



DESIGN AND VALIDATION OF A KNOWLEDGE MANAGEMENT MODEL AIMED AT ENHANCING BUSINESS PERFORMANCE IN KNOWLEDGE-BASED ENTERPRISES: THE CASE OF IRAN

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ABSTRACT

Aim/Purpose	To design and validate a knowledge management model to improve business performance in knowledge-based enterprises (KBEs).
Background	In recent years, KBEs have become essential drivers of economic development, particularly in Iran. These enterprises face unique challenges, such as intense competition and limited access to advanced knowledge management practices. Addressing these challenges through effective management models is critical for enhancing their performance. This study aims to design and validate a knowledge management model tailored to the specific needs of KBEs in Iran, fostering improved business performance and competitiveness.
Methodology	This research adopts an exploratory mixed-methods approach, integrating both qualitative and quantitative techniques. The qualitative phase involved in-depth interviews with 21 managers from knowledge-based enterprises in Iran, selected through theoretical sampling. In the quantitative phase, data were collected from 140 experts from these enterprises, chosen using simple random sampling. Data collection was carried out via interviews and questionnaires. The qualitative data

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were analyzed using grounded theory methodology, while the quantitative data were analyzed using Partial Least Squares (PLS) analysis to validate the proposed knowledge management model.

Contribution	This study is the first of its kind in Iran to develop a knowledge management model specifically designed for knowledge-based enterprises and to evaluate its impact on business performance. The results offer valuable insights for policy-makers and managers, enabling them to refine competitive strategies and foster sustainable growth. Furthermore, the study introduces a validated paradigmatic model of knowledge management, underscoring its pivotal role in enhancing business performance across financial, marketing, innovation, and social domains.
Findings	The findings indicate that the implementation of the knowledge management model can significantly improve the performance of knowledge-based enterprises in Iran. This model focuses on enhancing knowledge repositories, streamlining business processes, and strengthening competitive capabilities. Key factors influencing knowledge management include managerial leadership, knowledge workers, a knowledge-oriented culture, and organizational learning. The knowledge management infrastructure in these enterprises acts as a foundational element, while business support factors and environmental uncertainty serve as mediating variables.
Recommendations for Practitioners	Organizations should prioritize the development of robust knowledge management infrastructures to enhance business performance. This includes fostering a knowledge-driven culture, investing in collaborative tools, and ensuring effective leadership to create sustainable competitive advantages.
Recommendations for Researchers	Future research should investigate the integration of knowledge management strategies in diverse organizational contexts and evaluate their long-term effects on innovation. Exploring how these practices contribute to organizational agility and resilience is also recommended.
Impact on Society	The findings highlight the pivotal role of knowledge management in driving societal and organizational progress, particularly in knowledge-driven economies. By optimizing knowledge flow, organizations can contribute to sustainable development and address complex societal challenges.
Future Research	Further research should explore the impact of emerging technologies, such as artificial intelligence (AI) and machine learning, on the enhancement of knowledge management practices. Investigating their potential to automate knowledge processes, optimize decision-making, and facilitate real-time knowledge sharing will be crucial for advancing the field. Additionally, examining the ethical implications of integrating these technologies into knowledge management systems represents a critical area for future inquiry.
Keywords	knowledge management, business performance, knowledge-based companies

INTRODUCTION

In recent decades, the global economy has undergone significant transformations, marked by the emergence of the knowledge-based economy. In this paradigm, knowledge is regarded as the primary source of value creation and wealth generation within organizations, and knowledge-based enterprises (KBEs) are recognized as the frontrunners of this economic evolution (Caputo et al., 2019). In a knowledge-based economy, small and medium-sized knowledge-intensive enterprises play a vital role in the economic and social development of nations. To support these firms, governments strive

to provide the necessary infrastructure and support for their growth. However, a critical challenge in this domain is the intense competition prevalent among such companies (Krupskaya, 2025).

The success of businesses operating in this field hinges on their ability to continuously improve their performance. Therefore, a comprehensive and strategic plan for enhancing competitive capabilities becomes a key success factor for these firms (Bahari & Taheri Roozbehani, 2023; Donnelly & Hughes, 2023). Knowledge-based enterprises have consistently been at the forefront of leveraging knowledge and technology. Consequently, their readiness to optimally utilize new technologies and improve marketing activities can significantly enhance their knowledge reservoirs and marketing performance. Evidence suggests that in many developed countries and emerging economies, these companies have effectively adapted to competitive challenges driven by the expansion of digital transformation by implementing necessary marketing innovations (Warkentin et al., 2024).

In the contemporary era, the growth and prosperity of knowledge-based enterprises are driving transformative changes in the economic landscape through the application of new scientific findings. These findings significantly influence the implementation of knowledge-based economic principles (Ghavammanesh, 2023). With the intensifying competition among knowledge-based organizations, the managers of these companies can leverage their internal capacities and organizational strengths to achieve competitive advantages and ensure survival in highly competitive markets.

A critical focus in this context is the enhancement of capabilities and the development of competencies within knowledge-based enterprises to improve both financial and non-financial performance (Yarahmadi et al., 2024). As the name suggests, knowledge management serves as a foundational element, playing an undeniable role in the establishment, growth, maturity, and expansion of these companies' activities and their improved performance. The life cycle of these businesses is intrinsically tied to the creation, acquisition, and application of knowledge in their day-to-day operations and long-term strategies.

