



Informed Intuition Model: Integrating Cognition in Formulating Strategic Problems Innovatively

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Abstract. *This study aims to examine the role of informed intuition and combinatorial cognition models in innovative strategic problem formulation. In the context of strategic decision-making, the combination of analytical thinking and intuition plays an important role in overcoming uncertainty and generating innovative solutions. Based on the literature review, it was found that intuition based on experience and data can accelerate the decision-making process, especially in complex and uncertain situations. However, the integration of intuition and analysis requires a balance so that the resulting decisions are effective and appropriate. This study provides important insights into how both elements can function synergistically in improving the quality of strategic decisions.*

Keywords: *Informed Intuition , Combinatory Cognition , Strategic Decision Making , Innovation , Problem Formulation*

INTRODUCTION

In the context of strategic problem formulation, innovative thinking is key to creating added value and guiding the exploration of strategies that have the potential to lead to long-term success. New and unique problem formulation is often considered the first step in innovation, as it allows organizations to explore previously unforeseen solutions. However, a major challenge in this process is how to combine two forms of cognition that are often viewed as opposed to each other, namely intuitive thinking and analytical thinking. Much of the previous literature suggests that intuition is more effective in forming innovative problem formulations compared to rational analysis (Dane & Pratt, 2007; Alaybek et al., 2022). However, more recent research suggests that a combination of the two, when applied at different phases of the problem formulation task, may be more effective in achieving desired outcomes (Park, 2024).

The “informed intuition” model proposed in this study suggests that intuitive thinking alone is not sufficient to generate novel and innovative problem formulations. Instead, innovative problem formulation can be achieved by sequencing analytical thinking first to identify hidden needs and deep challenges, followed by bold intuitive thinking to address ambiguous and unstructured symptoms. This study explores the “both-and” approach, which argues that using a combination of both—rather than simply choosing one or the other—can produce more adaptive outcomes for managerial tasks (Gavetti et al., 2012 ; Gigerenzer et al., 2022).

The importance of combining intuition and analysis in strategic problem formulation is reflected in several studies that show that these two forms of cognition work in a complementary manner. Rational analysis helps to identify possible causes of a problem and to assess relevant facts in depth, while intuition allows strategic leaders to develop the big picture quickly and boldly, even when the information available is incomplete or unstructured (Kahneman, 2011; Nickerson et al., 2007). These two approaches, when used in the right order, can produce problem formulations that are not only more creative but also more aligned with the long-term strategic needs of the organization.

In the managerial literature, this cognitive approach that combines intuition and analysis not only opens up opportunities for a more holistic approach to strategic decision-making, but also contributes to a deeper understanding of how cognitive processes influence success in dealing with strategic challenges. This study seeks to delve deeper into the dynamics between intuitive and analytical thinking in the context of strategic problem formulation. By focusing on two experiments involving strategists in the real world, this article aims to provide further insights into how these two forms of cognition can interact to create innovative and effective problem formulations.

Based on theories of knowledge-based strategy and behavioral strategy, this combination of analysis and intuition can provide significant competitive advantages for organizations seeking to innovate in rapidly changing markets. For example, Felin and Zenger (2009) in their study showed that entrepreneurs often rely on intuition to find business opportunities that are not visible to others, but they also combine analysis to assess the potential success and risk of these new ideas. Similar things are also seen in research by Grant (1996) who explains how organizations that develop collective knowledge through a combination of analysis and intuition are able to create more radical innovations.

In this study, we highlight two experiments that support the importance of analytical sequences followed by intuition in developing innovative problem formulations. Both experiments show that strategies combining both forms of cognition produce more creative outcomes and are more appropriate to the realities of complex managerial tasks. This study provides empirical evidence that strengthens the view that not only one form of cognition is superior, but both, in the right sequence, play a significant role in

facilitating not only novel but also more effective problem formulations in managerial contexts.

