of uncertainty when compared with the developed markets. The uncertainty prevails in the form of more sparse informational environments, fewer analysts following, reduced accounting disclosure, and the like. In such a context, fast and frugal reasoning works better, which needs to be studied further. Ahmad, Shah, and Abbass (2021) argue convincingly, most studies focus on well-developed financial markets, and very little is known about top-level management behavior in emerging markets. The present study contributes to filling this gap in the literature. A handful of studies have shown evidence that heuristics cause inevitable behavioral biases in investment decisions from developing economies (Jaiyeoba and Haron, 2016; De Vries et al., 2017; Metawa et al., 2018) and from developed economies (Tversky and Kahneman, 1986; Coval and Moskowitz, 1999; Hirshleifer, 2001; Wang et al., 2011; Yalcin et al., 2016). The findings of various studies were inconclusive in explaining these cognitive heuristics. Therefore, this study has tried to provide the desired empirical evidence from the developing economy by using a data set of top-level management operating in the service, trading, and manufacturing firms.

Thus, the current study makes a few contributions to the existing body of literature on cognitive heuristics and strategic decision-making. First, the present study improves the understanding of the role that cognitive heuristics plays in strategic decision-making. The current study provides an explanation for how and why managerial behavior deviates from rationality and causes judgment mistakes in strategic decision making. The findings of the current research offer novel contributions to the existing literature by suggesting that strategic decision-makers are behaviorally biased which adversely affects their strategic decision-making during the COVID-19 pandemic in an emerging economy. Our work is a pioneering study in this context. To the best of the author's knowledge, the underconfidence, self-attribution, and disposition effect have never been systematically tested with strategic decision-making, nor have its predictive power been examined in the emerging economy during the COVID-19 pandemic. Hence, the present study also advances an important stream of existing research, which posits that the human mind relies on heuristic strategies affected by systematic and predictable errors (biases), that allow only sub-optimal decisions (Tversky & Kahneman, 1974). Second, in this study, the authors combine the theoretical fields of cognitive psychology and cognitive heuristics research with strategic decision-making literature. Thus, this article makes a theoretical contribution by providing further insights into the managerial heuristics–decision-making relationship by exploring how strategic decisions are affected by their underconfidence self-attribution, and disposition effect heuristics. This has important practical, as well as theoretical implications since SDMTs usually act in environments characterized by a high level of uncertainty and ambiguity (Sarasvathy, 2001). In doing so, the authors address “the thinking-feeling-doing connection”. This study extended knowledge on cognitive heuristics and their effect on strategic decision-making in Pakistan—an emerging economy.

Third, studies conducted in western countries cannot be generalized to Asian nations and may not apply in the Pakistani context, because of the difference in contextual paradigm (i.e., individualist v/s collectivist). This is one reason why this study also enhances the understanding of the psychology of the choices of managers from an emerging market. Most articles concentrate on individualistic cultures and well-developed markets, and very little is known about the profiles and conduct of strategic decision-makers in collectivist cultures and emerging markets. This present article also helps fill this gap in the literature by considering how cognitive heuristics influence

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3 strategic decision-making in collectivist societies, particularly in Pakistan. The study provides a  
4 significant and meaningful contribution to the prevailing young and emerging markets paradigm.  
5 Strategic decision-makers are not fully aware of behavioral biases and their effect on strategic  
6 decision-making, especially in emerging economies so it will be useful for them to become aware  
7 of these biases and to gauge the impact of their own cognitive and emotional factors on their  
8 strategic decision-making. In emerging markets, strategic decision-makers have to cope with  
9 additional difficulties in making strategic decisions. Sociopolitical factors seem to create  
10 uncertainty in a highly volatile market, deeming strategic decision-makers to be extremely  
11 conservative in their strategic decisions and probably, one of the major reasons they are suffering  
12 from the cognitive heuristics when making strategic decisions.  
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16 Of two theories supporting the research phenomenon, one is known as prospect theory, and the  
17 other is known as bounded rationality theory. The behavioral theory of bounded rationality, which  
18 Simon explained in (1955), states that decision-makers cannot make a rational decision due to the  
19 limited information they have, the cognitive limitations of their minds, and the limited time they  
20 have to make a decision. Thus, even decision-makers who intend to make optimal decisions are  
21 bound to make satisficing (rather than maximizing or optimizing) decisions in complex situations  
22 within their data processing and cognitive limitations. One way to deal with this limitation is  
23 through heuristics or shortcuts, which might cause systematic errors in judgment and lead to  
24 satisfactory choices related to strategic management but do not maximize utility (Ahmad, Shah, &  
25 Abbass, (2021). Prospect theory, which is explained by Kahneman and Tversky (1979), posits that  
26 people make decisions on the basis of gains and losses rather than final outcomes, as well as setting  
27 reference points and making decisions accordingly. People value gains and losses differently. This  
28 value is calculated from a reference point (Ahmad, & Shah, 2021).  
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33 Heuristics are rules of thumb, which strategic decision-makers use to avoid the risk of losses in  
34 uncertain situations like the COVID-19 pandemic and make efficient decisions (Ritter, 2003), by  
35 reducing the complexity of measuring probabilities and forecasting values to simpler judgments  
36 (Tversky and Kahneman, 1974). According to Shah and Oppenheimer (2008), all heuristics are a  
37 form of effort reduction, using one or more of the following: analyzing only a few clues, integrating  
38 less information, or analyzing only a few alternatives. Under conditions of environmental  
39 uncertainty and complexity(turbulent), strategic decision-makers often fell prey to cognitive  
40 heuristics namely under-confidence, self-attribution, and disposition effect due to bounded  
41 rationality, to reduce the risk of losses. Due to cognitive heuristics, their technical knowledge and  
42 reasoning faculties are impaired, leading to errors in judgment (Ahmad and Shah, 2021). As a  
43 result, investors make irrational decisions, which in turn adversely affect their strategic decision-  
44 making.  
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49 The remaining article proceeds as follows: In the next section, the authors discuss the previous  
50 studies regarding the relationship of cognitive heuristics with strategic decision-making and  
51 develops the hypotheses for this article. In the third section, the authors describe the method of  
52 data collection and the operationalization of construct measures. The results of the paper are  
53 presented in section four. In the fifth section, the authors describe the discussion regarding the  
54 results of the study. Section six shows the conclusions, contributions, and implications of the  
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3 results of this article to the field of strategic management. In section seventh, the authors suggest  
4 avenues for future research.  
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## 6 7 **2. Literature Review**

