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Strategic Management Process: The Role of Emerging Technologies and Decision-Making Performance

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Abstract

The present study aims to examine the impact of the strategic management process on decision-making performance, considering the role of emerging technologies. This research is applied in terms of purpose and descriptive-correlational in terms of method. The statistical population of the study consists of 145 managers and technology experts in knowledge-based companies in Isfahan, from whom 105 individuals were randomly selected as the sample using Cochran's formula. To collect the required data, a researcher-developed questionnaire based on a five-point Likert scale was used. The content validity of the instrument was confirmed by specialists and experts, while its reliability was assessed using Cronbach's alpha and composite reliability. The validity of the instrument was evaluated through three methods: construct validity (outer model), convergent validity (AVE), and discriminant validity. The AVE value for all variables must be greater than 0.5. To test the research hypotheses, structural equation modeling was conducted using Smart PLS 2 statistical software. The findings indicate that all research hypotheses were confirmed. Accordingly, strategic thinking, strategic planning, and emerging technologies have a significant impact on decision-making performance and can effectively contribute to improving strategic management processes and making strategic decisions.

Keywords: Strategic Management, Emerging Technologies, Decision-Making Performance, Strategic Thinking, Strategic Planning.

1. Introduction

Managers are evaluated based on their ability to achieve organizational goals. As these goals progressively become more competitive, managers must evolve into strategic thinkers with exceptional decision-making skills. Effective strategic management frameworks enable managers to focus on complex issues that need prioritization to accelerate decision-making processes. Additionally, these frameworks equip managers with the capability to make necessary decisions that guide organizational efforts in overcoming specific challenges (Ferlie & Ongaro, 2022; Parsakia & Jafari, 2023; Parsakia et al., 2023). The term "strategy" represents the execution of two key components in achieving organizational objectives. The first component of strategic management comprises effective action plans selected to attain these goals and objectives. The second component involves the resource allocation pattern that connects the organization with its environment. Moreover, strategic management is defined as the process of transforming strategic thinking into an actionable plan that benefits the organization in sustaining its competitive advantages (Hera et al., 2024).

Strategy can be further classified into strategic thinking and strategic planning. Strategic planning focuses on analysis, dealing with the interpretation, detailed expansion, and formulation of current strategies. On the other hand, strategic thinking emphasizes synthesis, utilizing intuition and creativity to construct a coherent vision and image of the organization. Strategic thinking is a process through which senior managers can detach themselves from daily management processes and crises, thereby gaining a different perspective on the organization and its dynamic environment (Ochuba, 2024). Strategic thinking and strategic planning should complement each other. Strategic thinking creates a vision aligned with current market realities and future developments, while strategic planning serves as a tool for its elaboration and implementation (Salman Al-Oda et al., 2024; Shepherd et al., 2024).

Strategy also represents top management's commitment to achieving results aligned with the organization's strategic objectives. A strategy becomes achievable when consistent results or patterns emerge over the years (Henry, 2021). Thus, strategy can be understood as either planning for the future or establishing patterns based on stable results. Organizations must develop plans while also evolving patterns derived from previous organizational outcomes. These stages can be viewed as intended strategy and realized strategy (Ricardo et al., 2022).

The effectiveness of implemented strategies can indicate the quality of decision-making performance within an organization. Decision-making performance refers to the quality and efficiency of decisions made by managers and organizations in achieving strategic objectives. This performance can encompass decision-making speed, accuracy, productivity, and the impact of decisions on organizational success (Nugroho & Angela, 2024). In this study, decision-making performance refers to an organization's ability to make strategic decisions that are accurate, timely, and based on precise data and advanced analytics. Strategic decision-making requires comprehensive data analysis, scenario simulations, and forecasting of future trends. In this context, emerging technologies assist organizations in making better decisions founded on real data and scientific analysis. Strategic decision-making may involve selecting between multiple strategic options, assessing risks and opportunities, and allocating resources to strategic priorities (Ochuba et al., 2024).

Emerging technologies such as artificial intelligence (AI), big data, and machine learning are transforming business operations and leadership decision-making. With the accelerating pace of innovation, senior managers face the challenge of adapting to these changes and adopting new decision-making approaches. AI is a transformative technology with the potential to revolutionize business operations. From customer service to supply chain management, as AI becomes more advanced and accessible, it is increasingly integrated into various business operations. This has significant implications for management and decision-making, as AI enables managers to leverage the power of data and analytics for more informed decision-making (Keding, 2021). A key advantage of AI is its ability to rapidly and accurately process vast amounts of data. This allows managers to identify patterns, trends, and insights that were previously hidden, providing them with a deeper understanding of organizational performance and market dynamics. Equipped with this knowledge, managers can make more strategic and informed decisions that lead to improved performance and competitive advantage (Shrestha et al., 2019).