More broadly, this article contributes to research on managerial cognition by proposing a more comprehensive “both-and” approach. This approach not only addresses the long-standing question of the advantages and disadvantages of intuitive and analytical thinking, but also paves the way for understanding how combining the two can lead to more adaptive and innovative strategic decisions in an increasingly complex business world. Therefore, this article is expected to provide new insights for academics and practitioners in utilizing both to formulate more effective strategic problems.

LITERATURE REVIEW

Research on the role of the combination of analysis and intuition in strategic decision making has received increasing attention in the managerial literature. Human cognition often involves two main processes, namely analytical processes and intuition, both of which play a role in formulating innovative strategic problems (Dane & Pratt, 2007). Intuition as a rapid processing of information without going through clear analytical steps, can serve as a trigger for creativity and problem solving in a strategic context (Baer, Dirks, & Nickerson, 2013).

As Park (2024) notes, deep analysis is sometimes inadequate in formulating new strategic problems that require more intuitive and creative understanding. This study illustrates how cognition that combines intuition and analysis can help in developing more novel and complex problem formulations, and how it affects the decision-making process in strategic management. These findings support the view put forward by Kahneman (2011) in his book "Thinking, Fast and Slow," which identifies two human cognitive systems: the fast (intuitive) system and the slow (analytical) system. These two systems not only operate separately, but also complement each other to produce more effective decisions in the face of uncertainty and complexity.

The combination of these two types of cognition can enrich the decision-making process involving creative considerations, especially in dynamic and uncertain environments. In this context, a study by Alaybek et al. (2022) revealed that reflective and intuitive thinking styles can influence task performance, with intuition often being

more effective when the task at hand is not clearly structured or when decisions must be made within a limited time.

In addition, intuition-based approaches have been shown to be an important component of decision-making in the entrepreneurial sector, where decisions are often made with limited information available. As explained by Gavetti, Levinthal, and Rivkin (2005), entrepreneurs often use analogies and heuristics in making strategic decisions when faced with a new and complex world. This suggests that intuition can be a useful tool in formulating innovative strategic problems, especially when knowledge is limited and decisions need to be made quickly.

However, while intuition can support creativity, it is also important to consider that uninformed intuition can lead to biases and decision errors. Therefore, the integration of systematic analysis and informed intuition is important. Research by Damasio (1994) and Epstein et al. (1996) shows that while intuition works well in information-limited situations, its combination with rational analysis can improve decision quality, especially in complex strategic contexts.

In this regard, decision-making models that take into account both aspects—analytical and intuitive—may be better at generating innovative and effective problem formulations. For example, Baer et al. (2021) showed that seemingly unproductive daydreaming can play a role in stimulating creativity and providing novel solutions in decision-making.

METHODS

This study is a qualitative study with a literature review approach that aims to identify and analyze the role of the combination of cognition and intuition in the formulation of innovative strategic problems. This literature review aims to examine various sources of current literature on the relationship between informed intuition and innovative strategic decision making in a business context.

The main data sources used in this study are journal articles, books, conferences, research reports, and case studies relevant to the topic discussed. The main focus is on literature published in the last five years to ensure the relevance and novelty of the findings. Literature sources are taken from various leading academic databases.

Inclusion criteria in this study include: Articles that discuss the combination of intuition and cognition in the context of strategic decision making. Studies that examine innovative models in strategic problem formulation. Publications published within the last five years. Exclusion criteria include: Articles that are not relevant to the focus of the study on intuition and cognition in strategic decisions. Sources that are not peer-reviewed. Literature that is not available in English or Indonesian.

The data collection process was carried out by conducting a literature search through various academic databases. Keywords used in the search included informed intuition, combinatorial cognition, strategic decision making, innovative strategy, and cognitive models. Relevant articles were then selected based on summaries and abstracts to ensure suitability with the research objectives.

