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Demystifying Intuitional and Rational Decision-Marking: Symmetrical and Asymmetrical Analysis

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Abstract

Effective decision-marking in the dynamic business environment is key to business performance. The relationship between intuition and rationality in decision-making has long been discussed in the relevant literature, albeit with discrepant views and inconsistent findings. Drawing on cognitive experiential self-theory (CEST), this paper examines an integrated model of antecedents and decision outcomes of intuition and rationality and how intuition and rationality in different scenarios interplay to influence decision outcomes. The study was undertaken in Australia and New Zealand. Both symmetrical (structural equation modeling or SEM) and asymmetrical (fuzzy-set qualitative comparative analysis or fsQCA) methods were employed to capitalize on a holistic understanding of the proposed relationships. The findings show that the fsQCA testing presents more insightful information about how different levels of factors inform intuitive and/or rational decision making and outcomes, and how it relates to SEM findings. This paper provides a novel perspective on the strategic decision-making process by integrating various decision-making situations and by deploying fuzzy or configurational and linear or symmetrical methods. The results also have implications for the relevant practitioners to consider the appropriate decision situations and their preferred decision styles to achieve optimal decision outcomes.

Keywords

intuition, rationality, CEST, strategic decision making, SEM, fsQCA

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Introduction

The rapid change and dynamics of marketing environment in unprecedented economic and social upheavals pose challenges for marketers to make appropriate decisions without an optimal balance of intuition and rationality (Hodgkinson & Sadler-Smith, 2018). Marketing professionals frequently encounter challenges in articulating and rationalizing their strategic decisions, particularly when intuition is a significant factor in their decision-making process (Elbanna et al., 2013). Strategic decisions are those non routine, important decisions that involve allocating organizational resources to enable the organization to achieve or maintain a competitive advantage. In a more general sense, strategic decisions are decisions about how the organization chooses to align its competencies with the threats and opportunities in the environment (Ashmos et al., 1998). The use of intuition and rational analysis and their respective roles in the decision-making process has been widely discussed. The paradox perspective posits that employing both intuitive and rational decision-making approaches simultaneously can generate tension because of the disparities in thinking styles (Calabretta et al., 2017; Keller & Sadler-Smith, 2019). Conversely, according to the cognitive experiential self-theory (CEST), the concurrent utilization of both styles can result in a seamless, harmonious, and synergistic process (Epstein, 1994, 1998, 2008). Hodgkinson and Sadler-Smith (2018) affirm that CEST not only acknowledges the differentiation between intuition and rationality but also provides more compelling and foundational insights into how they jointly influence decision making.

Existing studies (e.g. Elbanna et al., 2015; Riedl et al., 2013) have delved into the ramifications of intuitive and/or rational decision-making styles, yielding outcomes with both positive and negative implications. For instance, Kaufmann et al. (2014) found that a positive correlation between rationality and financial performance, while experience-based intuition was linked to both financial and non-financial performance. In their subsequent investigation, Kaufmann et al. (2017) identified a positive association between rationality and both financial and non-financial performance, but no such relationship was observed for experience-based intuition. These inconsistent findings are possibly due to the exclusion of

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contextual factors under which rationality and intuition may be influenced (Basel & Brühl, 2013; Elbanna & Child, 2007b; Elbanna et al., 2013; Hodgkinson & Sadler-Smith, 2018). Existing research suggest that achieving improved decision outcomes necessitates the consideration of individual factors and challenges within the tasks at hand as well as in the broader environmental context (Basel & Brühl, 2013; Hodgkinson & Sadler-Smith, 2018). Consequently, this paper examines how the contexts (the decision-specific individual, environmental, and organizational factors) affect decision-making styles (intuitive vs. rational) and how the styles influence decision-making outcomes.

Previous research primarily focused on exploring the connections between decision styles (e.g. intuition and rationality) and the outcomes, often overlooking the potential influence of contexts and conditions on these outcomes (e.g. Elbanna et al., 2015; Kaufmann et al., 2017). Furthermore, these earlier studies heavily relied on symmetrical correlational methods to determine the isolated effects of decision outcome predictors, rather than considering their combined impact. Typically, studies examining interactions using correlational methods were confined to two-way or three-way interactions (e.g. Elbanna & Child, 2007a; Gilley et al., 2002; Goll & Rasheed, 2005; Hough & White, 2003), failing to capture the intricate nature of the environment for decision making. To reveal a comprehensive insight into the interplay between decision contexts, the utilization of different decision-making styles, and their influence on the organizational outcomes for decision-making, fuzzy-set Qualitative Comparative Analysis (fsQCA) is used in this study, a method based on a configurational perspective (Fiss, 2011; Ragin, 2008b). Table 1 summarizes the key literature and highlights the position of our current research.

Rooted in complexity theory, this method yields insights grounded in three fundamental principles. First, conjunction: it highlights that outcome variables was caused by the interdependence and the interplay between more than one condition variables. Second, equifinality: this principle reveals the possibility of multiple routes resulting in a particular outcome. Third, asymmetry: it suggests that a configuration contains specific attributes that are related to a positive outcome in one context while being unrelated or inversely associated with another (Misangyi et al., 2017). FsQCA excels in unveiling synergistic effects, emphasizing the impact of attribute combinations rather than isolated effects. Moreover, it takes into account all contextual factors and their interactions with decision-making styles. This approach offers fresh perspectives and identifies distinctive decision-making contexts for strategic decision-makers. The subsequent sections provide the theoretical foundation and hypothesis development for the proposed relationships, outline the methodology for testing these hypotheses, present the study's results, and engage in a discussion. Our research ends by discussing the implications of the research findings and pointing to future research avenues.

Conceptual framework

Cognitive experiential self-theory (CEST) and decision-making

CEST represents a prominent example within the realm of dual-process theories, extensively discussed in the decision-making literature (Hodgkinson & Sadler-Smith, 2018; Wang et al., 2017). The fundamental premise of dual-process theories posits that human information processing operates through two distinct yet complementary mechanisms: automatic processing, commonly referred to as intuition, and controlled information processing, considered as rationality (Hodgkinson & Sadler-Smith, 2018). Intuition empowers individuals to swiftly and effortlessly navigate vast amounts of information, while rationality entails meticulous and in-depth analysis, accompanied by conscious awareness (Keller & Sadler-Smith, 2019). Within the framework of CEST, several key assumptions are made: (1) parallel operation: intuitive and rational decision processes operate concurrently; (2) competitive and cooperative interaction: these two decision styles interact with each other in both competitive and cooperative manners; (3) combined influence: behaviors are shaped by a combination of both intuitive and rational systems; (4) primary determinants: in certain situations, behaviors can be predominantly guided by either the intuitive or rational style; and (5) contextual dependence: the decision maker and the decision context determine the extent of the roles played by different decision styles (Epstein, 2008).

CEST defines intuition as judgments imbued with emotion, emerging swiftly through holistic associations that are usually non-conscious (Dane & Pratt, 2007), capable of surpassing analytical reasoning in specific contexts and yielding judgments as good as or even better than those derived from rational decision styles (Epstein, 2008). Within the framework of CEST, Epstein et al. (1996, p. 391) advised there are instances where intuition and rationality may appear to clash, resulting in a "struggle between feelings and thoughts." Nevertheless, in most situations, their interaction is characterized by seamless, harmonious, and synergistic operations (Pacini & Epstein, 1999). This synchronized integration enriches the information processing by incorporating holistic elements, proving particularly effective in navigating complex scenarios (Epstein, 2008).

Intezari and Pauleen (2019, p.11) defined decision situations as "situations when decision making is inevitable . . . and the decision maker must begin to define the problem and get involved in the decision-making process." Researchers (Basel & Brühl, 2013; Elbanna et al., 2013, 2020; Samba et al., 2019; Shepherd & Rudd, 2014) contend that comprehending intuition and rationality in decision-making necessitates a holistic consideration of the overall decision context and its potential consequences. In alignment with the preceding discourse, the present study seeks to investigate a comprehensive model encompassing decision-making contexts, styles, and outcomes, elucidating their interconnections. The contexts are approached from, inter alia, the decision task itself, the individual differences, the broader environment under which the decision is made, and the organizational context.