8 Many scholars have explored the effect of cognitive heuristics on strategic management from a  
9 variety of perspectives and in a variety of cultural and environmental settings, with some of their  
10 findings being particularly relevant and beneficial for this study. A brief summary of prior studies  
11 on cognitive heuristic biases and strategic decision-making is provided hereafter.  
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### 13 **2.1 Strategic decision-making**

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15 The overall performance of a company is inextricably linked to its strategic decisions. As a result,  
16 strategic decision making is the most active area of contemporary research. According to  
17 Eisenhardt (1999), a strategic decision is referred to as committing resources and competencies  
18 needed to achieve strategic goals, influence organizational direction, and structure, and shape the  
19 course of a firm. Strategic decisions usually involve the commitment of top-management teams in  
20 long-range planning and are determined in response to novel problems, complexity, or  
21 environmental trends (Shrivastava and Grant, 1985), which require either reactivity or proactivity  
22 in strategy formulation. Strategic decisions have received a lot of attention because of their firm-  
23 wide implications and importance in a company's survival and growth (Haider & Mariotti, 2016).  
24 The nature and complexity of strategic decisions remain divergent from the tactical and operational  
25 decisions. Therefore, mostly strategic decisions are entrusted to top-level management teams,  
26 called strategic decision-making teams (SDMTs). Strategic decisions made by these SDMTs  
27 remain unique, complex, and provide a course of action to achieve the firm's vision and mission  
28 effectively (Parayitam & Papenhausen, 2018). Accordingly, the complexity inherent to these  
29 strategic decisions requires collective thinking and innovative ways to reach the optimal course of  
30 action. Therefore, members of strategic decision-making teams exchange information, process and  
31 interpret it before proceeding towards a final decision (Parayitam & Papenhausen, 2016). A firm's  
32 long-term growth prospects and sustainability are strongly influenced by the overall strategic  
33 decisions that are made.  
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38 The last five decades of research revealed three forms of conflicts in the strategic decision-making  
39 process: cognitive conflict, affective conflict, and process conflict. The strategic decision-making  
40 process subjected to these inherent conflicts negatively impacts the quality of strategic decision-  
41 making (Jehn, 1995). Previous research posits that cognitive conflict among team members  
42 improves strategic decision quality; however, relationship conflicts remain dysfunctional  
43 (Amason, 1996). Cognitive conflict remains central to affect the quality of strategic decision  
44 making and, if not managed properly, can result in harmful consequences. However, the cognitive  
45 conflict remains unavoidable during strategic decision-making because humans remain divergent  
46 in terms of cognition and information processing abilities. The research scholars from the strategic  
47 management community argue convincingly that SDMTs must be competent in the cognitive  
48 aspects of decision-making under conditions of stress, information overload, time pressure,  
49 uncertainty, or novelty (Mitchell et al., 2000; Simon et al., 2000) and specifically in their use of  
50 cognitive heuristics (Alvarez and Busenitz, 2001).  
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53 Heuristics are efficient cognitive processes, which ignores part of the information, consciously or  
54 unconsciously. Gigerenzer and Gaissmaier (2011, p. 454) propose a definition of heuristic as "a  
55 strategy that ignores part of the information with the goals of making decisions more quickly  
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3 frugally, and/ or accurately than more complex methods". Strategic managers often use heuristics  
4 to simplify problems; these are generally effective and beneficial when decision-makers have  
5 limited time and information (Waweru et al., 2008), but they can also lead to systematic judgement  
6 errors (Ritter, 2003; Tversky and Kahneman, 1974). According to Gigerenzer and Gaissmaier  
7 (2011), heuristics may be more accurate than more complex tactics, even when working with less  
8 information. They are not rational or irrational, good or bad; the structure of the environment  
9 determines the accuracy of their predictions. People learn to select the most appropriate heuristics  
10 from their adaptive toolbox after gaining adequate knowledge and experience. In general, strategic  
11 decision-making is guided by heuristics, as rational models' assumptions rarely hold true in an  
12 uncertain context like COVID-19 Pandemic. Thus, SDMTs' cognitive competency is crucial when  
13 it comes to selecting the best heuristics from their toolbox of adaptive strategies. They must also  
14 have the cognitive abilities to make strategic decisions in high-stress situations, like COVID-19  
15 Pandemic.  
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19 Some researchers posit that when strategic managers decisions based on cognitive mechanisms,  
20 their quality decision-making can be impaired. Some of the problematic/negative aspects of  
21 strategic managers cognitions such as overconfidence and representativeness error (Busenitz and  
22 Barney, 1997), self-serving bias, self-justification, and planning fallacy (Baron, 1998),  
23 counterfactual thinking, and affect-infusion (Forgas, 1995), mistaken belief in the law of small  
24 numbers and the illusion of control (Simon et al., 2000). Baron (1998) argues convincingly;  
25 cognitive factors are the main drivers of some of the most important SDMTs heuristics and biases.  
26 Cognitive factors (Kaish and Gilad, 1991), heuristics (Manimala, 1992) as well as emotions and  
27 affect (Baron, 2008) are the main factors that lead SDMTs to make less than the optimal strategic  
28 decisions. Luciano et al., (2020) argue that strategic decisions that are susceptible to cognitive  
29 biases result in cognitive conflicts, which reduce the quality of strategic decision making. The poor  
30 quality of strategic decision making remains dysfunctional to organizational growth and long-term  
31 sustainability.  
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34 SDMTs often fell prey to heuristic-driven biases and judgmental rules when making strategic  
35 decisions in an uncertain situation. Due to cognitive heuristic-driven biases and rules of thumb,  
36 their technical knowledge and reasoning faculties are impaired, leading to judgment errors and  
37 systematic flaws in strategic decision making (Liu et al., 2021). According to Fust et al., (2021),  
38 managerial decision-making in general, and strategic decision-making in particular, are not  
39 immune to cognitive heuristic-driven biases. Thus, cognitive biases induce decision-makers to  
40 deviate from making rational choices which undermine the quality of strategic decisions (Bratnicki  
41 & Dyduch, 2020). Rational planning is a strategic management theoretical framework primarily  
42 focused on a rational approach to strategic decision making. The research work by Zubac, Danielle,  
43 and Zwikael, (2021) highlighted that the underlying assumption of rational planning is violated  
44 due to cognitive biases. Acciarini et al., (2020) also contend that the presence of cognitive biases  
45 during the strategic decision-making process causes deviations from anticipated goals and incur  
46 wastage of resources. Thus, to make efficient and effective strategic decisions, it is essential for  
47 SDMTs, to understand cognitive biases and their possible impact on the strategic decision-making  
48 process. This study aims to examine the potential impact of cognitive heuristic driven biases,  
49 namely under-confidence, self-attribution, and disposition, on strategic decision making During  
50 the COVID-19 Pandemic, which could be very useful for SDMTs. A limited review of prior studies  
51 of how cognitive heuristics affect strategic decision making is discussed below.  
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## 56 ***2.2 Under-confidence and strategic decision making***