These companies actively strive to enhance their knowledge reserves by fostering organizational innovation and adopting open innovation approaches to acquire external knowledge, thereby continuously improving their performance (Fischer et al., 2022). Research indicates that intellectual capital and knowledge management processes directly impact market performance, enabling organizations to enhance innovation and competitiveness through these resources (Buenechea-Elberdin et al., 2018; Hussinki et al., 2017).

In summary, in the age of knowledge, where the cornerstone is a knowledge-based enterprise, societies that achieve success in the global competitive arena are those with dynamic, growing, and expanding knowledge-based enterprises capable of effectively leveraging knowledge management. Knowledge is now a critical domain governing production and service industries globally, including Iran. For knowledge-based enterprises to enhance their performance, adopting knowledge management with a global outlook and localized approach is imperative (Islam et al., 2021).

The study of knowledge management in the context of Iran and its integration with international frameworks is of paramount importance for improving the performance of knowledge-based enterprises. As a country with considerable scientific and technological potential, Iran encounters both opportunities and challenges in fostering the growth of its knowledge-based sector. A comprehensive examination of its economic, political, and cultural landscape, alongside a comparative analysis with global knowledge management models, can facilitate the development of context-specific strategies tailored to its innovation ecosystem.

Furthermore, international collaborations and technological partnerships play a crucial role in accelerating organizational learning, fostering knowledge exchange, and enhancing the competitive advantage of Iranian knowledge-based enterprises. As these companies endeavor to penetrate global markets, understanding international standards, regulatory challenges, and supportive policies from

other nations can significantly contribute to the formulation of effective knowledge management strategies.

Additionally, drawing insights from successful knowledge management practices in advanced economies and adapting them to Iran's innovation-driven economy can substantially improve enterprise performance, productivity, and sustainable growth. Addressing knowledge management from an international perspective strengthens domestic capabilities and positions Iranian knowledge-based enterprises for a stronger presence in the global marketplace.

In Iran, knowledge management is widely recognized as a crucial factor in the development of knowledge-based enterprises, and significant efforts have been made to strengthen this field. However, substantial research gaps persist, highlighting the need for further exploration to develop effective management models aimed at improving the performance of these enterprises. Given the importance of this domain, the year 2022 (1401 in the Iranian calendar) was designated as the *Year of Knowledge-Based Development* (Alemohammad & Hezarjaribi, 2025; Matin & Sabagh, 2015). In the same year, UNESCO declared the *International Year of Basic Sciences for Sustainable Development* (United Nations General Assembly, 2021). Similarly, in Iran, the year 1401 in the Persian calendar was introduced under the slogan *Production, Knowledge-Based, and Employment-Generating*, underscoring the significance of a knowledge-based economy, reducing reliance on natural resources, creating employment opportunities for skilled professionals, and strengthening scientific and research infrastructure (Office of the Preservation and Publication of the Works of Grand Ayatollah Khamenei, 2022; Toghiani, 2022). This designation underscores the pivotal role of knowledge-based development in driving economic growth in the country.

Nevertheless, conducting localized studies in Iran remains essential, as the country's unique cultural, economic, and social characteristics necessitate the development of strategies specifically tailored to its domestic context (Brett, 2022). Such research is critical for identifying the challenges and opportunities associated with knowledge-based development and ensuring the formulation and implementation of effective and efficient strategies (Yeganeh & Su., 2007).

This focus has deep roots in Iran, with numerous institutional steps taken by policymakers since 2005 (1384 in the Persian calendar) to transition from a resource-based economy to a knowledge-based enterprise, guided by strategic documents such as the Vision 2025 plan. The Seventh Development Plan bill also underscores the shift toward a knowledge-based enterprise. According to the Iranian Parliament Research Center, while Iran has achieved the fastest growth in knowledge-based enterprises over the past decade, climbing from 113th place in 2013 to 62nd in 2023, it still lags behind the targets set in overarching documents like the Iranian-Islamic Progress Model and the 20-Year Vision, which aim for regional leadership and global top-10 status. By focusing on the realities of knowledge management within Iran, this study provides a critical assessment of existing strategies and offers new perspectives for bridging this gap.

Insufficient attention to knowledge management can impede the enhancement of performance in knowledge-based enterprises and their adaptation to environmental changes. Despite a growing academic interest in recent years, research has often examined knowledge management and business performance as distinct constructs. Consequently, integrated studies analyzing the impact of knowledge management on performance improvement within knowledge-based enterprises remain significantly under-researched, highlighting a substantial research gap.

This research adopts an exploratory approach to identify the fundamental constructs of knowledge management that enhance the performance of knowledge-based enterprises. Furthermore, it aims to define and elucidate the interrelationships among these constructs.

Knowledge management is pivotal for enhancing the performance of these enterprises in today's competitive landscape by enabling the creation, acquisition, sharing, and application of knowledge.

This, in turn, contributes to the achievement of both financial and non-financial business objectives (Caputo et al., 2019; Chang & Yen, 2019).