Big data has also emerged as a critical term in recent years. By harnessing the power of big data, managers can gain unprecedented insights into organizational performance, customer behavior, and market trends. This capability enables them to make more informed decisions, identify new opportunities, and drive innovation (Hera et al., 2024; Massel & Massel, 2018). Additionally, machine learning, a subset of AI, involves training machines to learn from data and make decisions or predictions based on that data. As machine learning algorithms become more advanced, they are increasingly used to support decision-making in various business functions, from marketing to finance. Given the growing influence of emerging technologies on management, it is essential for managers to adapt and evolve. By understanding the potential benefits and challenges of these technologies, managers can make informed decisions on how to integrate them into their decision-making processes (Balasubramanian et al., 2022).

The literature on strategic decision-making and emerging technologies highlights various models and frameworks that influence decision-making performance in organizations. Sedigh Pourmand et al. (2023) designed a strategic decision-making model based on information and communication technology (ICT) in the Physical Education Department of the Ministry of Education, identifying 22 concepts and four key categories: individual factors, infrastructure and facilities, and organizational factors (Sedigh Pourmand et al., 2023). Taghavi et al. (2022) proposed a strategic decision-making model for IT startups,

revealing 649 key points categorized into 141 abstract concepts and 34 core categories, including strategic leadership, technology-driven support, and restrictions due to sanctions (Taghavi et al., 2022). Bahramipour et al. (2022) introduced an algorithm for optimal technology acquisition strategies under complex conditions, distinguishing between acquisition methods based on long-term, mid-term, and short-term decision horizons (Bahramipour et al., 2022). Hera et al. (2024) investigated the role of information systems (IS) in strategic management, finding that IS significantly improves decision-making and organizational performance while posing challenges related to costs and security (Hera et al., 2024). Stone et al. (2020) reviewed the application of artificial intelligence (AI) in strategic marketing decisions, emphasizing the need for more research as AI moves from operational to strategic domains (Stone et al., 2020). Lastly, Afolayan et al. (2020) explored the role of evaluation in strategic decision-making for small and medium-sized enterprises (SMEs) in adopting new technologies, showing that SMEs often rely on subjective judgments, which can lead to ineffective technology adoption and impact business sustainability (Afolayan & de la Harpe, 2020). This body of research collectively underscores the critical role of ICT, AI, IS, and cloud computing in enhancing strategic decision-making while addressing potential challenges and limitations.

The aim of this study is to enhance the understanding of strategic management processes in relation to decision-making performance by incorporating the role of emerging technologies. However, a knowledge gap exists regarding the specific emerging technologies that effectively enable strategic management to enhance organizational performance during decision-making. This study analyzes the relationship between strategic management and decision-making performance while proposing a framework to elucidate the role of emerging technologies.

2. Methods and Materials

This study is applied in terms of purpose and descriptive-correlational in terms of method. The statistical population consists of 145 managers and technology experts from knowledge-based companies in Isfahan, out of whom 105 individuals were randomly selected as the sample using Cochran's formula. Data collection was conducted using a researcher-developed questionnaire based on a five-point Likert scale. The findings from Cronbach's alpha test and composite reliability, used to assess the reliability of the research instrument, are reported in Table 2. To evaluate the validity of the instrument, content validity was assessed through expert consultation, and its credibility was confirmed. Following the distribution of the questionnaire, the validity of the instrument was examined using three methods: construct validity (outer model), convergent validity (AVE), and discriminant validity. The AVE value for all research variables must be greater than 0.50. To test the research hypotheses, structural equation modeling (SEM) was conducted using Smart PLS 2 statistical software.

3. Findings and Results

In this study, Cronbach's alpha was used to determine the reliability of the test. Cronbach's alpha coefficient ranges from 0 to 1, with a value above 0.70 indicating acceptable reliability (Cronbach, 1951). However, Moos et al. (1998) suggested that for variables with a small number of items, a threshold of 0.60 can be considered as the lower limit for Cronbach's alpha. In this study, the Cronbach's alpha coefficient was calculated using SPSS software, and the alpha values for all variables were found to be acceptable.