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3 As a heuristic-driven bias, underconfidence is associated with an underestimation of one's own  
4 knowledge and skills (Razmdoost, Dimitriu, & Macdonald, 2015). Some people think that they  
5 know little than they really do because they ponder themselves to be inexpert in decision-making,  
6 such type of behavior is a reflection of underconfidence. Thus, decision-makers tend to be  
7 underconfident when their subjective knowledge is deflated as compared to objective knowledge.  
8 According to Ahmad (2021), the underconfident bias manifests itself through three essential  
9 attributes which reflect the tendency of individuals suffering from this bias: underestimation,  
10 under-precision, and under-placement. The first attribute, which is an underestimation, reflects the  
11 tendency of individuals who undermine their skills and abilities than their actual skills. Likewise,  
12 under-placement is conceived as individuals perceive themselves as inefficient as compared to  
13 others. Similarly, under-precision reflects that individual undermines their judgment and tend to  
14 overestimate risk factors. Under-confidence bias can induce pessimistic behaviour because under-  
15 confidence decision-makers perceive that they have to exhibit limited knowledge; as a result, they  
16 opt for suboptimal choices, which can hinder the quality of strategic decision-making.  
17 Accordingly, decision-makers suffering from under-confident bias may overestimate their  
18 downside risk, resulting in a suboptimal strategic decision (Zubac et al., 2021).  
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22 The linkage between heuristics and strategic decision-making appears to be quite controversial.  
23 Some of the studies expounded in past literature hold the view that strategic decision-making teams  
24 heavily rely on heuristics to avert complexity and always remain able to make quality strategic  
25 choices. The study of Fust et al. (2021) proclaims that heuristic-driven biases outperform and  
26 significantly influence the quality of strategic decisions. The study's findings adhere to the notion  
27 that cognitive conflicts among team members induce innovative ways to reach out to the optimal  
28 strategic choices and improve the quality of strategic decisions (Haider & Mariotti, 2016).  
29 However, literature recognized under-confidence boils down to too much skepticism in one's  
30 knowledge and abilities, which leads to underestimating the probability of desired outcomes.  
31 Therefore, under-confidence may thus be perceived as expecting negative outcomes, despite a  
32 rational basis (Bratnicki & Dyduch, 2020). Accordingly, strategic decision-makers tend to  
33 underestimate the value of existing firm resources and capabilities, which undermine opportunities  
34 in an uncertain environment like the COVID-19 Pandemic. Therefore, there are fewer probabilities  
35 that under-confidence bias may be pragmatic to positively influence the strategic decision making  
36 and a higher level of chances that it can undermine the quality of strategic decisions. Likewise,  
37 decision-makers subject to under-confidence about their abilities may also under-estimate the  
38 strategic choices, which may be significant for value creation. Therefore, teams who are being  
39 entrusted to make strategic decisions should consider the prevalence of under-confidence bias  
40 while making strategic choices to maximize value creation and sustainable growth. Based on the  
41 substantive review, the following hypothesis is deduced:  
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46 *H<sub>1</sub>: Under-confidence bias has a significant negative influence on strategic decision making.*  
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### 49 **2.3 Self-attribution and strategic decision making**

50 Self-attribution bias is the tendency of individuals to attribute good outcomes to their own qualities  
51 and bad outcomes to bad luck or other factors. Individuals would take credit for successes and  
52 blame external factors for failures (Mushinada & Veluri, 2019). Self-attribution bias is divided  
53 into two types: self-enhancing bias, which refers to the propensity of individuals to claim an  
54 unreasonable degree of credit for their successes, and self-protecting bias, which refers to the  
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tendency of people to deny responsibility for their failures. Self-attribution cognitive heuristic also has very bad consequences for strategic decision-making. Bratnicki and Dyduch (2020) assert that cognitive biases such as self-attribution bias lead decision-makers to make irrational choices that degrade strategic decision-making quality. When a member of a strategic decision-making team suffers from self-attribution bias, conflicts among team members emerge, which has a negative impact on the strategic decision-making process. (Acciarini et al., 2020). Thus, Strategic decisions that are susceptible to cognitive biases, namely self-attribution bias, result in cognitive conflicts, which reduce the quality of strategic decision making.

After reviewing the relevant literature, the authors have identified that there is a negative relationship between Self-attribution bias and strategic decision-making, which means that self-attribution bias can lead to worse strategic decisions. Based on a substantive review of the literature following relationship is expected:

*H<sub>2</sub>: self-attribution bias has a significant negative influence on strategic decision making.*

#### **2.4 Disposition effect and strategic decision making**

Constantinide (1984) explained people's approach to realizing the gains and the losses in the context of transaction expenses. When transaction expenses are not present, it is not difficult to recognize losses. If transaction costs are present, losses might be realized in a pattern that reaches a substantial low point. People have a tendency to realize their gains too soon and their losses too late; this type of behavior is a reflection of the disposition effect. There is a negative relationship exist between the disposition effect and strategic decision-making, which means that the quality of strategic decisions is impaired due to the disposition effect. **Prospect theory, which is explained by Kahneman and Tversky (1979), posits that people value their gains and losses with regard to some reference point. They are risk-averse in the domain of gains, and they are risk-seeking in the domain of losses. This nature of strategic decision-makers causes them to focus on strategies that produce positive results while ignoring plans that have poor outcomes. This indicates that they are willing to gamble on the possibility of losing. When they are faced with the choice of either quickly realizing losses or holding losses in the hope of achieving breakeven or facing an additional loss. In this case, they are in the domain of losses and so they are willing to take more risks and so, they do not realize the losses immediately such type of behavior has a negative impact on strategic decision-making. Rau (2015) argues convincingly that people who work in a group are more susceptible to the disposition effect than individuals, which has a negative impact on their decision-making process.**

The literature suggests that the disposition effect influences the strategic decision-making process directly or indirectly. The disposition effect causes strategic decision-makers to make irrational decisions that have a negative impact on strategic decision-making.