On the basis of prior empirical studies (Dayan & Elbanna, 2011; Elbanna et al., 2013) and a literature review article (Shepherd & Rudd, 2014), the contextual factors of decision situations are operationalized into four dimensions: the decision, individual, environmental, and organizational levels. Ten contextual conditions derived from the strategic decision-making literature are selected. The selection followed the criteria in Elbanna et al. (2013) and Vergne and Depeyre (2016): 1) The four aforementioned dimensions and empirical support from existing studies determine the inclusion of variables in our models (Elbanna et al., 2020; Shepherd & Rudd, 2014); 2) There is continuity in the literature and discussion of these variables for future replication studies (Elbanna et al., 2013; Verbeke et al., 2019); 3) A configuration is considered as combining theoretically relevant recipes (pertaining to decision contexts and decision styles in our paper) that are causally related to an outcome variable (decision outcomes in our research; Vergne & Depeyre, 2016). The following section presents these variables in further details and the influence on decision making.

Table 1. Literature Positioning Table.

References	Themes(s)	Methodology	Variables	Key findings	Position of the current research
Baldacchino et al. (2023)	The role of experience and intuition in new venture ideation, the perspective of CEST	Empirical study using think-aloud protocol analysis and regression to test mediation.	Experience, rationality, and intuition	Experienced entrepreneurs are able to use both intuition and rationality extensively during new venture ideation, and that the use of intuition is most effective for new venture ideation when used together with rationality.	This study empirically tested the perspective of CEST. However, the contextual factors were excluded in this study. Our research builds on the understanding of CEST to extend the interaction of intuition and rationality under different contexts.
Hodgkinson and Sadler-Smith (2018)	The role of intuition and analysis in managerial decision-making	Conceptual study	Not applicable	Based on the discussion of different theoretical streams, the dual-process theories such as the cognitive-experiential self-theory (CEST) were proposed to study the role of intuition and analysis in managerial decision-making.	The discussion was primarily theoretical. Empirical studies were called upon to test the dual-process theories. Our research responds to this call to empirically test the role of both intuition and rationality based the CEST.
Wang et al. (2017)	Relation between intuition and analysis	Empirical study using meta-analysis	Rationality and intuition	Intuition and analysis are independent constructs, rather than opposite ends of a bipolar continuum.	Based on the findings, our research proposes the simultaneous use of rationality and intuition in decision-making, consistent with the CEST.
Kaufmann et al. (2014, 2017)	Patterns of rational and intuitive in supplier selection decision-making based on the perspective of CEST	Empirical studies using the hierarchical regression analysis	Rational and intuitive processing modes	For instance, Kaufmann et al. (2014) found that a positive correlation between rationality and financial performance, while experience-based intuition was linked to both financial and non-financial performance. Kaufmann et al. (2017) identified a positive association between rationality and both financial and non-financial performance, but no such relationship was observed for experience-based intuition.	Rationality and intuition were included in the same studies. However, the findings were inconsistent partially due to the exclusion of the contextual factors. Our study therefore includes the contextual factors to undercover the reasons behind the inconsistent findings in previous studies.
Shepherd and Rudd (2014)	The influence of context on strategic decision-making	Literature review	Not applicable	Individual level, decision-specific, environmental, and organizational characteristics were reviewed to impact decision outcomes through decision styles.	Based on this literature review and previous empirical studies of contextual factors, our research focuses on the configuration of intuition, rationality, and contextual factors and their joint impact on decision outcomes.
Basel and Brühl (2013)	The dual process models of reasoning in managerial decision-making	Conceptual study	Not applicable	Based on CEST, a research agenda was proposed to analyze intuition and rationality and how they interact in consideration of individual factors and challenges within the tasks at hand as well as in the broader environmental context.	Based on the discussion in this paper, our research empirically tests the interaction of intuition and rationality including the decision-level (the task), individual-level, and environmental-level variables.
Elbanna et al. (2013)	Antecedents and consequences of intuition in strategic decision-making	Empirical study using partial least squares (PLS) and multigroup analysis for moderation test.	Decision context variables: decision motive, decision uncertainty, company performance, company size, environmental uncertainty, and environmental hostility	Decision uncertainty and company size are related to the use of intuition; that intuition significantly influences decision disturbance; and that environmental hostility moderates the relationship between decision intuition and disturbance.	Rationality was included as a control variable with a significant and positive relationship with intuition, as well as decision disturbance. Our research includes both intuition and rationality as the antecedents and goes beyond a multigroup analysis and PLS.
Riedl et al. (2013)	Antecedents and outcomes of procedural rationality in supplier selection decisions	Empirical studies using structural equation modeling (SEM)	Procedural rationality, decision uncertainty, accountability, incentives, product dynamism, time pressure, product familiarity, work experience, and supplier decision performance	Organizational, situational, and personal antecedents significantly influence the use of procedural rationality; Procedural rationality is effective in reducing uncertainty in supplier selection decisions; The reduction in decision uncertainty improves supplier decision performance.	This study focused on procedural rationality while ignored intuition. The capacity of SEM limits the tests to two-way or three-way interactions of various organizational, situational, and personal antecedents. Our research therefore incorporates rationality and intuition in one model and employs fuzzy-set qualitative comparative analysis (fsQCA) to explore the interactions of various contextual factors, decision styles, and decision outcomes.
Epstein (1994, 1998, 2008)	Intuition from the perspective of CEST	Conceptual study	Not applicable	The perspective of CEST indicates the concurrent utilization of both intuition and rationality and believes they can result in a seamless, harmonious, and synergistic process.	Our research is based on the perspective of CEST and empirically tests the interaction of rationality and intuition as well as the contextual factors in decision outcomes.

Hypothesis development

Decision level context

Decision uncertainty. Uncertainty in decision making denotes insufficient information to predict a plausible outcome (Sonenshein, 2007). In contrast to general environmental uncertainty, decision uncertainty here implies the ambiguity around a specific decision. Strategic decisions are non-routine in nature and are likely to involve uncertainty. Due to the difficulty in conducting rational analysis in uncertain situations, several authors (Dane & Pratt, 2007; Elbanna et al., 2013; Shepherd & Rudd, 2014; Sonenshein, 2007) support the contention that intuition is more likely used during uncertain times. However, Elbanna and Child (2007b) suggested that for high uncertainty decisions, the use of intuition is negatively related to the effectiveness of decision outcomes. Huang and Pearce (2015) revealed that combining intuition and rationality helps angel investors to improve the effectiveness when making uncertain decisions. However, when rational analysis contradicts intuition, the latter more effectively predicts extraordinarily profitable investments.

H1a: Decision uncertainty can be configured with either rationality and/or intuition to account for decision outcomes.

Decision motive. The motives affect the subsequent processes of decision making because managers act differently in terms of information search, interpretation, attribution, and sense-making (Hurt & Abebe, 2015). Two motives drive most of the decision-making process: pursuing an opportunity leading to significant positive results or responding to a crisis to avoid more negative results in the short term (Elbanna et al., 2013). Under a crisis, managers often make decisions based on intuition due to insufficient time and information (Sayegh et al., 2004). While several researchers (Hurt & Abebe, 2015; Sayegh et al., 2004) agree that strategic decision making relies more on intuition when made in a crisis, many studies suggest the opposite. For example, decisions motivated by opportunities were also found to be associated with intuition (Dayan & Elbanna, 2011; Elbanna et al., 2013), and the use of rationality led to higher decision effectiveness under a crisis situation (Elbanna & Child, 2007a).

H1b: Decision motive can be configured with either rationality and/or intuition to account for decision outcomes.

Time pressure. Time pressure comes from time constraints when decision-makers have to make a quick decision. When sufficient time is not available to complete the analytical process, decisions are likely guided by intuitive judgment rather than rational analysis (Ward & King, 2018). The use of intuition is preferred because time pressure prevents adequate information collection, and the systematic processing and sufficient evaluation of decisional options as required in rational decision-making. Time pressure was identified as one factor that makes decision-makers rely heavily on intuition (Klein, 2003; Lipshitz et al., 2001; Vanharanta & Easton, 2010). However, decision outcomes using intuition under high time pressure are still an underexplored area.

H1c: Time pressure can be configured with intuition to account for decision outcomes.

Individual level context

Experience. Work-related experience is important for strategic decision-making. Experience can be based on the amount and type of different experiences at work (Hitt & Tyler, 1991). Experience creates opportunities for managers to assess and evaluate their own cognitive models and to reflect on that for better decision-making. Several researchers (Leybourne & Sadler-Smith, 2006; Sayegh et al., 2004) suggest the successful use of intuition requires experience, which is why experienced managers use more intuition to make decisions. As the CEO's experience increases, their domain knowledge also grows, which positively influences intuitive thinking and successful decision-making (Dane & Pratt, 2007). Therefore, intuitive decision-makers require experience to make the right decisions.

H2a: Experience can be configured with intuition to account for decision outcomes.