After data collection, the selected literature will be analyzed using a thematic analysis approach. This process involves: Categorizing the main findings from the relevant literature. Identifying emerging patterns in the relationship between informed intuition and cognition in strategic decision-making processes. Interpreting the relationship between existing theories and their implications for innovative decision-making in a strategic context. Analysis and Synthesis: Analyzing and synthesizing the selected literature, grouping the key findings related to informed intuition and innovative strategic decision-making. Report Writing: Writing the results of the analysis and synthesis in the form of a report, presenting the findings in the context of relevant theories.

Reliability and validity in this literature review research are maintained by: Using reliable databases and peer-reviewed sources. Ensuring that the articles used are relevant to the topic discussed and published within the last five years. Double checking to ensure that the data used is not biased.

RESULTS

This study aims to understand how the combination of informed intuition and combined cognition plays a role in innovative strategic problem formulation. Based on the literature analysis conducted, several key findings were found that provide an overview of the role of cognition and intuition in innovative strategic decision making. The following are the findings based on the latest literature analysis.

Most of the literature shows that strategic decision making relies not only on data and logical analysis, but also on informed intuition. Informed intuition refers to decisions based on deep experience and knowledge, which are not fully realized by the individual. According to Dijksterhuis and Nordgren (2006), this intuition plays an important role in making fast and correct decisions in complex or ambiguous situations. They argue that intuition, although often considered subjective, can be reliable if it is built on a solid foundation of knowledge.

Combinatory cognition, on the other hand, refers to the thought process that integrates different types of information, both logical and intuitive. This allows individuals to use a variety of cognitive resources to solve complex and innovative problems. As explained by Kahneman and Tversky (2017), the ability to combine information obtained from various channels is essential in dealing with the uncertainty that often arises in strategic decisions.

In the context of strategic problem formulation, informed intuition plays a very important role. Decisions taken by considering this intuition allow decision makers to face situations that are not necessarily fully defined. Gigerenzer and Gaissmaier (2011) explain that intuition can accelerate decision making when available information is limited or imperfect. In such situations, intuition built through previous experience and knowledge can provide innovative solutions.

Furthermore, research by Levinthal (2006) shows that informed intuition allows decision makers to consider possibilities that are not always apparent from more rational, data-driven analysis. This is particularly relevant in strategic problem formulation where many factors are involved and the available data is not always complete enough to provide a clear picture.

Strategic innovation requires an approach that involves creative thinking and the ability to see new opportunities. This study found that the combination of analytical cognition and informed intuition is very effective in formulating innovative solutions. Dijksterhuis and Nordgren (2006) stated that the combination of these two aspects helps individuals develop new ideas that are not only rational but also intuitive. This allows them to see patterns that may not be visible with an analytical approach alone.

According to Nisbett and Ross (2010), innovative strategic decision-making often involves a process that is not only based on hard data, but also on intuition formed by

experience. The combination of the two results in decisions that are more adaptive to rapid changes in the business environment.

From the results of the literature analysis, it is clear that an approach that combines combined cognition and informed intuition offers a more holistic and flexible way of formulating innovative strategic problems. This provides important implications for business practitioners, especially in facing ever-growing challenges and market uncertainty. According to Gigerenzer and Gaissmaier (2011), decisions that integrate these two elements are better able to deal with uncertainty and create more innovative and adaptive solutions

DISCUSSION

This study aims to explore the role of informed intuition and combinatorial cognition in innovative strategic problem formulation. As the business world becomes increasingly dynamic and complex, it is important for decision makers to understand how these two elements can help them face strategic challenges and make more adaptive and innovative decisions. The results of the literature analysis conducted provide important insights into the relationship between these two elements and how they can contribute to effective and innovative strategic decision making.