*H<sub>3</sub>: Disposition bias has a significant negative influence on strategic decision making.*

### **3. Research Methodology**

#### **3.1 Sampling and Data Collection**

To achieve the research objective, the sample of this study includes top-level management from firms located in the twin cities (Rawalpindi-Islamabad) of Pakistan. **The selection of twin cities for data collection is motivated by the fact that the inhabitants have diverse social, cultural,**

demographic characteristics and most enterprises have their head office in these locations. The research by Anwar, Rehman, and Shah, (2018) asserts that owners and top managers are more responsible for strategic planning. A total number of 450 questionnaires were directly delivered to top-level managers operating in the service, trading, and manufacturing firms located within the twin cities of Pakistan during the COVID-19 pandemic. Of these, 289 were returned. Out of which 76 questionnaires were found incorrectly filled and have missed values hence these were dropped. Thus 213 questionnaires were fully and correctly completed by the target population and used for analysis, representing an effective response rate of 47.33%. The data for this study is taken between May 2020 to September 2020. the choice of data selection is motivated by the fact that Pakistan experiences its first COVID-19 wave during this time frame. A convenient, purposively sampling technique and snowball method were used for data collection.

Data collection methods include structured interviews, unstructured interviews, semi-structured interviews, observation, and group discussions. The self-reported questionnaire is one of the most common methods of quantitative research, and it was chosen as the data collection method for this study because it was more time and cost-effective than other methods, such as interviews, video conferencing, and brainstorming. (Bryman & Bell, 2007). Another reason was the natural tendency among top-level management to avoid personal interviews or to give ample time to researchers. Questionnaires were considered the best method for data collection in this situation as it allowed the respondents to complete them whenever they had free time and without the possibility of direct influence from the researchers. Each copy of the questionnaire accompanied by a cover letter which clearly stated that: confidentiality and secrecy of information will be strictly maintained; the data will be used only for research purposes, and venture information will not appear in any document meant for public access.

### ***3.2 Operationalization of Variables***

The main objective of the research is to explore how cognitive heuristic-driven biases influence strategic decision-making. To achieve this research objective, a survey method was used and where possible, developed a questionnaire based on existing measurement instruments from the literature. If necessary, the authors modified the scales to make them more suitable to the context of the Pakistani strategic decision-making-heuristics relationship. For all multi-item construct measurements, the authors used a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). All constructs were operationalized with reflective measurement models. Simultaneously, five strategic management experts were engaged in the assessment of the developed questionnaire. This was done specifically to ensure the validity and reliability of the instrument used for this study. Furthermore, a pilot test was conducted to fine-tune the questionnaire for reliable data collection. Using data collected from 53 respondents, a pilot study was undertaken to determine the reliability of the items contained in the instrument. 110 questionnaires were delivered by hand to respondents for pilot testing and collected immediately after they completed them. Only 78 questionnaires were received, with 53 of them being usable, resulting in a 48.18 percent effective response rate. The Cronbach's Alpha coefficient estimated the degree of the variable's consistency. The initial Cronbach's Alpha value of strategic decision-making was 0.396, indicating that the questionnaire for this variable cannot be used for data collection. To improve the questionnaire's quality, the authors removed two questions of strategic decision-making. After removing two items

of the strategic decision-making questionnaire, overall, the variables presented values ranging between 0.724-0.871 and the F test is significant for each factor (See Table 1), thus being classified as satisfactory. Therefore, the estimation of all components incorporated into the variables provided a good representation of each of the variables under study, thus allowing further analysis (correlation analysis and regression analysis). More Details related to the operationalization of variables are discussed below.

**Table 1.**  
**Analysis of Variables Reliability Using the Cronbach's Alpha**

Variables	Cronbach's alpha	F (sig)
under-confidence bias	0.836	4.778(0.000)
Self-attribution bias	0.849	7.604(0.000)
Disposition effect bias	0.871	2.331(0.037)
Strategic decision-making	0.724	11.997(0.000)

### 3.2.1 Independent Variables

The authors use heuristic-driven biases namely as under-confidence, self-attribution, and disposition effect as predictor variables: three items were used to measure under-confidence heuristic. The items were adopted from (Ahmad, 2021). To measure under-confidence, respondents were asked to what extent they agree/disagree with “*You feel your skills and knowledge of strategic planning is not enough to make long term strategic decision for the firm*” and “*You feel self-distrustful about your abilities to do better than others in making strategic choices*” etc. Self-attribution was also measured with three items, adopted from (Mushinada, and Veluri, 2019) To measure self-attribution, respondents were asked to what extent they agree/disagree with “*Your past strategic decision-making failures were, usually, due to incorrect recommendations or advice from board members/policymakers*” and “*your past strategic decisions failures were, usually, due to bad luck and other related factors*” etc. The authors adopted a scale from (Baker, Kumar, Goyal, and Gaur, 2019). to measure the disposition effect. Three items were used to measure the disposition effect. To measure, respondents bias, respondents were asked to what extent they agree/disagree with “*you are often reluctant to realize the success of your choices due to external factors*” and “*You do not react quickly to good or bad news and tend to make abrupt and unplanned changes during the strategic decision-making*” etc.

### 3.2.2 Dependent Variable

The authors use strategic decision-making as endogenous variables: Eight items were used to measure strategic decision-making. Questions were adapted from Ahmad, Shah, and Abbass, (2021). To measure strategic decision-making, respondents were asked to what extent they agree/disagree with “*Your firm's philosophy is to involve all levels of management in major strategic decisions*” and “*You practice a high level of delegation of key strategic decision making in this company*” etc.