Education. The education level refers to the knowledge and skill base, and the degree of competence for systematic assessment of alternative decision options (Hsu et al., 2013). Rationality requires the ability to be thorough and comprehensive in information gathering, analysis, and integration (Bantel, 1993). Herrmann and Datta (2005) support that higher education levels enhance an individual's cognitive ability and assist with new idea absorption and information process. Thus, a more educated manager is likely to possess the attributes for rational analysis (Francioni et al., 2015; Papadakis, 2006). In addition, Papadakis and Barwise (2002) suggested that CEO characteristics such as education level and the broader environmental context should be considered together to present a more reliable view of strategic decision-making. Therefore, rational decision-makers with higher education levels are more likely to make the right decisions.

H2b: Education can be configured with rationality to account for decision outcomes.

Capability. The decision maker's capability to process and analyze information in complex situations is another factor determining decision success (McKenzie et al., 2011). It indicates the intellectual capability and information processing skills of the decision-maker (Wally & Baum, 1994). The behavioral theory of the firm suggests that top managers' experience, educational background, and capabilities shape the strategic decision-making process, such as how an issue is identified and how information is sourced and processed. Managers with more robust decision-making capabilities are able to perform efficient information gathering and simplify the decision-making process amidst overwhelming information, ambiguity, and diverging objectives (Hsu et al., 2013). A manager who has the cognitive ability to generate, evaluate, and select among decision alternatives tends to make quick and accurate decisions (Wally & Baum, 1994).

H2c: Capability can be configured with rationality to account for decision outcomes.

Environmental level context

Environmental uncertainty. An uncertain environment features unpredictability, high rates of change, and a lack of information, precedents, and stability (Covin et al., 2001). There are different types of environmental uncertainty: uncertainty in demand, technology (Atuahene-Gima & Li, 2004), economy, competition, governmental policy, and available resources and services (Elbanna et al., 2013). Due to information scarcity, rapid change, and the absence of precedents, decision-makers are likely to rely on intuition rather than analytical processes (Dane & Pratt, 2007). Moreover, the effective use of rational analysis is unattractive because acquiring relevant,

timely, and valid data in an uncertain environment is challenging. Khatri and Ng (2000) found that uncertain environment fosters the positive impact of intuition on organizational performance. However, Elbanna and Child (2007a) found that environmental variables are significantly related to rationality. Many researchers (Goll & Rasheed, 2005; Hough & White, 2003) also concluded that rational analysis contributes more to decision quality in a dynamic environment.

H3a: Environment uncertainty can be configured with either rationality and/or intuition to account for decision outcomes.

Environmental hostility. In contrast to environmental uncertainty, environmental hostility pertains to adverse changes that are positioned against the organization's mission or objectives (Edelstein, 1992). A hostile external environment is typically characterized by intense competition, narrow profit margins, stringent governmental regulations, and restricted avenues for growth (Zahra et al., 1997). In environments characterized by heightened hostility, organizations tend to adopt a more rational approach to gain a deeper understanding of the prevailing threats (Elbanna et al., 2013). Consequently, rationality exhibits a positive correlation with decision effectiveness in high-hostility environments (Elbanna & Child, 2007b). However, Goll and Rasheed (2005) observed that the positive association between rational thinking and organization performance is contingent upon a more abundant and resource-rich environment rather than environmental hostility.

H3b: Environment hostility can be configured with rationality to account for decision outcomes.

Organizational level

Firm size. Although the extant literature suggests that firm size has a profound impact on the process of strategic decision-making, it is dominated by mixed findings. In general, most researchers agree that smaller firms tend to favor intuition due to the lack of a formalized organizational system and the human resources to adopt rational decision-making procedures (Elbanna et al., 2013). The decision-making outcomes depend on one or a few individuals. Therefore, Khatri and Ng (2000) suggested individuals from smaller firms follow a more intuitive decision-making styles. Conversely, as companies expand in terms of both their workforce and assets, larger firms generally tend to establish a more structured and formalized approach when it comes to strategizing and implementation (Papadakis, 1998). More procedures are required, and thus more formal and rational processes will be followed.

H4a: Firm size can be configured with either rationality and/or intuition to account for decision outcomes.

Firm performance. The current literature has three distinct lines of research on firms' past performance and the strategic decision-making process. One line argues that good performance encourages managers to make intuitive decisions because they tend to be more confident in their intuition, reducing the desire to collect data for analyses. Meanwhile, for firms with poor performance, managers are reluctant to make unexplained decisions with higher risks. Instead, they prefer to hire consultants, search for information, and conduct detailed analyses (Elbanna et al., 2013). However, an alternative strand of research posits that the effectiveness of rational analysis hinges on the presence of financial and technological resources, which are outcomes of strong firm performance

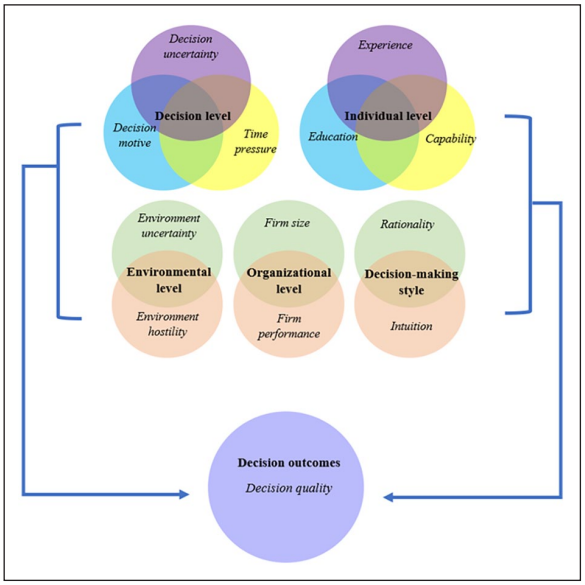

Figure 1. Theoretical model.

(Papadakis, 1998). Thus, firm performance provides the slack resources to conduct rational analysis and a positive outcome (Francioni et al., 2015). For firms with poor performance and fewer material resources, managers are left with limited options other than using their intuition. A third avenue of research argues that companies possessing ample slack resources exhibit greater receptivity to novel ideas and information sources. Consequently, they are more adaptable in incorporating either rationality, intuition, or a combination of both into their decision-making processes (Sharfman & Dean, 1997; Shepherd & Rudd, 2014).

H4b: Firm performance can be configured with either rationality and/or intuition to account for decision outcomes.

The theoretical model is illustrated in Figure 1.

Methods

Sampling and data collection

Data were collected from Australia and New Zealand firms from August to September 2018. Only marketing executives with managerial and strategic decision-making experience were selected for this study. As a result, 665 eligible respondents were recruited through an online screening process. After deleting 11 responses with missing data and 16 outliers, 638 usable responses were generated. Of this group, 62.5% of the participants identified as male, while 37.5% identified as female. Their job roles included directors (16.5%), executive management (34.8%), senior management (32%), and supervisory to middle-level management (16.7%). About 55% of the participants are aged 31 to 50 years. Over 90% of the participants have diploma or higher degrees. The participant's background information is presented in Appendix 1. To evaluate potential non-response bias, respondents were divided into early and later waves, and a comparison was made between the two waves (Armstrong & Overton, 1977). The firm characteristics examined in the comparison encompassed the number of employees, annual turnover, industry, as well as individual attributes such as ethnicity and qualifications. The absence of a systematic difference between

the early and late waves indicates that non-response bias have minimum impact to the research findings.

Measures

This study uses the decision level (Elbanna & Child, 2007b) as its unit of analysis, a choice in alignment with our aim to investigate the configurational connections between decision-making contexts, styles, and their resulting outcomes. To measure the constructs in this study, we adapted established measures from pertinent literature sources.