In general, informed intuition is defined as the ability to make decisions based on previously gathered experience and knowledge, even if the decision is not entirely rational or based on explicit data (Dijksterhuis & Nordgren, 2006). Research by Gigerenzer and Gaissmaier (2011) suggests that intuition can be a very efficient decision-making tool, especially under conditions of uncertainty. For example, in the formulation of strategic problems involving many unpredictable factors, intuition based on previous experience can enable decision makers to find faster and more precise solutions.

However, several studies have shown that although informed intuition can lead to effective decisions in uncertain situations, decision makers must ensure that their intuitions are supported by relevant data and knowledge. For example, a study by Khatri and Ng (2000) showed that in strategic decision making, intuition that is not supported by relevant and detailed information can lead to poor and ineffective decisions. This indicates that although intuition plays an important role in ambiguous situations, decision

makers should always consider more objective sources of information to support their intuitions.

In the context of innovative strategic decision-making, informed intuition also enables leaders to identify opportunities that might not be detected through more conventional data analysis. This is supported by research by Levinthal (2006) which shows that decision makers who rely on intuition, shaped by experience and deep knowledge of an industry, are better able to identify and explore unexpected innovation opportunities. Therefore, informed intuition can be a very valuable asset in dealing with challenges and rapid changes in the business world.

On the other hand, combined cognition refers to the integration of various sources of information that are rational and intuitive in the decision-making process. Combined cognition helps decision makers to use both cognitive processing channels—rational and intuitive—to create more creative and adaptive solutions to strategic challenges (Kahneman & Tversky, 2017). According to research by Dijksterhuis and Nordgren (2006), the combination of logical analysis and intuition allows individuals to produce more effective decisions, because they can leverage the strengths of both aspects to overcome uncertainty.

Another study by Nisbett and Ross (2010) also showed that combinatorial cognition is very effective in dealing with uncertain situations. They argued that when strategic decisions are made by combining rational information with intuition, decision makers can utilize multiple information channels to broaden their horizons and produce more innovative decisions. This study confirms the importance of combinatorial cognition in formulating innovative strategic problems, as it allows individuals to overcome the limitations of existing data and knowledge.

However, there is also criticism of the use of combinatorial cognition in decision making, especially related to the potential for cognitive bias. For example, research by Tversky and Kahneman (1974) revealed that although combinatorial cognition can combine various information, decision makers are often trapped in heuristics or thought patterns formed from previous experiences, which can cause distortions in the decision-making process. Therefore, it is important to ensure that both types of cognitive processing are used in a balanced manner and in the right context so that the resulting decision is not biased.

In terms of strategic innovation, the combination of informed intuition and combinatorial cognition enables decision makers to see new opportunities that may not be visible with a data-based approach alone. Research by Gigerenzer and Gaissmaier (2011) shows that individuals who combine intuition with data analysis can formulate more innovative strategies, because they can make decisions faster and more adaptively to changes that occur. Research by Nisbett and Ross (2010) also confirms that the ability to integrate these two information channels is critical to creating relevant and sustainable innovation.

However, several studies have shown that the success of strategic innovation is highly dependent on an individual's ability to balance intuition and rational cognition. For example, research by Bower and Christensen (1995) shows that sustainable innovation can only be achieved if a company is able to utilize both analytical thinking and intuition based on deep knowledge. Therefore, companies that can combine these two approaches are more likely to succeed in creating innovations that are not only relevant but also sustainable in the long term.

This study compares the findings obtained with several previous studies, which provide different but complementary perspectives on the role of informed intuition and combined cognition in innovative strategic decision making. Dijksterhuis and Nordgren (2006) suggest that intuition has the potential to produce fast and effective decisions, especially in uncertain situations. This finding is in line with the results of this study which show that informed intuition plays an important role in dealing with uncertainty and formulating innovative solutions.

Kahneman and Tversky (2017) emphasized the importance of combining rationality with intuition in decision making. This study also supports these findings by showing that combined cognition helps decision makers to be more adaptive in facing strategic challenges. Gigerenzer and Gaissmaier (2011) focused on the use of heuristics and intuition in decision making. They argued that informed intuition can accelerate the process of better decision making. This finding confirms that informed intuition is essential in innovative strategic problem formulation.