### 3.3 Data Analysis Method

The data gathered through the survey were examined by utilizing SPSS software. Firstly, a pilot test was conducted for checking the validity and reliability of the instrument. Then statistical techniques were employed to meet the aims of the study, including Cronbach's alpha test,

descriptive statistics, correlation analysis and regression analysis. The statistical techniques used in this study are consistent with other studies on similar topics conducted in different environments, such as those of Shah et al. (2018) and Hayat and Anwar (2016) and several others. Kumar and Goyal (2015) systematically reviewed quantitative studies on investment management decision-making to identify gaps for future research in behavioural strategy. Their study reveals that 65.81% of studies used regression analysis in this area of study. Thus, we have used a regression model for testing hypotheses

### 3.4 Econometric Model

The general form of the econometric equation can be stated as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where Y is the dependent variable, which is a measure of the strategic decision-making,  $\beta_0$  is an intercept,  $\beta_1, \beta_2, \beta_3$  are the Slopes, and  $X_1, X_2, X_3$  are the explanatory variables that are a measure of the heuristic-driven biases namely under-confidence, self-attribution, and the disposition effect. Here,  $\varepsilon$  is an error term. The expanded model for this study is stated as follows:

$$SDM = \beta_0 + \beta_1 UCD + \beta_2 SA + DE + \varepsilon$$

where  $\beta_0$  is the constant term,  $\beta_1$  is the coefficients of the under-confidence bias,  $\beta_2$  is the coefficients of the self-attribution bias, and  $\beta_3$  is the coefficients of the disposition effect. UCD is under-confidence bias, SA is self-attribution bias, DE is disposition effect bias, SDM is strategic decision-making and  $\varepsilon$  is the error term.

## 4. Empirical Findings

### 4.1 Statistics for demographic variables

Table 2 displayed Statistics for demographic characteristics of the sample used for analysis. The sample for the study was composed of 87.3% male and 12.7% female top-level managers. This composition of sample symbolizes the social and cultural norms of Pakistan. The sample of the study was comprised of 32.4% service, 40.4% trading and 27.2% manufacturing sector firms. In terms of qualification, 56.8% held a master's degree, 16.9% held a bachelor's degree, 20.7% of the managers had done M.S./MPhil, while 5.6% of the managers had done PhD. In terms of age groups, the major portion of the sample (about 44.6%) lied within the age level of 41-50 years, while 31.9% representing 31-40 years, 9.9% representing 20-30 years, and 13.6% lied within the age level 50 above. The sample for the study included 19.7% managers having strategic decision-making experience 0-5 years, 53.5 % managers who have strategic decision-making experience from 6 to 10 years, 18.3% managers have strategic decision-making experience from 11-15 years as well as 8.5% managers having experience 15 years above for strategic management.

**Table 2.**  
**Statistics for demographic variables**

Category		Frequency	Percentage %
<b>Gender</b>	Male	186	87.3
	Female	27	12.7
<b>Age</b>	20-30 Years	21	9.9
	31-40 Years	68	31.9
	41-50 Years	95	44.6
	50 above Years	29	13.6
<b>Qualification</b>	Bachelors	36	16.9
	Masters	122	56.8
	Ms/Mphill	44	20.7
	PhD	11	5.6
<b>Experience as a strategic decision-maker</b>	0-5 Years	42	19.7
	6-10 Years	114	53.5
	11-15 Years	39	18.3
	More than 15 Years	18	8.5
<b>Industry</b>	Service	69	32.4
	Trading	86	40.4
	Manufacturing	58	27.2

#### 4.2 Correlation analysis

Pearson correlations among the variables are displayed in Table 3. It gives initial support for the proposed hypothesis of the research. The output of the analysis shows the correlation coefficient for four variables. The results show that each variable is perfectly correlated with itself because the value of the correlation coefficient is one ( $r = 1$ ). The results reveal that cognitive heuristic-driven biases namely under-confidence bias ( $r = -0.466$ ,  $p < 0.01$ ), self-attribution bias ( $r = -0.338$ ,  $p < 0.01$ ), and disposition effect bias ( $r = -0.266$ ,  $p < 0.01$ ) were negatively related to strategic decision-making. These findings suggest that cognitive heuristic biases can impair the quality of strategic decision-making. Psychologically, this means that cognitive heuristic-driven behavioral biases worsen strategic decision-making because managers who are suffering from heuristic-driven biases cannot make rational decisions and they make poor decisions related to strategic management. These findings are consistent with research by Ahmad et al. (2021), who reported a negative correlation between heuristic-driven biases and the entrepreneurial strategic decision-making

**Table 3.**  
**Means, standard, deviations Pearson correlation**

Variables	Mean	SD	1	2	3	4
Under-confidence bias	2.7605	0.67496	1			
Self-attribution bias	3.8373	0.58444	-0.191	1		
Disposition effect bias	3.0351	0.78472	0.156*	0.136	1	

Strategic decision-making	3.7353	0.32126	-0.466**	-0.338**	-0.266**	1
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Note: N=213, \*p < 0.05, \*\*P < 0.01

### 4.3 Regression analyses

Hypotheses were explicitly tested using hierarchical regression analysis. Cognitive heuristic-driven biases namely under-confidence, self-attribution, and disposition effect were regressed on strategic decision-making. In the first step, gender, age, education, and experience were entered as control variables, and only their R<sup>2</sup> value is shown, demonstrating that 6.1 per cent of the dependent variable is explained by the control variables. In the second step, under-confidence, self-attribution, and disposition effect were entered and the values of their R<sup>2</sup>, change in R<sup>2</sup> and beta (β) are reported. The value of R<sup>2</sup> = 0.45 implies that under-confidence, self-attribution, and disposition effect collectively account for approximately 45% of the variation in strategic decision-making, but the remaining 55% is not captured in this model and needs to be explored. The value of the F-statistic (3.492, sig 0.000) is significant and indicates that the model is fit. The change in R<sup>2</sup> indicates that, after controlling for demographics, the value of R<sup>2</sup> is significantly affected

The hypotheses predict that cognitive heuristics are negatively linked with the strategic decision-making. To test these predictions, we regressed strategic decision-making on cognitive heuristics. Results reported in Table 4 show that under-confidence cognitive heuristic (β 5 = -0.210, p < 0.001) was a significant predictor of the strategic decision-making, supporting H1. A significant negative relationship was found between the self-attribution of cognitive heuristic (β 5 = -0.157, p < 0.001) and strategic decision-making, providing support for H2. Similarly, a significant negative relationship with strategic decision-making was found for the disposition effect cognitive heuristic (β 5 = -0.141, p < 0.001), which supports H3. Overall, the findings suggest that during the Covid-19 pandemic, strategic managers frequently succumbed to cognitive heuristic-driven biases when making strategic decisions, resulting in irrational decisions related to strategic management.