Adapted from previous studies, *decision quality* was measured by four items on the outcomes of a decision regarding its accuracy, correctness, precision, and reliability (Ghasemaghaei et al., 2018; Jarupathirun & Zahedi, 2007). *Decision uncertainty* was adapted from Elbanna et al. (2013) regarding the clearness of decision purposes, the degree to require additional information, similarity to past decisions, and predictivity of decision outcomes. Based on Riedl et al. (2013), *time pressure* is measured by whether or not the decision was made with little time, was rushed, or has limited time to evaluate different options. *Decision motive* was measured by the motivations for managing a crisis versus exploring an opportunity (Elbanna et al., 2013). *Experience* was measured by the quantity and the intensity of experience (Hitt & Tyler, 1991), including the number of years in the organization, the current position, the number of strategic decisions made in the current organization and the total number of strategic decisions made. *Education* was measured by the respondent's highest level of qualification achieved. *Capability* was measured by the process and ability for decision-makers to process and assess different decision options, for example, the decision-makers' confidence, and the ability to access information to process the decision and predict the outcomes of different decisions (Riedl et al., 2013). *Environment uncertainty* was measured using a second-order construct consisting of a 35-item scale from Elbanna and Child (2007a) and Miller (1993). The construct comprises six first-order constructs to measure uncertainties in the environment regarding uncertainties in product, economy, competition, governmental policy, resources and services, and technology. *Environment hostility* was measured by the degree to which the external environment is safe, has opportunities, and can be manipulated to the firm's advantage (Elbanna & Child, 2007a). *Intuition* was measured by the extent to which a decision is made based on personal judgment and gut feeling (Khatri & Ng, 2000), while *rationality* was measured by the extent to which a decision is made based on information searching, quantitative analysis, extensive analysis, analytical process, and crucial information (Riedl et al., 2013). *Firm size* was measured by the number of employees in that organization. *Firm performance* was measured by a firm's financial performance on profitability, sales growth, return on assets, market share, and overall financial performance (Elbanna et al., 2013; Khatri & Ng, 2000). The survey questions for the measurement items are presented in Appendix 2.

Results

Measurement model

The overall quality of the measurement model (Bagozzi et al., 1991) was evaluated using confirmatory factor analysis in AMOS 26 using the maximum likelihood estimation approach before the hypotheses were put to the test. A satisfactory fit was shown in the measurement model (CMIN/DF = 2.15, TLI = 0.93, CFI = 0.94, IFI = 0.94, RMSEA = 0.04). As shown in Table 2, convergent validity was established for all the constructs with composite reliability and average variance extracted (AVE) reaching or exceeding the standard cut-off points of 0.7 (Hair et al., 2014) and 0.5 (Blunch, 2013). Higher than the recommended 0.70 (Nunnally & Bernstein, 1994), the reliabilities for all variables confirmed satisfactory reliability. As shown in Table 3, discriminant validity was achieved through the squared root of the constructs' AVEs higher than the correlations of any individual constructs (Fornell & Larcker, 1981). In conclusion, the measurement model provides a passable fit to the data, and the constructs show sufficient measurement properties to support further investigation.

Table 2. Convergent and Discriminant Validity.

Variables	Cronbach's alpha	CR	AVE	VIF
Decision level				
Decision uncertainty	.83	0.83	0.55	1.72
Decision motive[a]	—	—	—	1.22
Time pressure	.88	0.89	0.72	1.60
Individual level				
Experience	.81	0.83	0.62	1.10
Education[a]	—	—	—	1.04
Capability	.80	0.80	0.57	2.23
Environmental level				
Environment uncertainty	.91	0.93	0.69	1.58
Environment hostility	.80	0.80	0.57	1.48
Organizational level				
Firm size[a]	—	—	—	1.07
Firm performance	.90	0.90	0.64	1.64
Decision-making styles				
Rationality	.83	0.84	0.51	2.05
Intuition	.74	0.74	0.56	1.63
Decision outcome				
Decision quality	.86	0.86	0.61	1.74

Note. Model fit: CMIN/DF = 2.15, TLI = 0.93, CFI = 0.94, IFI = 0.94, RMSEA = 0.04. CR = composite reliability; AVE = average variance extracted; *SD* = standard deviation; VIF = variance inflation factor.
[a]Manifest variables.

Common method variance (CMV) could be a potential concern because the survey data was from a single source, and the majority of the variables were based on the respondent's perceptions. We involved strategies both at ex-ante research design stage to minimize CMV and using ex-post statistical analyses to deal with it (Chang et al., 2010; Jordan & Troth, 2020). At the ex-ante research design stage, first, we ensured key concepts such as a strategic decision and the scenarios under which respondents have made the decision are clearly defined in the survey to ensure more accuracy and minimum ambiguity (Jordan & Troth, 2020). Second, in order to prevent respondents from simply combining related items to cognitively build the association required to produce a CMV-biased pattern of replies, we employed different scales (e.g. a 7-point Likert scale and a 10-point Likert scale) and diversified the order of the constructs. (Chang et al., 2010). Third, we included fact-based questions where possible, for example, experience, education, and firm size. Fourth, the measurement items were not in their original form, leading to a reduced likelihood of CMV (Meyer & Su, 2015). For example, we formed a second-order construct for environmental uncertainty. Several variables (decision motive, capability, rationality, and intuition) are reverse coded. In addition, all the variables are transformed during the calibration process using fsQCA. We also used ex-post statistical analyses, for example, the Harman's single-factor test (Podsakoff et al., 2003) to further assess the possibility of CMV. The findings indicate that the single factor accounts for 29.01% of the variance, which falls below the typical cutoff point of 35%.

Table 3. Descriptive Statistics and Discriminant Validity.

	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1	Decision quality	**0.78**											
2	Decision uncertainty	−0.04	**0.74**										
3	Decision motive[a]	0.25**	0.05										
4	Time pressure	0.13**	0.49**	0.07	**0.85**								
5	Experience	0.05	−0.14**	0.03	−0.17**	**0.79**							
6	Capability	0.53**	−0.17**	0.37**	0.08	0.14**	**0.75**						
7	Environment uncertainty	0.08*	0.48**	0.03	0.35**	−0.08	−0.01	**0.83**					
8	Environment hostility	−0.09*	0.40**	−0.04	0.32**	−0.13**	−0.18**	0.49**	**0.75**				
9	Firm size[a]	0.07	0.10*	0.07	0.07	0.15**	0.06	−0.01	0.02				
10	Firm performance	0.58**	−0.04	0.33**	0.17**	0.06	0.55**	0.08*	−0.10*	0.07	**0.80**		
11	Rationality	0.50**	−0.04	0.28**	0.21**	0.04	0.65**	0.02	−0.07	0.09*	0.53*	**0.71**	
12	Intuition	0.44**	0.18**	0.21**	0.37**	0.06	0.45**	−0.16**	0.06	0.04	0.41**	0.50**	**0.75**

Note. Square roots of AVE: diagonal elements (bold).
[a]Manifest variables.
*$p < .05$. **$p < .005$. ***$p < .001$.

Table 4. Calibration of Variables.

Variables	*M*	*SD*	Max	Median	Min	Fully in	Crossover	Fully out
Decision outcome								
Decision quality—high	4.97	0.99	7	5	1	6.67	5	3.50
Decision quality—low	4.97	0.99	1	5	7	3.50	5	6.67
Decision level								
Decision uncertainty	3.96	1.33	7	4	1	6,	4	1.50
Decision motive	4.86	1.47	7	5	1	7	5	2
Time pressure	4.22	1.47	7	4.33	1	6.33	4.33	1.33
Individual level								
Experience	4.33	1.24	7	4.67	1	6.67	4.67	2.67
Education	3.27	1.36	6	4	1	4	3	1
Capability	5.25	1.07	7	5.33	1	7	5.33	3.67
Environmental level								
Environment uncertainty	4.05	1.07	7	4.04	1	5.79	4.04	2.25
Environment hostility	4.11	1.30	7	4	1	6	4	1.67
Organizational level								
Firm size	6.37	2.33	10	7	1	7	5	3
Firm performance	7.00	1.58	10	7.2	1	9.80	7.20	4.35
Decision-making styles								
Rationality	5.06	1.00	7	5	1	6.80	5	3.40
Intuition	4.86	1.06	7	5	1	6.50	5	3.44

Additionally, we ran an unmeasured latent factor technique to minimize the impact of CMV (Podsakoff et al., 2003). In this approach, trait, method, and random error are used to divide the variance of a particular item. The inclusion of the latent common method variance factor did not significantly affect the factor loadings. Hence, it can be reasonably concluded that common method variance is not a prevalent issue in the present study.

Calibration. To conduct fsQCA, it is necessary to transform the original data into scores ranging from 0 to 1. These scores represent the degree of membership and are determined using specific values associated with three essential breakpoints: (1) full membership, (2) the crossover point, and (3) full non-membership. In this study, the direct approach was employed to form the calibrations for outcome variables and causal conditions suggested by Fiss (2011) and Ragin (2008a). We utilized the 75th, 50th, and 25th percentile (Gupta et al., 2020; Misangyi & Acharya, 2014) to calibrate for the full membership, crossover points, and non-membership respectively. In addition, the option for anchors must be consistent with the study context (Woodside et al., 2015). The anchor points for calibrating education were based on the Tertiary Education Quality and Standards Agency's categorization of higher degree (fully in), undergraduate (crossover), and high school education (fully out) in Australia, and firm size is calibrated based on the Australian Bureau of Statistics' classification of large (fully in), medium (crossover), and small firms (fully out). The criteria for data calibration are presented in Table 4.