Table 1. Cronbach's Alpha, Reliability, and Validity of Research Variables

Research Variables	Cronbach's Alpha	AVE	CR
Strategic Thinking	0.887	0.567	0.920
Strategic Planning	0.870	0.547	0.907
Emerging Technologies	0.856	0.592	0.854
Decision-Making Performance	0.864	0.584	0.889

In this section, to test the research hypotheses, the structural model was implemented. Before running the structural model, multivariate normality of the data was assessed using skewness and kurtosis indices. According to the results, the skewness index ranged from -0.748 to +0.242, and the kurtosis index ranged from -1.063 to +0.180, indicating that the data were normally distributed. Additionally, to examine the model's validity, in addition to factor loadings for each item, the validity and reliability

of research variables were considered. Factor loadings greater than 0.50 indicate that the observed variable is a reliable measure of the latent variable. As shown in Table 2, the factor loadings for all items in the present sample exceeded 0.50.

Table 2. Initial Factor Loadings

Construct	Items	Factor Loading	Construct	Items	Factor Loading
Strategic Thinking	q1	0.58	Emerging Technologies	q10	0.57
	q2	0.54		q11	0.63
	q3	0.55		q12	0.55
	q4	0.60		q13	0.63
Strategic Planning	q5	0.56	Decision-Making Performance	q14	0.58
	q6	0.52		q15	0.63
	q7	0.55		q16	0.56
	q8	0.56		q17	0.59
Emerging Technologies	q9	0.58		q18	0.56

Next, to evaluate model fit, after assessing and confirming the measurement model, the structural model of the study was developed, and relationships between latent variables (which represent the research hypotheses) were examined. In this process, model fit indices were first verified before testing the hypothesized relationships between latent variables. Given the similarity of fit indices between the measurement and structural models, only one table is presented to display and evaluate model fit indices. Based on Table 3, a total of 13 indices fall within the acceptance range. According to Afshani et al. (2016), if at least three indices are within the acceptable range, the model fit can be considered good and acceptable. Therefore, the research model demonstrates an excellent fit.

Table 3. Model Fit Indices

Fit Index	Description	Acceptable Criterion	Achieved Value	Status
Absolute Fit Indices				
AGFI	Adjusted Goodness-of-Fit Index	≥ 0.80	0.920	Accepted
GFI	Goodness-of-Fit Index	≥ 0.90	0.940	Accepted
RMR	Root Mean Square Residual	< 0.08	0.035	Accepted
Comparative Fit Indices				
CFI	Comparative Fit Index	≥ 0.90	0.953	Accepted
TLI	Tucker-Lewis Index	≥ 0.90	0.945	Accepted
IFI	Incremental Fit Index	≥ 0.90	0.954	Accepted
RFI	Relative Fit Index	≥ 0.90	0.875	Accepted
NFI	Normed Fit Index	≥ 0.90	0.902	Accepted
Parsimonious Fit Indices				
CMIN/df	Chi-square divided by degrees of freedom	≤ 3	1.698	Accepted
PCFI	Parsimonious Comparative Fit Index	≥ 0.50	0.804	Accepted
PNFI	Parsimonious Normed Fit Index	≥ 0.50	0.754	Accepted
PRATIO	Parsimony Ratio	≥ 0.50	0.843	Accepted
RMSEA	Root Mean Square Error of Approximation	≤ 0.08	0.043	Accepted

After evaluating and confirming the models, the significance of the hypotheses was tested using two key indices: the critical value and the p-value. Based on a significance level of 0.05, the critical value must be greater than 1.96. A value below this threshold indicates that the corresponding parameter in the model is not significant. Additionally, p-values smaller than 0.05 suggest a significant difference between the computed regression weights and zero at a 95% confidence level. The research hypotheses, along with their regression coefficients, critical values, and corresponding p-values, are presented in Table 4. The results indicate that, among the seven formulated hypotheses examining the effect of independent variables on the dependent variable, all hypotheses were confirmed.

Table 4. Hypothesis Testing in the Research Model

No.	Hypothesis	Regression Coefficient	Critical Value	p-Value	Result
1	Strategic Thinking -→ Decision-Making Performance	0.50	3.859	0.002	Accepted
2	Strategic Planning → Decision-Making Performance	0.39	3.137	0.002	Accepted
3	Emerging Technologies → Decision-Making Performance	0.76	4.275	0.002	Accepted

After evaluating and confirming the models, the significance of the hypotheses was tested using two key indices: the critical value and the p-value. Based on a significance level of 0.05, p-values smaller than 0.05 suggest a significant difference between the computed regression weights and zero at a 95% confidence level. The results indicate that, among the two formulated hypotheses, all were confirmed and found to be statistically significant.