**Table 4.**  
**Result of regression analyses**

Predictors	Strategic Decision-Making		
	β	R <sup>2</sup>	Δ R <sup>2</sup>
Step 1		0.061	
Control variable			
Step 2			
under-confidence bias	-0.210***		
Self-attribution bias	-0.157***		
Disposition effect bias	-0.141***	0.45	0.431**

Note: N=213, \*\*P < 0.01, \*\*\*p < 0.001; control variables were gender, age, qualification, and experiences.

## 5. Discussion

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3 Strategic decisions are becoming increasingly difficult for all types of managers, especially in the  
4 wake of the Covid-19 pandemic. When the decision-making process is hampered by instabilities,  
5 it becomes more difficult than ever before. A rapidly changing environment makes it difficult to  
6 take advantage of available opportunities and resources and make sound decisions related to  
7 strategic management based on all available information. It is likely that the opportunity will no  
8 longer be available by the time decisions are reached. As a result of these complicated  
9 circumstances like the Covid-19 pandemic, strategic decision-makers frequently succumbed to  
10 cognitive heuristics when making strategic decisions. In general, these heuristics are beneficial and  
11 useful when time is limited (Waweru et al., 2008), but sometimes they lead to biases (Kahneman  
12 and Tversky, 1974; Ritter, 2003).  
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16 This study has expanded the prospect theory and bounded rationality theory with regard to strategic  
17 decision-making by measuring the perceptions of top-level managers during the Covid-19  
18 pandemic of their cognitive heuristics and the strategic decision-making. This study's idea was  
19 developed from the existing literature and was tested with correlation and regression analysis using  
20 SPSS software. This study's findings confirm that during the Covid-19 pandemic top-level  
21 managers often fell prey to cognitive heuristics when making the strategic decision to reduce the  
22 risk of losses. As a result, they make irrational decisions, which in turn adversely affect their  
23 strategic decisions. The findings of the article indicate that cognitive heuristics namely under-  
24 confidence, self-attribution, and disposition effect have a markedly negative influence on the  
25 strategic decision-making during the Covid-19 pandemic in an emerging economy.  
26 Psychologically, this means that cognitive heuristics deteriorates the quality of the strategic  
27 decision-making process because managers who are suffering from cognitive heuristics s cannot  
28 make rational decisions and they make poor decisions related to strategic management activities.  
29 This finding is consistent with research by Ahmad, Shah, and Abbass (2021) who have found that  
30 cognitive heuristics negatively influence strategic decisions made by business actors such as  
31 entrepreneurs  
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35 In the heuristics debate, we have two streams of thought: Tversky and Kahneman (1974) postulated  
36 that the human mind relies on heuristics strategies – representativeness, availability,  
37 overconfidence, anchoring-adjustment heuristics – affected by systematic and predictable errors  
38 (biases), that allows only a second-best decision. Contrary to this position, Gigerenzer and his  
39 research group (1999) claim that heuristics can be successful in complex and uncertain  
40 environments as they guide the decision-maker in searching information “by effectively and  
41 efficiently exploiting information structures in the environment” (Bertel and Kirlik, 2010).  
42 Overall, the results of this article are consistent with Tversky and Kahneman (1974) because, in  
43 emerging markets, socio-political factors seem to create uncertainty in a highly volatile market as  
44 a result manger often fell prey to heuristics that lead to errors in judgment, ultimately their strategic  
45 decisions affected adversely.  
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## 49 **6. Conclusion**

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51 The present article demonstrates the cognitive heuristics and their impact on strategic decision-  
52 making during the Covid-19 pandemic in an emerging economy such as Pakistan. The results of  
53 the study divulge that managers often used cognitive heuristics when making strategic decisions,  
54 specifically, reliance on cognitive heuristics such as under-confidence, self-attribution, and  
55 disposition effect, which lead them to make less than an optimal strategic decision. Our findings  
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highlight cognitive heuristics negatively influence the strategic decision-making process in an emerging economy like Pakistan during the Covid-19 pandemic. Psychologically, this means that in emerging markets cognitive heuristics can impair the quality of strategic decision-making.

In emerging markets, managers have to cope with additional difficulties in making strategic decisions. Socio-political factors seem to create uncertainty in a highly volatile market, deeming them to be extremely conservative in their strategic decisions and probably, one of the major reasons they are suffering from the cognitive heuristics when making strategic decisions. When managers use heuristics, their technical knowledge and reasoning faculties are impaired, leading to errors in judgment. As a result, they make irrational decisions, which in turn adversely affect their strategic decision-making. The high levels of economic uncertainty and a lack of information have an influence on the strategic decisions made by top-level management in an emerging economy such as Pakistan. Furthermore, the present study suggests that one of the major differences in strategic decisions made by emerging and developed economies is the socio-economic background against which strategic decisions are made.

### ***6.1 Theoretical implications***

The findings of the current research contribute to the existing body of literature on cognitive heuristic-driven biases and strategic decision-making in at least three ways. First, the present study improves the understanding of the role that cognitive heuristics plays in strategic decision-making. The current study provides an explanation for how and why managerial behavior deviates from rationality and causes judgment mistakes in strategic decision making. The findings of the current research offer novel contributions to the existing literature by suggesting that strategic decision-makers are behaviorally biased which adversely affects their strategic decision-making during the COVID-19 pandemic in an emerging economy. Our work is a pioneering study in this context. To the best of the author's knowledge, the underconfidence, self-attribution, and disposition effect have never been systematically tested with strategic decision-making, nor have its predictive power been examined in the emerging economy during the COVID-19 pandemic. Hence, the present study also advances an important stream of existing research, which posits that the human mind relies on heuristic strategies affected by systematic and predictable errors (biases), that allow only sub-optimal decisions (Tversky & Kahneman, 1974). Second, in this study, the authors combine the theoretical fields of cognitive psychology and cognitive heuristics research with strategic decision-making literature. Thus, this article makes a theoretical contribution by providing further insights into the managerial heuristics–decision-making relationship by exploring how strategic decisions are affected by their underconfidence self-attribution, and disposition effect heuristics. This has important practical, as well as theoretical implications since SDMTs usually act in environments characterized by a high level of uncertainty and ambiguity (Sarasvathy, 2001). In doing so, the authors address “the thinking-feeling-doing connection”. This study extended knowledge on cognitive heuristics and their effect on strategic decision-making in Pakistan—an emerging economy.