Before undertaking the conventional truth table analysis, necessity analyses was performed for all individual conditions and their negation, using 0.9 as the consistency threshold (Schneider & Wagemann, 2012). As presented in Table 5, none of the conditions demonstrated consistency values exceeding 0.9 for both decision success and its negation. This indicates that none of these factors independently served as necessary conditions for either decision success

Table 5. Results for Necessary Conditions Testing.

Elements	Decision quality		Negation of decision quality	
	Consistency	Coverage	Consistency	Coverage
Decision uncertainty	0.65	0.63	0.68	0.71
Decision motive	0.76	0.72	0.60	0.62
Time pressure	0.71	0.67	0.62	0.67
Education	0.80	0.59	0.80	0.61
Experience	0.64	0.67	0.60	0.67
Capability	0.80	0.79	0.51	0.56
Environment uncertainty	0.67	0.66	0.64	0.68
Environment hostility	0.67	0.61	0.73	0.71
Firm size	0.73	0.57	0.69	0.57
Firm performance	0.80	0.81	0.51	0.56
Rationality	0.81	0.78	0.54	0.57
Intuition	0.75	0.78	0.53	0.59

Table 6. Configurational Solutions for High Decision Quality.

Conditions	Solution 1	Solution 2	Solution 3a	Solution 3b	Solution 4a	Solution 4b
Decision level						
Decision uncertainty	⊗	⊗	●	●	●	●
Decision motive	●	●	•	•	●	●
Time pressure		⊗	●	●	●	●
Individual level						
Experience	⊗	•	⊗	⊗	⊗	
Education	•			•	•	•
Capability	●	●	•	•	●	●
Environmental level						
Environment uncertainty	⊗	⊗	•	⊗	●	●
Environment hostility	⊗	⊗	•	⊗		•
Organizational level						
Firm size	●	●	⊗	⊗	•	•
Firm performance	●	●	●	●	●	●
Decision-making styles						
Rationality	●	●	●	●	●	●
Intuition	●	●	•	•	•	•
Consistency	0.97	0.96	0.96	0.98	0.96	0.96
Raw coverage	0.18	0.18	0.13	0.11	0.24	0.25
Unique coverage	0.01	0.03	0.02	0.01	0.01	0.02
Solution consistency	0.95					
Total coverage	0.37					

Note. •: presence of a condition; ⊗: absence of a condition; Large circles: core conditions; Small circles: peripheral conditions; Blank: "don't know."

or failure. Instead, it appears that the combined presence of multiple factors is more likely to exert an influential impact. Subsequently, to test whether or not the attribute combinations consistently associated to an outcome variable, we performed sufficiency analyses using the truth table algorithm (Ragin, 2008b). For samples over 150 (Fiss, 2011) such as our study, we chose 3 cases per configuration as the frequency cut-off as suggested. The consistency benchmark was $\geqslant$0.8 (Ragin, 2008b) with a proportional reduction in inconsistency (PRI) score $\geqslant$0.7 as a complementary threshold (Chen et al., 2018; Greckhamer et al., 2018).

Subsequently, we conducted a truth table analysis following Ragin's (2008b) procedure. This analysis produces various solutions contingent upon how we incorporate simplifying assumptions about counterfactuals (Schneider & Wagemann, 2012). Adhering to current best practices (e.g. Fiss, 2011), we present a combination of intermediate and parsimonious solutions. Intermediate solutions encompass simplifying assumptions that align with empirical evidence and established knowledge associated with individual conditions that make up logical remainders, often termed as "easy" counterfactuals. In contract, parsimonious solutions are nested within intermediate solutions and may incorporate easy and more complex counterfactuals (Schneider & Wagemann, 2012). Core conditions are those found in both the intermediate and parsimonious solutions, while peripheral conditions include the intermediate solutions but excludes the parsimonious solutions. The black circles (•) and the crossed circles (⊗) represent the presence and absence of a causal condition respectively (Table 6). The core conditions and peripheral conditions were represented by the circle sizes with larger circles for core conditions and smaller circles for peripheral conditions. We achieved a coverage of 0.37 for high decision quality, signifying the

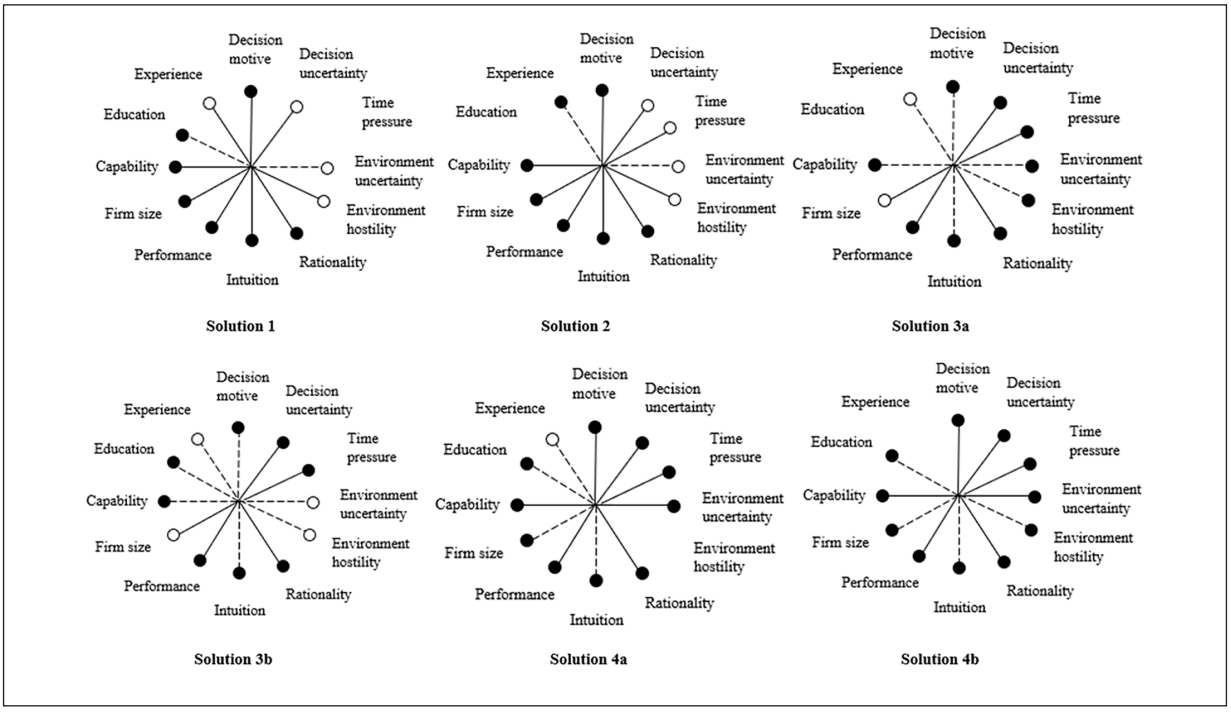

Figure 2. Star charts of decision success solutions.
Note. ● Condition present; ○ Condition absent; —— Condition is part of parsimonious solution; – – – – Condition is part of intermediate solution.

empirical significance of the overall solutions. The solution consistency stands at 0.95, well surpassing the required consistency threshold of 0.80 (Fiss, 2011), affirming that the overall solutions align closely with the empirical data.

Configurational solutions. Table 6 revealed four configurational solutions leading to good decision quality. The results also uncover Solution 3 (3a and 3b) and Solution 4 (4a and 4b), illustrating the existence of within-type equifinality. For the purpose of better visualization, the results are also illustrated using star charts (Rubinson, 2019) in Figure 2.

Solution 1 reports that for firms with a larger size and better performance, the presence of opportunity-driven decision motive, decision maker's capability, together with the combined use of rationality and intuition, and the absence of decision uncertainty, decision maker's experience and hostile environment are core conditions for a good decision outcome. The presence of the decision maker's high education level and the absence of environmental hostility are the peripheral conditions. Solution 2 demonstrates that within a larger and high-performing firm, when decision-making encounters lower uncertainty, is driven by a quest for increased opportunities, experiences less time constraints, operates within a less hostile and uncertain environment, and leverages the decision maker's expertise and capability, a combined approach utilizing both rationality and intuition tends to result in favorable decision outcomes. Solutions 3a and 3b indicate that for a smaller firm with good performance, despite decision-makers' lacking decision-making experience, making uncertain and opportunity-driven decisions under significant time pressure, greater capability, and the use of both rationality and intuition result in a good decision outcome, irrelevant of the uncertain and hostile environment. Lastly, Solutions 4a and 4b demonstrate the presence of decision uncertainty, decision motives driven by seeking new opportunities, high time pressure, the decision maker's greater capability, environmental uncertainty, together with good firm performance and rationality are the core conditions for a good decision outcome. The presence of a decision-maker's high education level, large firm size, and the use of intuition, with either the absence of decision experience, or the presence of environmental hostility, are the peripheral conditions for a good decision outcome.