To address these issues, this study adopts a mixed-methods approach, combining qualitative and quantitative analyses. The research is based on a systematic review of 40 scholarly articles on knowledge management in knowledge-based enterprises and empirical data collected from 15 Iranian knowledge-based companies. This dual approach allows for a more comprehensive understanding of knowledge management practices in Iran and provides insights into the factors influencing business performance in this sector. This study addresses the critical question:

What is the knowledge management model aimed at improving the business performance of knowledge-based enterprises?

LITERATURE REVIEW

KNOWLEDGE MANAGEMENT

Historically, knowledge management (KM) has emerged in organizational and management literature during the 1990s. Multiple studies emphasize that KM evolved alongside the growth of information and communication technologies (ICT) during the last decade of the 20th century (McInerney, 2002; Wiig, 2000). According to the Organization for Economic Cooperation and Development (OECD), knowledge management is defined as a set of organizational activities aimed at creating, acquiring, and distributing knowledge and enhancing knowledge sharing within and beyond the organization.

KM encompasses organizational processes that synergistically integrate the data and information processing capacities of technology with the innovation and creativity potential of human resources (Korstanje et al., 2020). KM involves any process or practice related to the generation, acquisition, capture, dissemination, socialization, and application of knowledge, wherever it resides, to enhance organizational learning and performance. KM has also been described as a process through which an organization creates intellectual capital by leveraging the thoughts, ideas, and knowledge-based assets of its members (J. Ferreira et al., 2020). This perspective highlights KM's critical role in fostering learning and driving organizational effectiveness.

KM is recognized as an innovative organizational management approach that enables organizations to effectively identify, organize, select, and share their knowledge resources. The goal of this process is to facilitate the transformation of tacit knowledge into explicit knowledge, thereby creating competitive advantages and improving organizational performance. This approach not only optimizes resource utilization but also fosters stronger synergy within the organization by leveraging the workforce more efficiently (Paoloni et al., 2020).

KM is a formal process of determining which internal information can benefit the organization and ensuring that this information is systematically and readily accessible to those who need it. A company's overall economic, strategic, and innovative performance depends on the extent to which it can leverage all the knowledge it creates and transform it into value-generating activities. These activities contribute to intellectual capital, which can further translate into patents, trade secrets, and copy-rights (Harlow, 2018).

BUSINESS PERFORMANCE

There is no universally accepted definition or set of characteristics for business performance in the literature, as it is a multidimensional concept that reflects an organization's position relative to its competitors (Foruzandeh et al., 2025). Business performance encompasses various dimensions, including financial, operational, and market-based evaluations, which collectively help identify an organization's standing in the competitive landscape. It includes variables such as efficiency, scale, resilience, return on investment, effectiveness, productivity, and quality (Van De Ven et al., 2023).

Key Performance Indicators (KPIs) – the metrics used to evaluate a company’s performance – are critical tools in managing business models and aligning competitive strategies (Djumaevna, 2023). Enhancing business performance can be understood as a series of actions and information aimed at optimizing resource utilization to achieve business objectives efficiently and effectively (Sutrisno et al., 2023). Business performance reflects an organization’s ability to achieve its objectives at various levels. It can be categorized into three primary dimensions, each playing a critical role in a comprehensive evaluation.

1. Financial performance

Financial performance encompasses key metrics such as return on investment, profit margins, and cash flow, which offer valuable insights into a business’s financial health and stability. These indicators are essential for assessing an organization’s economic sustainability and strategic positioning (Fischer et al., 2022; Truong et al., 2024). Moreover, financial performance is closely linked to knowledge-based strategies that enhance business resilience and profitability (Asutay & Ubaidillah, 2024; Farida & Setiawan, 2022).

2. Operational performance

Operational performance focuses on the efficiency of business processes and operations. It includes measures such as production rates, quality control, and operational costs, which are crucial for maintaining day-to-day efficiency, ensuring long-term sustainability, and optimizing resource utilization (J. J. Ferreira et al., 2024). Recent research highlights that integrating knowledge management strategies enhances operational efficiency by streamlining internal workflows and improving adaptability in dynamic environments (Durst et al., 2024).

3. Market performance

Market performance refers to a company’s standing within its industry and is evaluated using indicators such as market share, sales growth, and customer loyalty. This dimension reflects an organization’s ability to adapt to market fluctuations and maintain a competitive advantage. Studies suggest that companies leveraging intellectual assets and effective knowledge management frameworks exhibit superior market adaptability and strategic agility (Caputo et al., 2019; Foruzandeh et al., 2025).

Recent academic research underscores that both financial and non-financial performance are influenced by multiple factors. The strategic integration of these performance dimensions can significantly enhance competitive advantage. For example, studies have demonstrated that strategic decision-making styles and knowledge-based management approaches enhance organizational performance by effectively aligning resources and capabilities with market demands (Fischer et al., 2022; Nugroho & Angela, 2024).

Emerging technologies play a crucial role in knowledge management and enhancing the performance of knowledge-based enterprises. Technologies such as artificial intelligence (AI), big data, blockchain, and the Internet of Things (IoT) have revolutionized the processes of knowledge collection, processing, and application. These technologies enable the analysis of complex data, prediction of future trends, and optimization of decision-making processes. For Iranian knowledge-based enterprises, leveraging these technologies can provide a competitive advantage and foster innovation. However, challenges such as limited access to technological infrastructure, strict regulations, and communication barriers with international companies may slow the adoption of these technologies (J. Ferreira et al., 2020; Shaban-Elahi & Khadivor., 2010).