Third, studies conducted in western countries cannot be generalized to Asian nations and may not apply in the Pakistani context, because of the difference in contextual paradigm (i.e., individualist v/s collectivist). This is one reason why this study also enhances the understanding of the psychology of the choices of managers from an emerging market. Most articles concentrate on



individualistic cultures and well-developed markets, and very little is known about the profiles and conduct of strategic decision-makers in collectivist cultures and emerging markets. This present article also helps fill this gap in the literature by considering how cognitive heuristics influence strategic decision-making in collectivist societies, particularly in Pakistan. The study provides a significant and meaningful contribution to the prevailing young and emerging markets paradigm. Strategic decision-makers are not fully aware of behavioral biases and their effect on strategic decision-making, especially in emerging economies so it will be useful for them to become aware of these biases and to gauge the impact of their own cognitive and emotional factors on their strategic decision-making. In emerging markets, strategic decision-makers have to cope with additional difficulties in making strategic decisions. Sociopolitical factors seem to create uncertainty in a highly volatile market, deeming strategic decision-makers to be extremely conservative in their strategic decisions and probably, one of the major reasons they are suffering from the cognitive heuristics when making strategic decisions.

### ***6.2 Practical Implications***

In addition to the above theoretical contributions, the findings of this research have also generated important policy implications for CEOs, executives, managers, and policymakers. This study provides insight into policymakers and regulators and helps them understand the mechanism and role of cognitive heuristics in strategic decision-making. The results of the study suggested that strategic decision-making relies on fast and frugal rules that would not result in better outcomes in an emerging economy like Pakistan. Based on findings, the researcher would like to suggest that strategic decision-makers should not rely on cognitive heuristics while making strategic decisions, but conduct a proper analysis of business opportunities, develop quantitative criteria and establish objectives and constraints, based decisions on their financial capability and experience levels instead of making strategic decisions by using cognitive heuristics and sentiments solely. Academicians can formulate new behavioral models that can depict the solutions to dealing with an uncertain situation like COVID-19. Policymakers like strategic decision-making teams can formulate crisis management strategies based on behavioral strategy concepts to cope with situations like COVID-19 in the future.

Strategic policymakers also follow guiding principles provided below to mitigate the negative effect of cognitive heuristic-driven biases. For example, strategic policymakers mitigate the chances of being fell prey to cognitive heuristic biases if they specify the algorithm for strategic decisions in advance and to employ it dispassionately. Experience also diminishes the inadvertent consequences played by cognitive heuristic-driven biases. Over time through experience, they can learn how to overcome the negative effect of heuristic biases (Anandarajan et al., 2008). They can mitigate the impact of cognitive heuristic-driven biases by maintaining self-discipline, involving all levels of management in the strategic decision-making process and following guiding principles of the strategic management team when making strategic decisions (Ahmad, Shah, & Abbass, 2021).

### **7. Directions for future research**

As expressed above, this study investigated three cognitive heuristics in the specific context of Pakistan during the Covid-19 pandemic and the sample size is small. It is suggested that further research may be carried out to confirm the findings of this study with a larger sample size and

more diverse respondents after the Covid-19 pandemic. Furthermore, we suggest exploring heuristics factors which influence strategic decision-making, by taking mediator and moderator variables to clearly understand how psychological factors affect strategic decision-making. It may also be helpful if a study were carried out that covers data from three different markets, like one from a developed country, second from a developing country and the third from not so developed economy. Such a comparative study can prove to be a meaningful addition to the body of knowledge on strategic management.

## References

- Acciarini, C., Brunetta, F., & Boccardelli, P. (2020). Cognitive biases and decision-making strategies in times of change: a systematic literature review. *Management Decision*.
- Ahmad, M. (2021), "Does under-confidence matter in short-term and long-term investment decisions? Evidence from an emerging market.", *Management Decision*, Vol. 59 Issue: 3, pp. 692-709.
- Ahmad, M., Shah, S.Z.A. and Abbass, Y. (2021), "The role of heuristic-driven biases in entrepreneurial strategic decision-making: evidence from an emerging economy", *Management Decision*, Vol. 59 Issue: 3, pp. 669-691.
- Ahmad, M., and Shah, S.Z.A. (2021), "Overconfidence Heuristic-Driven Bias in Investment Decision-Making and Performance: Mediating effects of risk perception and moderating effects of financial literacy." *Journal of Economic and Administrative Sciences*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JEAS-07-2020-0116>
- Amason, A. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of management journal* 39(1), 123-148.
- Barberis, N., & Xiong, W. J. J. o. F. E. (2012a). Realization utility. *Journal of Financial Economics*, 104(2), 251-271.
- Bertel, S. and Kirlik, A. (2010), "Fast and frugal heuristics", *Wiley Encyclopedia of Operations Research and Management Science*. doi: 10.1002/9780470400531.eorms0319.
- Barberis, N., & Xiong, W. J. J. o. F. E. (2012b). Realization utility. 104(2), 251-271.
- Bratnicki, M., & Dyduch, W. (2020). Understanding cognitive biases in strategic decisions for value creation and capture. In *Contemporary Challenges in Cooperation and Coopetition in the Age of Industry 4.0* (pp. 359-373): Springer.
- Calabretta, G., Gemser, G., & Wijnberg, N. M. J. O. S. (2017). The interplay between intuition and rationality in strategic decision making: A paradox perspective. 38(3-4), 365-401.
- Chang, T. Y., Solomon, D. H., & Westerfield, M. (2016). Looking for someone to blame: Delegation, cognitive dissonance, and the disposition effect. *The Journal of Finance* 71(1), 267-302.
- Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of behavioral decision making*, 20(4), 425-451.