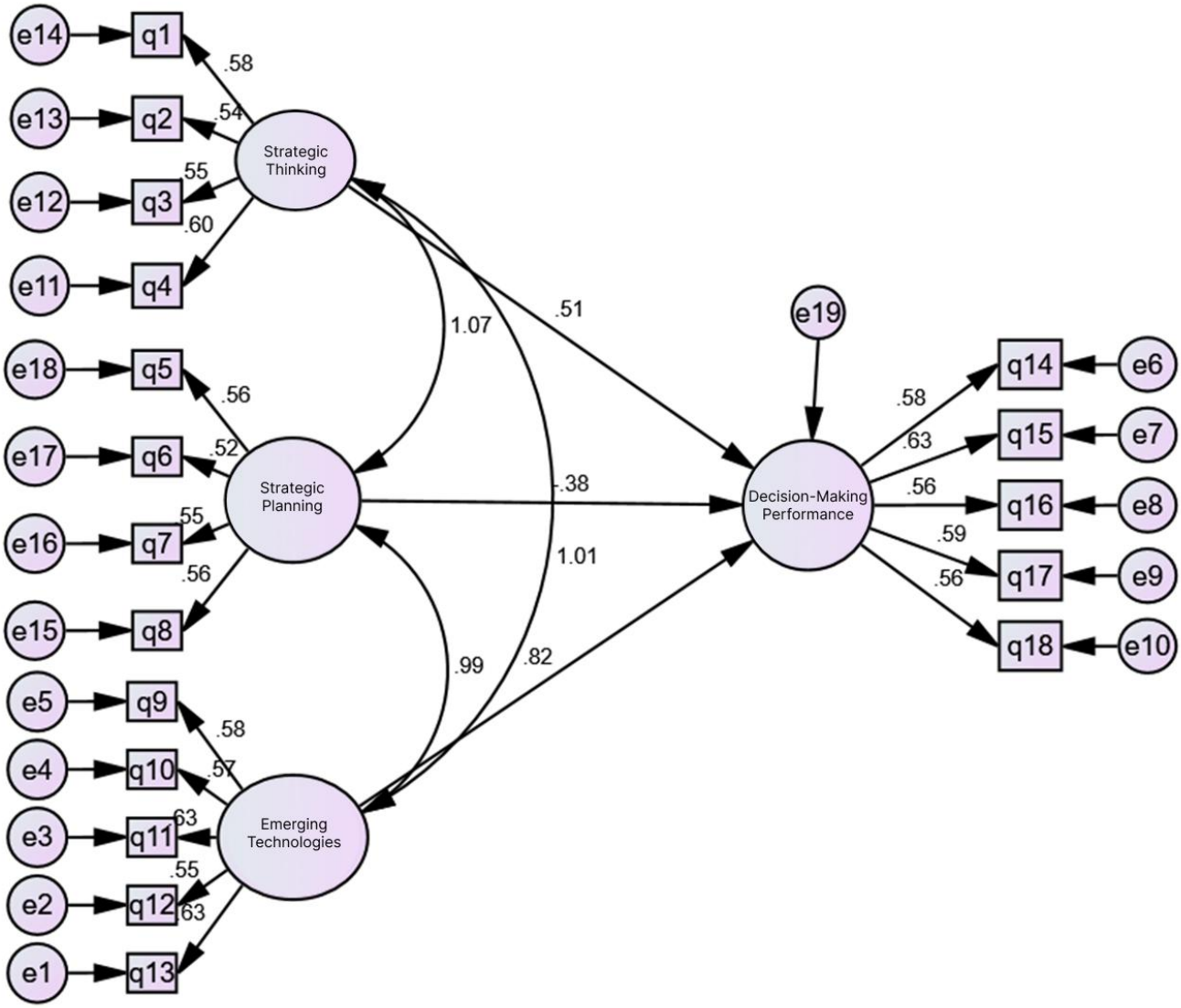

Figure 1. Structural Model of the Study Using AMOS Software

4. Discussion and Conclusion

The findings of this study confirm that strategic thinking, strategic planning, and emerging technologies significantly impact decision-making performance. The results indicate that strategic thinking positively affects decision-making performance, highlighting the necessity for managers to engage in creative and future-oriented strategic thought processes. This aligns with the study by Sedigh Pourmand et al. (2023), who emphasized the importance of individual cognitive capabilities, organizational infrastructure, and available technological resources in shaping strategic decision-making models (Sedigh Pourmand et al., 2023). Furthermore, strategic planning was found to be a key determinant of effective decision-making, reinforcing the notion that structured and well-defined strategic frameworks are essential for organizational success. This supports the findings of Taghavi et al. (2022), who identified strategic leadership and structured resource management as critical components of decision-making models in technology-based startups (Taghavi et al., 2022).