It's essential to highlight that achieving positive decision outcomes necessitates the simultaneous presence of factors such as the combined use of rationality and intuition, along with strong firm performance, the decision-maker's competence, and a motivation driven by opportunities. However, we observed that the other conditions are necessary but alone are insufficient. This underscores the interconnected and asymmetric causality among decision context, decision styles, and decision outcomes. The presence of conjunctural, asymmetric, and equifinal solutions further underscores how fsQCA enhances our understanding compared to conventional regression methods.

Robust test. As suggested in Gupta et al. (2020), adjusting the calibration anchor points is deemed appropriate to test the robustness of the model. Subsequently, we recalibrated the data by using the 85th, 15th, and 50th percentile for the full membership, non-membership, and crossover points respectively. The results in Table 7 are very similar to those in Table 6, indicating the test-retest reliability of the proposed model.

FsQCA tests complex asymmetrical relationships. Nevertheless, symmetrical testing such as SEM dominates the literature. Researchers (Mikalef & Pateli, 2017; Prentice et al., 2021) have suggested that embracing both methods would provide more insights and a holistic understanding of the proposed relationships. Consistent with this view, the post hoc analysis was performed by employing structural equation modeling (SEM) to understand the relationships between the contextual factors, decision-making styles, and the outcome as a comparison to the asymmetrical testing. SEM is based on the principles of linearity, additive effects, and unifinality, thereby limited in

Table 7. Robust Test for Configurational Solutions for High Decision Quality.

Conditions	Solution 1 (Table 6 S1)	Solution 2a (Table 6 S1)	Solution 2b (Table 6 S2)	Solution 3 (Table 6 S2)	Solution 4 (Table 6 S3a)	Solution 5 (Table 6 S3b)	Solution 5 (Table 6 S4a)	Solution 7 (Table 6 S4b)
Decision level								
Decision uncertainty	⊗	⊗	⊗	⊗	•	•	•	•
Decision motive	•	•	•	•	•	•	•	
Time pressure	⊗		⊗	⊗	●	●	●	●
Individual level								
Experience	⊗		•	•	⊗	⊗	⊗	•
Education	•	•		•		•	•	•
Capability	●	●	●	●	●	●	●	●
Environmental level								
Environment uncertainty	⊗	⊗	⊗	⊗	•	⊗	•	•
Environment hostility	⊗	⊗	⊗	⊗	•	⊗		•
Organizational level								
Firm size		●	●	●	⊗		●	●
Firm performance	●	●	●	●	●	●	●	●
Decision-making styles								
Rationality	●	•	•	•	●	●	●	●
Intuition	•	•	•		•	•	•	•
Consistency	0.94	0.95	0.94	0.92	0.94	0.93	0.94	0.93
Raw coverage	0.09	0.11	0.09	0.11	0.08	0.09	0.15	0.13
Unique coverage	0.01	0.01	0.01	0.02	0.01	0.01	0.03	0.03
Solution consistency	0.91							
Total coverage	0.32							

Note. •: presence of a condition; ⊗: absence of a condition; large circles: core conditions; small circles: peripheral conditions. Blank: "don't know."

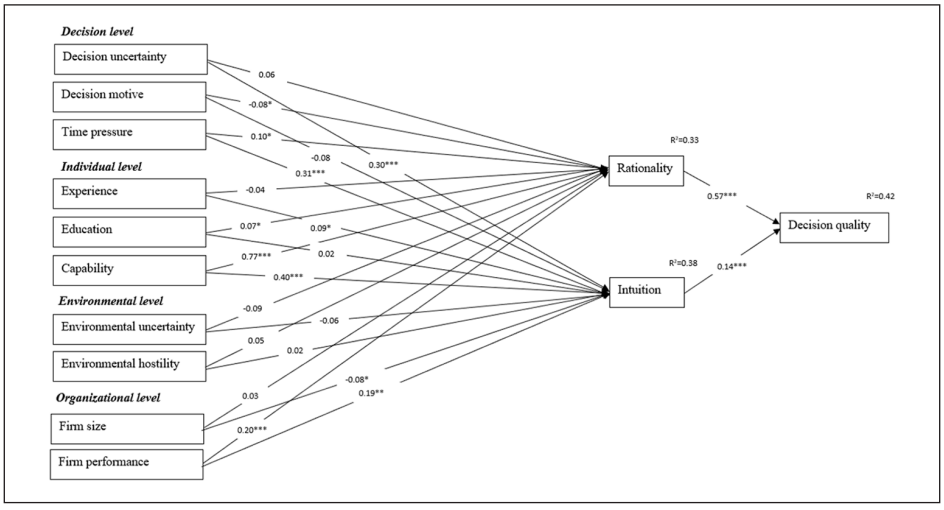

Figure 3. SEM results.
Note. Model fit: CMIN/DF = 2.26, TLI = 0.92, CFI = 0.93, IFI = 0.93, RMSEA = 0.04.
*$p < .05$. **$p < .005$. ***$p < .001$.

examining the combination of variables in explaining the dependent variable (Woodside et al., 2015). The structural model shows a satisfying model fit: CMIN/DF = 2.26, TLI = 0.92, CFI = 0.93, IFI = 0.93, and RMSEA = 0.04. The results in Figure 3 show both rationality and intuition have a positive impact on high decision quality. Time pressure, capability, and firm performance are found to be positively related to both rationality and intuition. Decision uncertainty, experience, and firm size exclusively relate to intuition, whereas decision motive and education exclusively pertain to rationality. However, decision uncertainty, experience, environment uncertainty, environment hostility, and firm size are not significantly related to rationality. Decision motive, education, environment uncertainty, and environment hostility are insignificantly related to intuition. These variables, where an insignificant relationship is shown in the SME results, are found as core or contributing conditions to be configured with rationality and intuition to exert a combined effect on a firm's high decision quality in at least three out of the four solutions in the fsQCA results. A detailed comparison is illustrated in Table 8. The differences in the results using these two analytical methods demonstrate the advantages of using fsQCA.

Table 8. Comparison of Findings From SEM and fsQCA.

Structural path	SEM findings	fsQCA findings
Decision uncertainty→rationality	ns	Presence in Solutions 3a, 3b, 4a, and 4b Absence in Solutions 1 and 2
Decision motive→rationality	−	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Time pressure→rationality	+	Presence in Solutions 3a, 3b, 4a, and 4b Absence in Solution 2
Experience→rationality	ns	Presence in Solution 2 Absence in Solutions 1, 3a, 3b, and 4a
Education→rationality	+	Presence in Solutions 1, 3b, 4a, and 4b
Capability→rationality	+	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Environmental uncertainty→rationality	ns	Presence in Solutions 3a, 4a, and 4b Absence in Solutions 1, 2, and 3b
Environmental hostility→rationality	ns	Presence in Solutions 3a and 4b Absence in Solutions 1, 2, and 3b
Firm size→rationality	ns	Presence in Solutions 1, 2, 4a, and 4b Absence in Solutions 3a and 3b
Firm performance→rationality	+	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Decision uncertainty→intuition	+	Presence in Solutions 3a, 3b, 4a, and 4b Absence in Solutions 1 and 2
Decision motive→intuition	ns	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Time pressure→intuition	+	Presence in Solutions 3a, 3b, 4a, and 4b Absence in Solution 2
Experience→intuition	+	Presence in Solution 2 Absence in Solutions 1, 3a, 3b, and 4a
Education→intuition	ns	Presence in Solutions 1, 3b, 4a, and 4b
Capability→intuition	+	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Environmental uncertainty→intuition	ns	Presence in Solutions 3a, 4a, and 4b Absence in Solutions 1, 2, and 3b
Environmental hostility→intuition	ns	Presence in Solutions 3a and 4b Absence in Solutions 1, 2, and 3b
Firm size→intuition	−	Presence in Solutions 1, 2, 4a, and 4b Absence in Solutions 3a and 3b
Firm performance→intuition	+	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Rationality→decision quality	+	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b
Intuition→decision quality	+	Presence in Solutions 1, 2, 3a, 3b, 4a, and 4b

Note. ns = not significant; + = positive and significant; − = negative and significant.