What is new in knowledge storage is the data lake, which works on the principles of schema-on-read. This means that there is no pre-defined schema in which data is installed before it is stored. It is only when the data is read during processing that it is examined, analyzed, and adjusted, if necessary. This feature, in addition to saving time, allows data to be stored in any format. Mohamed et al. (2025) suggest that knowledge graphs are now used as an efficient way to display and communicate information

about different concepts. Knowledge graphs have been important in managing data stored in organizational data lakes and are well-established in various industries. Considering that Bartuś et al. (2025) describe the emerging Industry 5 as a new paradigm for managing intellectual and technological resources and a key to harmonious human-centered development, it can be said that knowledge management, which is the management of intellectual capital in the tacit knowledge sector, can be very important in Industry 5. While discussing community building and the knowledge repository in the data age, Frick (2023) says that this knowledge repository serves as a repository of expertise, best practices, and guidance for navigating the complexities of data use by municipalities and regions. Koch and Smith (2025) propose future memory practice methods and argue that the representation, dissemination, and preservation of cultural knowledge in digital media are complemented by social frameworks.

Cultural differences have a profound impact on knowledge management and business performance. Factors such as organizational culture, knowledge-sharing practices, willingness to innovate, and leadership styles vary significantly across different countries. In Iran, traditional approaches to knowledge management and reluctance among some organizations to share information may pose challenges to the development of knowledge-based enterprises. In contrast, advanced economies with strong collaboration-oriented cultures facilitate knowledge management processes and accelerate business performance improvement. As a result, understanding these cultural differences is essential for Iranian companies aiming to enter global markets, as it can play a pivotal role in developing effective management strategies (Bashir et al., 2024; Mehrjou, 2022). The combination of financial, operational, and market performance provides a holistic view of a business's ability to achieve its goals, respond to environmental challenges, and sustain long-term success in competitive markets.

KNOWLEDGE-BASED ENTERPRISES

The term “knowledge-based economy” was first introduced by the Organization for Economic Co-operation and Development (OECD) and is defined as an economy grounded in the production, distribution, and utilization of knowledge and information. A knowledge-based enterprise has emerged from a novel economic structure driven by a significant revolution centered on knowledge and innovation. In this context, knowledge has become the primary factor of production, a source of prosperity, and a growth engine for knowledge-driven societies aiming toward development (Anabestani et al., 2022).

Knowledge-based enterprises are systems built on the foundation of generating, distributing, and applying knowledge and information. These economies are products of major transformations rooted in knowledge and innovation, serving as the principal drivers of production and well-being in modern societies. Recent studies in knowledge management and intellectual capital demonstrate that integrating knowledge into business processes can enhance job readiness and improve organizational performance (Paoloni et al., 2020; Raut et al., 2024).

The pillars of a knowledge-based enterprise include creativity, innovation, investment, the development of communication infrastructure, the establishment of science and technology parks, commercialization, transforming ideas into products, and creating accelerator hubs. For the development and understanding of knowledge-based enterprises that can address the evolving knowledge needs of societies, it is necessary to identify broader knowledge dimensions. In such an economy, businesses are transitioning toward knowledge orientation, giving rise to the concept of knowledge-based businesses (Peters, 2022).

According to a comprehensive definition, a knowledge-based enterprise refers to a private or cooperative entity established to synergize science and wealth, develop a knowledge-driven economy, and achieve scientific and economic objectives. These objectives include the expansion and application of inventions and innovations and the commercialization of research and development outcomes, encompassing the design and production of high-tech products and services with substantial added value (Djumaevna, 2023). In Iran, a knowledge-based enterprise is defined as a private or cooperative

entity established with the aim of synergizing science and wealth, advancing the knowledge-driven economy, and achieving scientific and economic objectives. These objectives include expanding the application of innovation and commercializing the outcomes of research and development in high-tech domains with significant added value, as per the criteria outlined in relevant laws.

In knowledge-based enterprises, knowledge is a critical asset upon which the very existence of the organization depends (Shariatnejad & Zeidi Asl, 2023). Furthermore, knowledge-based enterprises require the development of management models that align with technological advancements and evolving market demands to improve their performance. Employing knowledge management and information technology strategies as critical tools can help these companies achieve greater success in today's dynamic and complex environment (Chang & Yen, 2019).

Despite the numerous advantages of knowledge-based enterprises, global statistics indicate that over 70% of these firms face the risk of failure within their first year of establishment, and more than 90% cease to exist within the first five years. One of the primary factors contributing to their poor performance and eventual failure is the lack of a clear framework for knowledge management and knowledge synergy. The absence of effective knowledge management ultimately leads to insufficient market understanding, financial challenges, technical issues, and legal or regulatory complications, severely impacting business performance (Hussinki et al., 2017; Sahibzada et al., 2020).