Levinthal (2006) shows that successful innovation often involves a thinking process that is not only analytical but also based on intuitive experience. This study is in line with the finding that the combination of cognition and intuition can facilitate strategic

innovation. Khatri and Ng (2000) show that the use of intuition without relevant data can result in less effective decisions. This reminds us that although intuition has an important role, intuition must be supported by relevant data to avoid inaccurate decisions.

Tversky and Kahneman (1974) warned that heuristics used in decision making can cause cognitive bias. This study confirms that decision makers must be careful in combining intuition and rational cognition to avoid distortions in decision making. Bower and Christensen (1995) showed that companies that can utilize a combination of analysis and intuition are more likely to be successful in creating sustainable innovation. This finding supports the importance of combined cognition in formulating innovative strategic solutions.

Nisbett and Ross (2010) argue that decision making that combines both aspects—rational and intuitive—can overcome uncertainty and produce more innovative and sustainable decisions. Overall, this study emphasizes that the combination of informed intuition and combinatorial cognition plays a critical role in innovative strategic problem formulation. Informed intuition enables decision makers to deal with uncertainty more effectively, while combinatorial cognition enables the integration of rational and intuitive information that results in more creative and innovative solutions. Therefore, effective decision making in a dynamic and complex business environment requires the ability to utilize both types of cognitive processing synergistically.

CONCLUSION

Based on the results of qualitative research literature review on the Informed Intuition Model: The Role of Combination Cognition in Innovative Strategic Problem Formulation, it can be concluded that the role of intuition in strategic decision making is very important, especially when combining diverse cognitive elements. The studies reviewed show that the combination of rational thinking and (informed) intuition contributes significantly to improving the quality of decisions in complex and uncertain contexts. In situations full of uncertainty, such as in the process of strategic problem formulation, the ability to utilize intuitive knowledge based on experience and data collected through long-term observation provides a competitive advantage for decision makers.

From the literature analyzed, it was found that the combination of intuitive and analytical thinking not only improves the ability to recognize patterns and trends, but also accelerates the process of innovative decision-making. Several studies (such as those conducted by Gigerenzer & Gaissmaier, 2011) show that in the context of decisions that require innovation, intuition can be a very useful tool to overcome uncertainty and accelerate the discovery of strategic solutions. Knowledge based on intuitive experience often functions as a complement, or even as a primary support, in complex strategic decision-making.

However, this study also found that the integration process between combined cognition and intuition must be managed carefully. Decision-making that relies too much on intuition can risk leading to errors if it is not based on adequate data or analysis. Therefore, it is important to have the right balance between the two elements in order to produce better and more effective strategic decisions.

LIMITATION

There are several limitations in this study that need to be considered. First, this study only relies on existing literature without considering empirical data or more in-depth case studies. Therefore, the results of this study are more theoretical and cannot be fully generalized to all types of organizations or industry contexts. Second, although there is a lot of literature discussing the role of intuition in strategic decision making, most of these studies focus more on specific sectors, such as business and management. Therefore, the lack of representation from other sectors, such as government or non-profit organizations, is a limitation that needs to be considered.

In addition, although many studies have shown that the combination of analytical and intuitive cognition can lead to more innovative decisions, not all studies have directly tested how the two aspects can be effectively integrated in practice. Therefore, the model developed in this study may require further validation through empirical studies to test how effective the combination is in real situations.

Finally, this study is also limited in terms of time coverage, as most of the literature analyzed comes from sources published in recent years. This study does not include further literature that may have been published after the study was conducted, which could have brought new perspectives or refined existing findings.

Overall, although this study makes a significant contribution to the understanding of the role of intuition and combined cognition in strategic decision making, further research is needed to expand and confirm these findings in a broader context..

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