Discussion

The study draws on the CEST theory (Epstein, 1994, 1998, 2008) to test a paradoxical relationship between intuition and rationality in decision making evidenced in the relevant literature (Calabretta et al., 2017; Keller & Sadler-Smith, 2019). This study proposes a model integrating the decision contexts from four levels, namely, the decision, individual, environmental, and organizational levels with decision-making styles and outcomes. Both symmetrical and asymmetrical methods were employed to examine these relationships. The findings observed from fsQCA suggest the decision quality was shaped by the combined use of intuition and rationality under different decision contexts, supporting the CEST theory where intuition and rationality are viewed as two distinct decision-making styles that can be used in synergistic ways under different contexts (Epstein, 1994, 1998, 2008). Including multiple levels of contextual factors in strategic decision-making also contributed to clarifying the mixed findings in the literature regarding the impact of intuition and rationality on decision outcomes, as suggested by several researchers (Basel & Brühl, 2013; Epstein, 1994; Hodgkinson & Sadler-Smith, 2018). Detail discussion of these findings is as follows.

Findings from fsQCA and SEM

The findings from fsQCA largely complement the SEM analysis. While there are the nine insignificant paths from the SEM findings, the focal variables were asymmetrically related to the decision outcome in such ways that the presence or absence of the focal conditions combined together play a significant role in several solutions in the fsQCA findings. The SEM results showed that both intuition and rationality were positively related to high decision quality, whereas fsQCA gauged the combinatory conditions by which decision contexts and decision styles interacted to affect decision outcomes. The fsQCA findings were asymmetric and equifinal, revealing that intuition and rationality, when used together, can be equally effectively under a configuration of different contexts because the two decision styles are not opposite ends of a bipolar continuum (Misangyi et al., 2017). The findings support the CEST view, affirming the synergistic coexistence of intuitive and rational decision-making. (Epstein, 1994, 1998, 2008).

Certain findings concerning the connection between decision context and decision styles, as determined by Structural Equation Modeling (SEM), align consistently with the results obtained through

fsQCA. To illustrate, the SEM results indicated a positive correlation between the decision maker's competence and firm performance with the utilization of both intuition and rationality. The fsQCA outcomes reveal that the decision-maker's capability and firm performance were consistently present in all configurations associated with favorable decision outcomes. This underscores their pivotal role as determining factors for employing both intuition and rationality to achieve positive decision results. These findings underscore the significance of the decision maker's capacity to simplify intricate problems and evaluate decision alternatives, which is crucial for the success of both intuitive synthesis and rational analysis (Hsu et al., 2013; Wally & Baum, 1994). The finding is consistent with those in many researchers (Laureiro-Martínez & Brusoni, 2018; Sharfman & Dean, 1997) that a firm's performance determines the flexibility in decision-making so that decision-makers can confidently shift between and use intuition and rationality simultaneously.

However, some inconsistent findings were revealed from these two methods. For example, the positive relationship between time pressure and the decision styles from the SEM results did not appear in any of the configurations in fsQCA. Environmental uncertainty and hostility were found insignificant in selecting the decision styles in the SEM results, but the presence or absence of the environmental conditions was found in all the configurations with good decision outcomes. The differences in the findings demonstrated the non-linear and asymmetric causal relationship between the decision context, decision styles, and good decision outcomes. The findings from fsQCA indicate that the decision context and the use of decision styles are complex and interdependent; the presence or absence of one specific contextual factor cannot determine the decision outcomes.

The fsQCA results provided more nuanced insights into the decision context under which both intuition and rationality should be used to achieve a good decision outcome. The findings align with the Cynefin Framework (Snowden & Boone, 2007) that classifies the decision situations into simple, complicated, complex, and chaotic contexts. When managers face a relatively simple decision situation (Solution 1) or a complicated situation (Solution 2; e.g. a strategic decision that was made in the past and needed to be renewed) with low decision uncertainty, environment uncertainty, and environment hostility, intuition and rational thinking play more or less an equal role. These two situations are the "known knowns" and "known unknowns," where managers with good education or experience should make decisions using both intuition and rationality. Only following intuition could be detrimental to the decision outcomes. Solutions 3 and 4, in general, align more with the complex and chaotic situations when the decisions are uncertain and urgent under dynamic and hostile environments. Under these situations, managers need to use both intuition and rationality again, but focus more on rational analysis. These are the "unknown unknowns" and "unknowables" such as the disruption to the international supply chains caused by the COVID-19 pandemic. An intuitive decision should be validated by comprehensive and relatively quick rational analysis rather than rushing through the process.

Implications

Theoretical contributions

The study was a response to the recent call for more research on the CEST view (Hodgkinson & Sadler-Smith, 2018), and to extend this theory by specifying the various contexts where rationality and intuition could be used simultaneously to generate optimal decision outcomes. Consequently, the study contributes to resolving the decision-making debate between the paradox perspective (Calabretta et al., 2017; Keller & Sadler-Smith, 2019) and the CEST view (Epstein, 1994, 1998, 2008). Although Snowden and Boone (2007) introduced the simple, complicated, complex, and chaotic situations in their Cynefin Framework more than a decade ago, this framework lacks evidence to support that both intuition and rationality could be used simultaneously under these situations.

Theoretically, the study was the first to propose an integrative framework incorporating the decision context into decision-making styles (i.e. rationality and intuition) and decision outcomes. This option is in line with the view that individual factors and challenges both in the tasks at hand and the broader environments should be considered when making a decision using rationality and/or intuition (Basel & Brühl, 2013; Hodgkinson & Sadler-Smith, 2018). This research provides insights into the strategic decision-making process through exploring the multiple dimensions of the decision context as stated in Tsui (2007, p. 1357), "deep contextualization is necessary for both theory development and the meaningful application of existing theory to novel contexts." Researchers have called for greater contextualization in social science research (Bamberger, 2008; Barkema et al., 2015; Mi et al., 2020). Including multiple decision contexts at the decision, individual, environmental, and organizational levels provide the totality of the complex decision-making process.

The study also offers a methodological contribution by embracing both symmetrical and asymmetrical analyses in the decision-making literature. Drawing on the complexity theory, the study employed fsQCA to capture configurations of interdependent attributes, revealing multiple solutions for decision quality and found asymmetric relations between a particular attribute and the decision outcome. This research tested the combined effect of multiple factors under a decision situation and compared the results with findings from SEM. The use of fsQCA largely complements the SEM findings and helps clarify the causal complexity between the use of intuition and rationality under different decision contexts and the decision outcomes of these processes.

Practical implications

The findings of this study on the context-specific and configurational view of the decision-making process have managerial implications. The study indicates that decision-makers can apply the context-specific and configurational perspective to examine the decision contexts and reflect on their own decision styles. Intentional adjustments should be made based on a holistic assessment of the four dimensions of decision context. The study also provides a framework for external consultants to evaluate a firm's decision situation before advising a change in strategies, usually irreversible or costly to do so. Although the decision situations are very complex, our results revealed four types of decision contexts under which using both intuition and rationality will be equally effective. For example, under a highly volatile environment such as making unpredictable decisions during the COVID-19 pandemic, combining intuitive synthesis and rational analysis could be vital to a firm's survival, especially for SMEs.

This study also shows that the interdependence of intuition and rationality together with decision-maker's capability is the decisive conditions in making the right decisions. Decision-making is typically a collaborative endeavor especially under the backdrop of digitalization and big data. Hence, it is imperative to assemble an expert team, encompassing experienced marketing managers and proficient data scientists to guarantee the efficacy of decision-making in the

digital realm. However, not everyone is equally skillful in rational analysis and intuitive synthesis. Team leaders or members who are involved with making strategic decisions at present or looking for career advancement in the future need to increase their self-awareness of the decision styles they are more skilled in and actively develop their capabilities and skills in the other (Gressel et al., 2021; Intezari & Pauleen, 2019). By the same token, firms need to include training on both rational analytical skills and learning when to trust intuitions in their employee development programs.