Studies conducted in Iran reveal that most of the country's knowledge-based enterprises struggle with significant challenges, including retaining knowledge workers, securing investment for both short-term and long-term projects, and improving and developing knowledge management processes. In summary, knowledge management is a critical factor for maintaining competitive strength and enhancing the performance of such companies in Iran (Fallah Tafti et al., 2023).

The lack of necessary strategies to enhance business performance within the ecosystem of knowledge-based enterprises in Iran is an issue requiring urgent attention. These organizations must prioritize improving innovation capabilities and strategic agility to advance their business performance (Bashir et al., 2024).

RESEARCH BACKGROUND

In recent years, a growing body of research has focused on the relationship between knowledge management and business performance, emphasizing its critical role in organizational success. Fallah Tafti et al. (2023) conducted a causal analysis of knowledge synergy in knowledge-based enterprises, revealing that knowledge management significantly enhances the performance of such enterprises. Similarly, Truong et al. (2024) examined the impact of intellectual assets on business performance through the mediating role of organizational knowledge management. Their findings demonstrated that knowledge management significantly moderates the relationship between intellectual assets and business performance, confirming its strategic importance.

Further supporting this perspective, Sadeghi et al. (2023) investigated job performance based on knowledge management components, concluding that all components of knowledge management positively and significantly influence job performance. A review-based study by Takhtaei and Lili Zadeh (2023) also underscored knowledge management as a fundamental pillar in improving business performance (Mombeini & Askari Masouleh, 2023).

Highlighted that knowledge management functions as a form of "soft power," influencing organizational performance, while Salari Kiskani et al. (2022) emphasized its impact on organizational performance when integrated with strategic human resource management practices. Additionally, Saadat Gholipour Azar and Ghahremani (2022) established a direct relationship between knowledge management, customer relationship management, and organizational performance.

Expanding on these findings, Eskandarinia (2022) reported that knowledge management directly affects the performance of small and medium-sized enterprises (SMEs) in Tehran. Similarly, Seifollahi

(2022) found that customer knowledge management influences market performance directly and indirectly through the mediation of innovation capabilities. Collectively, these studies underscore the pivotal role of knowledge management in various dimensions of organizational and business performance.

Building on this foundation, recent research has explored the integration of knowledge management with emerging technologies. Yumhi et al. (2024) designed an intelligent system to examine its impact on employee performance, demonstrating that knowledge management enhances organizational performance by improving employee capabilities. A systematic review by Durst et al. (2024) further confirmed that knowledge management significantly influences various performance dimensions in SMEs. J. J. Ferreira et al. (2024), in their study titled “Knowledge-Enhancing Strategies and Digital Transformation for Improving SME Performance,” emphasized the central role of knowledge management in fostering digital transformation. Santos et al. (2023) revealed that knowledge sharing when combined with a managerial control system, can enhance startup performance and innovation. Similarly, Idrus et al. (2023) highlighted the critical role of knowledge management, digital transformation, and artificial intelligence in shaping startup performance and marketing strategies. Narayanan et al. (2023) examined the drivers and outcomes of knowledge management implementation in SMEs, concluding that improved performance is the most significant outcome of adopting effective knowledge management strategies.

RESEARCH CONTRIBUTION

Given the increasing focus on knowledge-based enterprises and the existing research gap concerning the business performance of startups, this study adopts an exploratory approach to develop a knowledge management model specifically designed to enhance the performance of knowledge-based companies. By integrating a global perspective with a localized and specialized approach, this research ensures practical applicability for knowledge-based companies in Iran. The study’s emphasis on practical implementation aims to address the specific challenges of the local ecosystem while aligning with international advancements in knowledge management practices.

RESEARCH METHODOLOGY

This study is classified as applied-developmental research in terms of its purpose, while in terms of data collection methodology, it is a non-experimental (descriptive) research conducted using a cross-sectional survey approach. The research employs a mixed-methods approach, combining qualitative and quantitative methods.

QUALITATIVE PHASE

The qualitative participants consisted of theoretical experts (marketing management academics) and practical experts (managers of knowledge-based companies) with substantial experience in knowledge management. The selection criteria were based on Lopez and Whitehead (2013) and include:

1. Key influence,
2. Recognized expertise,
3. Theoretical knowledge,
4. Diversity, and
5. Motivation to participate.

The theoretical sampling method was employed to select participants, which is deemed appropriate for grounded theory methodology (Glaser et al., 1968). Sampling continued until theoretical saturation was achieved, resulting in a total of 21 participants in the qualitative phase.

QUANTITATIVE PHASE

The quantitative phase targeted managers and experts from knowledge-based companies in Tehran. To determine the sample size, Cohen's power analysis was applied using the G*Power software (Cohen, 2013). At a 95% confidence level, with an effect size of 0.15 and a test power of 80%, the minimum required sample size was calculated as 140 participants. Given the homogeneity of the statistical population, a simple random cluster sampling method was used.

DATA COLLECTION METHODS

Qualitative Data Collection

Data for the qualitative phase were collected through semi-structured interviews, which are well-suited for exploratory studies and model development. Semi-structured interviews allowed for in-depth insights from experts.

Quantitative Data Collection

Data for the quantitative phase were collected using a researcher-designed questionnaire tailored to the study's objectives. This comprehensive methodology ensures that the research incorporates both theoretical insights and empirical evidence to develop a robust model for improving business performance in knowledge-based companies.