Moreover, emerging technologies were found to have the most significant impact on decision-making performance, underscoring their role in modern strategic management. Similarly, Hera et al. (2024) demonstrated that information systems (IS) play a crucial role in improving organizational decision-making, despite concerns regarding increased costs and security risks (Hera et al., 2024). These findings suggest that organizations that leverage emerging technologies, including AI, big data, and IS, can enhance their strategic decision-making capabilities and achieve a competitive advantage.

The strong impact of emerging technologies on decision-making performance can be further explained by the growing reliance on AI and big data analytics in strategic management. Stone et al. (2020) highlighted that AI is increasingly shifting from operational applications to strategic decision-making, particularly in marketing and organizational management. This transition underscores the importance of integrating AI into decision-making frameworks, as it enables organizations to process large volumes of data and generate insightful predictions (Stone et al., 2020). Similarly, Afolayan et al. (2020) argued that technology adoption plays a crucial role in strategic decision-making within small and medium-sized enterprises (SMEs). However, they also noted that many SMEs fail to adequately assess the potential benefits of new technologies, leading to suboptimal decision-making outcomes (Afolayan & de la Harpe, 2020). These findings align with the results of the present study, emphasizing the necessity for organizations to develop systematic approaches to technology adoption in order to optimize decision-making performance.

One key aspect of this study's findings is the interplay between strategic management processes and technological advancements. The study by Bahramipour et al. (2022) introduced an algorithmic approach to technology acquisition, which categorizes decision-making strategies based on long-term, mid-term, and short-term organizational objectives. This aligns with the present study's results, as it highlights the importance of structured decision-making frameworks that incorporate emerging technologies to enhance organizational effectiveness. Additionally, the research by Taghavi et al. (2022) emphasized the importance of leadership in strategic decision-making, particularly in technology-driven industries (Taghavi et al., 2022). This further supports the argument that the integration of strategic thinking and planning with emerging technologies fosters better decision-making outcomes.

Furthermore, the findings contribute to the growing body of research on the role of IS in decision-making. Hera et al. (2024) demonstrated that IS adoption significantly improves decision-making performance, despite concerns regarding costs and security risks (Hera et al., 2024). The present study reinforces these findings by showing that emerging technologies enhance decision-making processes by providing organizations with data-driven insights, predictive analytics, and enhanced flexibility.

Overall, the results of this study provide empirical support for the idea that strategic management effectiveness is enhanced when organizations integrate structured strategic thinking, planning, and emerging technologies. These findings align with previous research that underscores the critical role of technology in facilitating strategic decision-making. The growing importance of AI, big data, and cloud computing in organizational decision-making frameworks further strengthens the argument that emerging technologies are essential for achieving competitive advantages in today's dynamic business environment.

Despite its contributions, this study has certain limitations. First, the research was conducted within a specific organizational context, focusing on knowledge-based companies in Isfahan. As a result, the findings may not be fully generalizable to other industries or geographical regions. Second, the study relied on self-reported data from managers and technology experts, which may introduce potential biases in the responses. Third, while the study examined the impact of strategic thinking, planning, and emerging technologies on decision-making performance, it did not explore other potential moderating variables, such as organizational culture, leadership style, or external market conditions, which may also influence decision-making outcomes.

Future studies should expand the scope of research to include a broader range of industries and geographical locations to enhance the generalizability of findings. Additionally, longitudinal studies could provide deeper insights into how strategic decision-making evolves over time in response to technological advancements and market dynamics. Future research could also investigate the role of moderating variables, such as organizational culture, leadership style, and regulatory environments, in shaping the relationship between strategic management and decision-making performance. Furthermore, qualitative studies involving in-depth interviews with industry experts and case studies of leading organizations could offer richer perspectives on the practical implementation of strategic decision-making frameworks.

Organizations should prioritize the development of structured strategic management frameworks that integrate emerging technologies to enhance decision-making performance. Managers should invest in AI-driven decision support systems, big data analytics, and cloud-based technologies to improve strategic agility and data-driven decision-making. Additionally, organizations should provide training programs for managers and employees to enhance their strategic thinking and planning capabilities in the context of technological advancements. By fostering a culture of innovation and leveraging technology effectively, organizations can strengthen their strategic decision-making processes and achieve long-term competitive advantages.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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