Methodological implications

Our research employs fsQCA as a novel method to investigate the complex decision situations and the impact on decision-making outcomes. First, fsQCA facilitates the exploration of combined effects extending beyond two-way or three-way interactions within symmetrical correlations (Misangyi et al., 2017), and provides a means to comprehensively understand the interplay among various decision contexts, the application of diverse decision-making styles, and their impact on decision outcomes. Second, in contrast to symmetrical analyses, fsQCA unveils the potential existence of multiple pathways leading to the same outcome (Fainshmidt et al., 2022). For instance, decision success may be achieved through the application of intuition, rationality, or a combination of both, depending on the specific contextual conditions. Third, the impact of one attribute may vary across different configurations (Douglas et al., 2020). Intuition, for example, might be positively associated with an outcome in one context, while demonstrating no correlation or an inverse association in another context. FsQCA allows for a nuanced examination of these contextual variations in the influence of decision styles on outcomes.

In terms of operationalizing fsQCA, rigorous steps need to be followed (for a comprehensive guide, see Pappas & Woodside, 2021) to ensure the rigor of the process. First, consistent with other empirical studies, the framework tested using fsQCA needs to be driven by theory (Douglas et al., 2020; Gupta et al., 2020; Mi et al., 2023) or findings from existing literature (Lewellyn & Muller-Kahle, 2022; Verbeke et al., 2019). Second, the calibration process is critical for fsQCA where different calibrations alter the outcomes of the membership and result in different configurational results. Although calibrations can be based direct or indirect methods (Pappas & Woodside, 2021), appropriate justifications need to be provided under different contexts (Zhang et al., 2023). Third, fsQCA excludes the use of control variables. FsQCA is not vulnerable to endogeneity resulting from omitted variable bias (Fiss, 2011; Ragin, 2008b; Schneider & Wagemann, 2012). Due to the fact that fsQCA is not a correlational method and does not estimate coefficients for individual explanatory factors, where bias occur in the effect of a missing correlated variable (Witt et al., 2022). Thus, fsQCA does not include control variables. Fourth, post hoc analysis such as SEM could be performed to reveal more insights (Mikalef & Pateli, 2017; Prentice et al., 2021) based on both principles of linearity, additive effects and unifinality for regression (Woodside et al., 2015), and configurations, combined effects and equifinality for fsQCA (Misangyi et al., 2017).

Limitations and future research

Despite ex-ante and ex-post endeavors throughout this research to ensure rigorousness, a few limitations must be acknowledged. First, the study was undertaken in Australia and New Zealand. Applications of the findings may limit to this region. More configurations of decision situations may be revealed in other country settings. Second, national and/or organizational culture may play a role in the proposed relationships, nevertheless, was omitted from the current study due to implicit political reasons. Admittedly including such variable/s would provide more insights into the decision-making outcomes. Third, we used cross-sectional survey data for this research. We acknowledge the limitation of this application to test predictive relationships. Future research could endeavor to collect longitudinal data to investigate the causal relationships considering time differences. The authors aspire to conduct an experimental or longitudinal study to replicate the current study with additional relevant variables.

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Appendix 1. Respondent Characteristics.

Variables	Percentage (%)
Gender	
Male	62.5
Female	37.5
Age (years)	
17–30	21.4
31–50	55
51–65	21.2
>65	2.4
Education	
PhD	8.5
Master's degree	28.4
Postgraduate diploma/certificate	14.6
Bachelor's degree	31.1
Diploma/certificate	11.9
High school qualification	5.5
Position	
Directors	16.5
Executive management	34.8
Senior management	32
Supervisory to middle-level management	16.7
Time in the organization (years)	
<1	6.4
1–5	41.7
5–10	26
10–20	15.5
>20	10.4

Appendix 2. Measurement Items.

Variables	Items	Factor loading	*M*	*SD*
Decision outcome				
Decision quality	The outcomes of that strategic decision was accurate (1—strongly disagree, 7—strongly agree)	0.83	5.17	1.28
	The outcomes of that strategic decision was correct (1—strongly disagree, 7—strongly agree)	0.85	5.18	1.30
	The outcomes of that strategic decision was precise (1—strongly disagree, 7—strongly agree)	0.77	5.02	1.26
	The outcomes of that strategic decision was reliable (1—strongly disagree, 7—strongly agree)	0.67	5.21	1.24
Decision level				
Decision uncertainty	To what extent were the goals of this decision clear to you (1—absolutely clear, 7—absolutely ambiguous)	0.79	3.81	1.84
	How would you describe your need for additional information (1—had all relevant information, 7—needed a great deal more information)	0.77	3.95	1.65
	To what extent was this decision situation similar to others you have dealt with in the past? (1—very similar, 7—very different)	0.74	3.98	1.57
	How difficult was it to predict the outcomes of the various courses of action you considered in making the decision (1—not at all difficult, 7—very difficult)	0.67	4.10	1.47
Decision motive	What was the general motivation for the company in making the decision (1—to avoid expected negative effects on the company, 7—to improve an already secure situation)	-	4.86	1.47
Time pressure	There was only little time to consider multiple options (1—strongly disagree, 7—strongly agree)	0.81	4.38	1.59
	The decision-making process was rushed (1—strongly disagree, 7—strongly agree)	0.87	4.00	1.70
	There was only limited time to evaluate different options (1—strongly disagree, 7—strongly agree)	0.88	4.28	1.58
Individual level				
Experience	How long have you worked in your current organization (1—less than 6 months, 7–20 years or more)	0.84	4.61	1.38
	How long have you worked in your current position (1—less than 6 months, 7–20 years or more)	0.89	4.05	1.28
	How many years of managerial experience have you had during your career (1—less than 6 months, 7–20 years or more)	0.60	4.95	1.44
Education	What is your highest educational qualification (1—High school, 7—PhD)	-	3.27	1.36

(Continued)

Appendix 2. (Continued)

Variables	Items	Factor loading	*M*	*SD*
Capability	I was confident that I was making the right decision (1—strongly disagree, 7—strongly agree)	0.77	5.41	1.28
	I had all relevant information to make this decision (1—strongly disagree, 7—strongly agree)	0.81	5.22	1.25
	I could easily predict what it would have meat to make a different decision (1—strongly disagree, 7—strongly agree)	0.68	5.11	1.30
Environmental level				
Environment uncertainty	Uncertainty in product (1—predictable, 7—unpredictable)	0.77	3.99	1.30
	Uncertainty in economy (1—predictable, 7—unpredictable)	0.74	4.13	1.33
	Uncertainty in competition (1—predictable, 7—unpredictable)	0.73	4.22	1.25
	Uncertainty in government policies (1—predictable, 7—unpredictable)	0.80	4.04	1.29
	Uncertainty in resources and services used (1—predictable, 7—unpredictable)	0.88	3.93	1.23
	Uncertainty in technology (1—predictable, 7—unpredictable)	0.78	3.97	1.35
Environment hostility	Rate the characteristics of the external environment (1—very safe; little threat to survival and well-being of the company, 7—very risky; a false step can mean company's undoing)	0.77	4.14	1.67
	Rate the characteristics of the external environment (1—rich in investment and marketing opportunities; not at all stressful, 7—very stressful, exacting, hostile; very hard to keep afloat)	0.78	4.02	1.45
	Rate the characteristics of the external environment (1—an environment that your company can control and manipulate to its own advantage, 7—a dominating environment, in which your company's initiatives count for very little against the tremendous forces of your business or political environment)	0.72	4.16	1.48
Organizational level				
Firm size	The current number of employees in your organization (1—1 to 5, 10—over 2000)	-	6.37	2.33
Firm performance	Long-run level of profitability (1—very poor, 7—excellent)	0.70	6.89	2.01
	Growth rate of sales or revenues (1—very poor, 7—excellent)	0.83	7.01	1.82
	Return on assets (1—very poor, 7—excellent)	0.83	7.10	1.78
	Market share (1—very poor, 7—excellent)	0.82	6.97	1.89
	Overall financial performance (1—very poor, 7—excellent)	0.80	7.02	1.86
Decision-making styles				
Rationality	I looked extensively for information in order to make this decision (1—strongly disagree, 7—strongly agree)	0.74	5.10	1.37
	Quantitative analyses were important in making this decision (1—strongly disagree, 7—strongly agree)	0.68	4.97	1.33
	I extensively analyzed relevant information before making this decision (1—strongly disagree, 7—strongly agree)	0.75	5.13	1.26
	The process that had the most influence on my decision was analytical (1—strongly disagree, 7—strongly agree)	0.68	4.95	1.29
	I was effective at focusing my attention on crucial information and ignoring irrelevant information while making this decision (1—strongly disagree, 7—strongly agree)	0.65	5.14	1.26
Intuition	To what extent did you in making this decision rely basically on personal judgment (1—not at all, 7—extensively)	0.77	4.80	1.38
	To what extent did you in making this decision depend on a "gut feeling" to make it (1—not at all, 7—extensively)	0.76	4.64	1.30