VALIDITY AND RELIABILITY

The validity of the qualitative phase was assessed based on the criteria proposed by Guba and Lincoln (1982), including credibility, transferability, confirmability, and dependability. These criteria were evaluated and approved by expert reviewers, ensuring the rigor and reliability of the qualitative research findings.

To assess the reliability of the qualitative phase and ensure the accuracy of coding, Holsti's (1969) method was employed. This approach involves the following steps:

1. *Initial Coding:* Two independent researchers reviewed and coded the qualitative data (e.g., interview transcripts) separately.
2. *Code Comparison:* The assigned codes from both coders were then compared to determine the level of agreement between them.
3. *Calculation of the Observed Agreement Percentage:* Holsti's (1969) proposed formula for calculating coding reliability is as follows:

$$PAO = 2M / (N_1 + N_2)$$

In the above formula:

- M represents the number of coding agreements between the two coders.
- N_1 and N_2 denote the total number of coded items by the first and second coders, respectively.
- PAO (Percentage Agreement Observed) ranges between 0 (no agreement) and 1 (perfect agreement). A value greater than 0.70 is considered desirable.

In this study, the coding process was conducted twice, and the observed agreement percentage was calculated as 0.69, which exceeds 0.60, indicating an acceptable level of reliability.

VALIDITY AND RELIABILITY ASSESSMENT

To assess the validity of the questionnaire, convergent validity and discriminant validity were examined. The average variance extracted (AVE) for all variables must be greater than 0.50 to ensure sufficient convergent validity.

For reliability assessment, both composite reliability (CR) and Cronbach's alpha coefficient were calculated. The acceptable threshold for CR and Cronbach's alpha for all constructs is greater than 0.70

(Hair et al., 2021). The results related to these indicators are presented in the outer model evaluation section.

DATA ANALYSIS METHODS

Two analytical approaches were employed:

- *Qualitative Phase:* Using Grounded Theory, the constructs related to knowledge management implementation aimed at improving the business performance of knowledge-based enterprises were identified, and the causal relationships among these factors were explained.
- *Quantitative Phase:* The Partial Least Squares (PLS) method was used to validate the paradigmatic model of the study.

Data analysis was conducted using MaxQDA for the qualitative phase and Smart PLS for the quantitative phase.

RESEARCH FINDINGS

QUALITATIVE PHASE

The demographic characteristics of 21 academic experts and managers of knowledge-based enterprises who participated in the qualitative phase are shown in Table 1.

Table 1. Demographic characteristics of academics and managers in knowledge-based companies

	Demographic characteristics	Frequency	Percentage
Expertise	Theoretical experts (marketing academics)	7	33%
	Practical experts (managers of knowledge-based companies)	14	67%
Education	Master’s degree	5	24%
	Doctorate degree	16	76%
Work experience	15–20 years	9	43%
	More than 20 years	12	57%
Total		21	100%

QUANTITATIVE PHASE

The demographic characteristics of the 140 experts from knowledge-based enterprises who participated in the quantitative phase are presented in Table 2.

Table 2. Demographic characteristics of experts in knowledge-based companies

Category	Demographic characteristics	Frequency	Percentage
Gender	Male	92	66%
	Female	48	34%
Age	Under 35 years	32	23%
	35–45 years	71	51%
	45 years and above	37	26%
Education	Bachelor’s degree	81	58%
	Master’s degree	42	30%
	Doctorate degree	17	12%
Work experience	Less than 10 years	44	31%
	10–15 years	34	24%

	15–20 years	35	25%
	More than 20 years	27	19%
Total		140	100%

These demographic insights provide a comprehensive understanding of the study participants and contribute to ensuring the reliability and validity of the research findings across diverse educational, professional, and experiential backgrounds.

Qualitative analysis and coding

The interview data were analyzed using grounded theory based on Strauss and Corbin’s (1997) proposed methodology, which includes open coding, axial coding, and selective coding.

- During the open coding phase, 227 initial codes were identified.
- Through axial coding, these codes were condensed into 13 axial codes and further organized into 6 selective codes and 72 open codes.

The knowledge management model for enhancing the business performance of knowledge-based companies, derived from grounded theory coding, is presented in Table 3. This systematic coding process ensures the robustness of the findings and highlights the critical constructs, relationships, and themes that underpin the proposed model.

Table 3. Coding framework for the knowledge management model to enhance business performance in knowledge-based companies