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60
- Chen, G., & Kim, K. O. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of behavioral decision making*, 20(4), 425-451.
- Das, T., & Teng, B. S. (1999). Cognitive biases and strategic decision processes: An integrative perspective. *Journal of management studies*, 36(6), 757-778.
- Feng. (2010). Managers' self-serving attribution bias and corporate financial policies. Available at SSRN 1639005.
- Fischhoff, B. J. J. o. E. P. H. p. (1975). Hindsight is not equal to foresight: the effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology*, 1(3), 288.
- Fust, A. P., Jenert, T., Winkler, C., & Kolbe, J. P. (2021). *Cognitive Biases and Strategic Decision-Making: A Self-Regulation Perspective*. Paper presented at the Academy of Management Proceedings.
- George, B., & Desmidt, S. (2018). Strategic-decision quality in public organizations: An information processing perspective. *Administration Society*, 50(1), 131-156.
- Goodie, A.S. and Crooks, C.L. (2004), "Time-pressure effects on performance in a base-rate task", *The Journal of General Psychology*, Vol. 131 No. 1, pp. 18-28.
- Gigerenzer, G. and Gaissmaier, W. (2011), "Heuristic decision making", *Annual Review of Psychology*, Vol. 62, pp. 451-482. Goldstein, D.G. and Gigerenzer, G. (1999), "The recognition heuristic: how ignorance makes us smart", *Simple Heuristics that Make us Smart*, Oxford University Press, Northamptonshire, pp. 37-58
- Haider, S., & Mariotti, F. (2016). Unfolding critical events and strategic decisions: the role of spatial and temporal cognition. *Management Decision*.
- Hirshleifer, D., & Luo, G. Y. (2001). On the survival of overconfident traders in a competitive securities market. *Journal of Financial Markets*, 4(1), 73-84.
- Hoffmann, A., & Post, T. (2014). Self-attribution bias in consumer financial decision-making: How investment returns affect individuals' belief in skill. *Journal of Behavioral Experimental Economics*, 52, 23-28.
- Jehn, K. A. J. A. s. q. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative science quarterly*, 256-282.
- Johnson, D. (2013). The evolution of error: Error management, cognitive constraints, and adaptive decision-making biases. *Trends in ecology evolution*, 28(8), 474-481.
- Kahneman, D., & Tversky, A. (2013). Prospect theory: An analysis of decision under risk. In *Handbook of the fundamentals of financial decision making: Part I* (pp. 99-127): World Scientific.
- Langer, E. J. J. J. o. p. (1975). The illusion of control. *Journal of personality social psychology*, 32(2), 311.
- Li, F. J. A. a. S. (2010). Managers' self-serving attribution bias and corporate financial policies.
- Liu, F., Jarrett, M., & Maitlis, S. J. T. L. Q. (2021). Top management team constellations and their implications for strategic decision making. *The Leadership Quarterly* 101510.
- Luciano, M. M., Nahrgang, J. D., & Shropshire, C. J. A. o. M. R. (2020). Strategic leadership systems: Viewing top management teams and boards of directors from a multiteam systems perspective. 45(3), 675-701.

- 1  
2  
3 Malmendier, U., & Tate, G. J. T. j. o. f. (2005). CEO overconfidence and corporate investment.  
4 60(6), 2661-2700.
- 5 Marshall, J. A., Trimmer, P. C., Houston, A. I., & McNamara. (2013). On evolutionary  
6 explanations of cognitive biases. *Trends in ecology evolution* 28(8), 469-473.
- 7  
8 Mushinada, V. N. C., & Veluri, V. S. S. J. R. o. B. F. (2019). Elucidating investors rationality and  
9 behavioural biases in Indian stock market. *Review of Behavioral Finance*.
- 10 Parayitam, S., & Papenhausen, C. (2018). Strategic decision-making: The effects of cooperative  
11 conflict management, agreement-seeking behavior and competence-based trust on decision  
12 outcomes. *Management research review*.
- 13 Parayitam, S., & Papenhausen, C. J. J. o. A. i. M. R. (2016). Agreement-seeking behavior, trust,  
14 and cognitive diversity in strategic decision making teams: Process conflict as a moderator.  
15 *Journal of Advances in Management Research*
- 16  
17  
18  
19 Pelster, M., & Hofmann, A. J. J. o. B. (2018). About the fear of reputational loss: Social trading  
20 and the disposition effect. *Journal of Banking Finance*, 94, 75-88.
- 21  
22 Razmdoost, K., Dimitriu, R., & Macdonald, E. (2015). The effect of overconfidence and  
23 underconfidence on consumer value. *Psychology Marketing*, 32(4), 392-407.
- 24  
25 Rau, H. A. (2015). The disposition effect in team investment decisions: Experimental  
26 evidence. *Journal of Banking & Finance*, 61, 272-282.
- 27 Sarasvathy, S.D. (2001), "Causation and effectuation: toward a theoretical shift from economic  
28 inevitability to entrepreneurial contingency", *Academy of Management Review*, Vol. 26  
29 No. 2, pp. 243-263.
- 30  
31 Shefrin, & Statman. (1985). The disposition to sell winners too early and ride losers too long:  
32 Theory and evidence. *The Journal of finance*, 40(3), 777-790.
- 33 Shefrin, H., & Statman, M. (1985). The disposition to sell winners too early and ride losers too  
34 long: Theory and evidence. *The Journal of finance* 40(3), 777-790.
- 35  
36 Shefrin, H. (2007), "How the disposition effect and momentum impact investment professionals",  
37 *Journal of Investment Consulting*, Vol. 8 No. 2, pp. 68-79.
- 38  
39 Shrivastava, P., & Grant, J. H. J. S. m. j. (1985). Empirically derived models of strategic  
40 decision-making processes. *Strategic management journal* 6(2), 97-113.
- 41  
42  
43 Shah, S. Z. A., Ahmad, M., & Mahmood, F. (2018). Heuristic biases in investment decision-  
44 making and perceived market efficiency. *Qualitative Research in Financial Markets*, Vol.  
45 10 No. 1, pp. 85-110. <https://doi.org/10.1108/QRFM-04-2017-0033>
- 46  
47 Simon. (1990). Bounded rationality. In *Utility and probability* (pp. 15-18): Springer.
- 48 Simon, Houghton, S., & Aquino, K. (2000). Cognitive biases, risk perception, and venture  
49 formation: How individuals decide to start companies. *Journal of business venturing*,  
50 15(2), 113-134.
- 51  
52 Tversky, A., & Kahneman, D. (1989). Rational choice and the framing of decisions. In *Multiple*  
53 *criteria decision making and risk analysis using microcomputers* (pp. 81-126): Springer.
- 54 Tversky, A., & Kahneman, D. J. S. (1974). Heuristics and biases: Judgement under uncertainty.  
55 185(4157), 1124-1130.
- 56  
57  
58  
59  
60

1  
2  
3 Zubac, A., Danielle, & Zwikael. (2021). The strategy and change interface: understanding  
4 “enabling” processes and cognitions. *Management Decision*  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
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