Selective coding	Axial coding	Open coding
Causal conditions	Managerial factors	1. Support and commitment of senior managers to KM
		2. Scientific and practical adherence of managers to knowledge-centricity
		3. Participative management and welcoming innovative ideas
		4. Promoting creativity and innovation within the company
		5. Allocating sufficient budgets for KM
	Knowledge workers	6. Access to talented individuals for recruitment
		7. Retention of knowledge workers
		8. Utilizing knowledge workers’ ideas
		9. Talent management and skill development of knowledge workers
		10. Meritocracy and career advancement for knowledge workers
	Knowledge-based culture	11. Institutionalizing KM culture within the company
		12. Promoting knowledge-based values
		13. Employees’ belief in knowledge-centricity as a core value
		14. Knowledge-based norms as accepted standards
		15. Creating a knowledge-based atmosphere
	Organizational learning	16. Identifying educational needs related to KM
		17. Conducting KM training programs based on needs
		18. Continuing KM training initiatives
		19. Developing double- and triple-loop learning
		20. Enhancing knowledge-based skills and competencies
Central phenomenon	Knowledge management	21. Creating knowledge using internal company resources
		22. Acquiring external knowledge through open innovation
		23. Storing knowledge in large databases
		24. Integrating stored knowledge
		25. Easy and quick retrieval of knowledge resources
		26. Sharing and disseminating knowledge across the business
		27. Utilizing knowledge in business operations
		28. Continuously developing and improving knowledge reserves

Selective coding	Axial coding	Open coding
Contextual conditions	KM infrastructure	29. Utilizing appropriate hardware for KM
		30. Leveraging required KM facilities and tools
		31. Using up-to-date KM software
		32. Accessing large internal databases
		33. Employing skilled human resources
Intervening conditions	Business environment uncertainty	34. Extensive economic sanctions
		35. Sanctions on the national banking system
		36. Stagflation conditions in the country
		37. Severe economic fluctuations
		38. Misalignment of current laws with modern needs
	Business support factors	39. Investment uncertainty
		40. Supportive regulations for knowledge-based companies
		41. Low-interest loans and financial assistance
		42. Clear regulations for patents and copyrights
Strategies and actions	Business KM strategies	43. Availability of business angels
		44. Clear vision for business KM
		45. Defined missions aligned with business KM
		46. Long-term KM goals
		47. Specific strategies for achieving long-term objectives
		48. Short-term KM goals
		49. Policies aligned with short-term goals
		50. Procedures and processes for KM execution
		51. Development and dissemination of KM execution laws and regulations
		Outcomes
53. Improved ability to attract new investments		
54. Budget management and cost savings		
55. Increased sales and revenue		
56. Enhanced profit margins		
Marketing performance	57. Expanded market share for knowledge-based companies	
	58. Expanded market share for knowledge-based companies	
	59. Enhanced competitiveness	
	60. Growth in customer acquisition and retention	
Innovative performance	61. Increased customer satisfaction and loyalty	
	62. Achieving sustainable competitive advantage	
	63. Increased creativity and innovation among employees	
	64. Innovation in product and service offerings	
Social performance	65. Process innovation	
	66. Adoption of new knowledge-based technologies	
	67. Creative responses to emerging challenges	
	68. Meeting public expectations	
	69. Aligning with sustainable development goals	
	70. Supporting philanthropic activities	
71. Enhancing organizational reputation and social image		
72. Improving environmental performance and sustainability		

Table 3 illustrates the structured coding framework, delineating the clear relationships among selective, axial, and open codes to construct a comprehensive and robust knowledge management model. Drawing on the analyzed results, Figure 1 depicts the paradigmatic model underpinning this research. Figure 1 presents a paradigmatic model of knowledge management aimed at enhancing business performance in knowledge-based companies.

This model has been systematically developed through a rigorous three-stage coding process – open coding, axial coding, and selective coding. The relationships between the components in this model are elaborated as follows:

Causal Conditions: This section includes managerial factors, knowledge-based culture, knowledge workers, and organizational learning, which directly influence the central phenomenon of the model (knowledge management). In other words, the presence of a strong knowledge-based culture, managerial support, and robust organizational learning plays a critical role in the development and implementation of knowledge management.

Central Phenomenon (Knowledge Management): This concept serves as the core of the model, illustrating how knowledge management is shaped and developed within an organization. It is influenced by the causal conditions and serves as the foundation for formulating business strategies for knowledge management.

Contextual Conditions: This section includes knowledge management infrastructure, which acts as a contextual factor affecting the implementation of knowledge management strategies. The availability of suitable IT infrastructure and information systems facilitates the success of knowledge management initiatives.

Intervening Conditions: This section comprises business support factors and environmental uncertainty. These variables influence how knowledge management strategies are executed. For example, challenges such as economic sanctions or rapid market changes may hinder the implementation of knowledge management, whereas government support can have a positive impact.

Strategies (Knowledge Management Business Strategy): These strategies define how knowledge management is applied to improve organizational performance. They are derived directly from the knowledge management phenomenon and are influenced by contextual and intervening conditions.

Outcomes (Organizational Performance): The outcomes of this model are categorized into four dimensions:

- *Financial Performance:* Includes increased investment, cost reduction, and improved profitability.
- *Marketing Performance:* Encompasses market share expansion, customer acquisition, and retention.
- *Innovative Performance:* Reflects enhanced employee creativity, product development, and process innovation.
- *Social Performance:* Relates to corporate social responsibility and sustainable development.

This model illustrates how managerial and organizational factors influence knowledge management, how knowledge management is implemented through business strategies, and how it ultimately leads to enhanced business performance. The relationships between the boxes in Figure 1 depict a causal-structural model, explaining how knowledge management contributes to business success.

After presenting the knowledge management model aimed at improving business performance, the Partial Least Squares (PLS) method was employed for validation. The final structural model of the research is depicted in Figure 2. This model, generated using Smart PLS software, presents a summary of the results in the standard estimation mode. Additionally, the t-statistics and bootstrapping values, which assess the significance of the relationships, are displayed in Figure 3. These metrics provide a robust evaluation of the model's validity and the strength of its constructs and relationships.

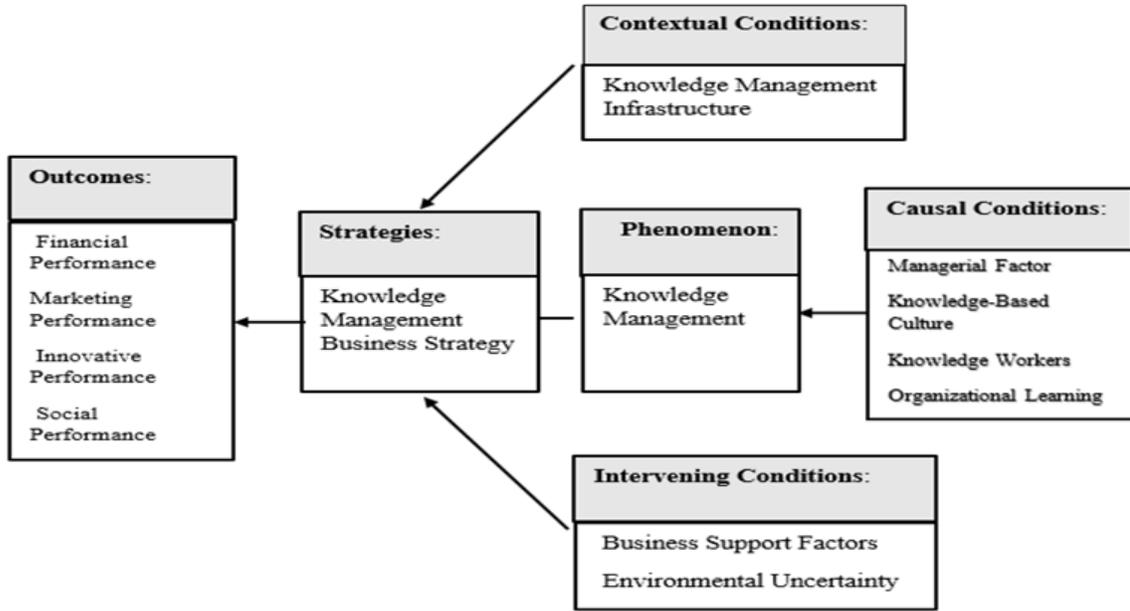


Figure 1. Paradigmatic model of knowledge management for enhancing business performance in knowledge-based companies

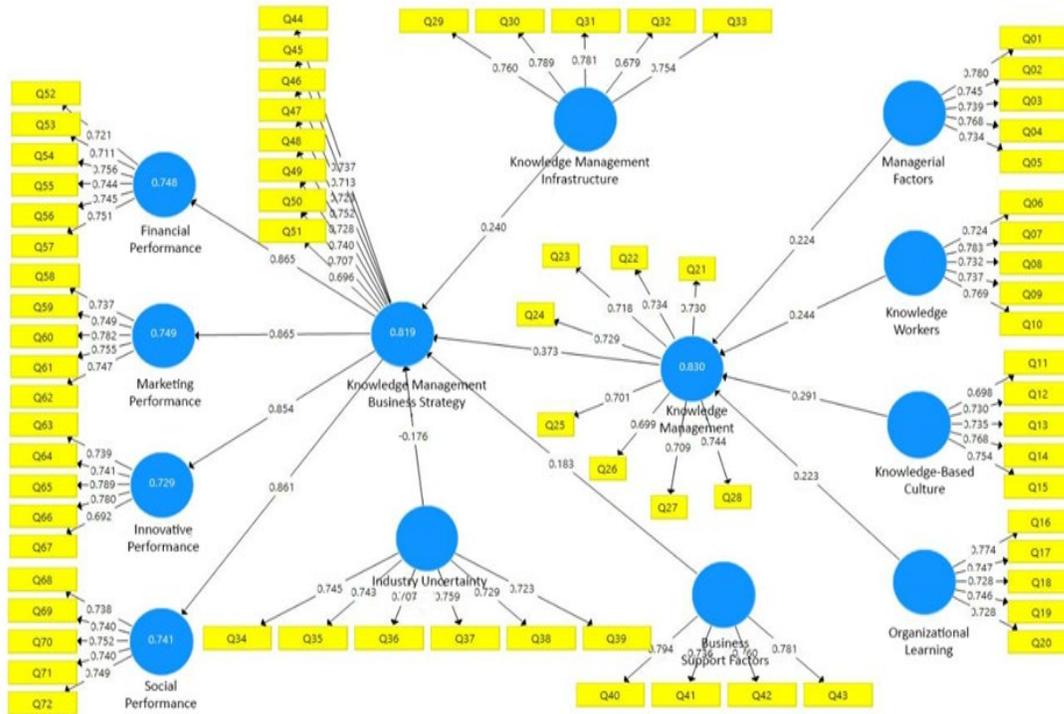


Figure 2. Validation of the knowledge management model for enhancing business performance using the Partial Least Squares (PLS) method

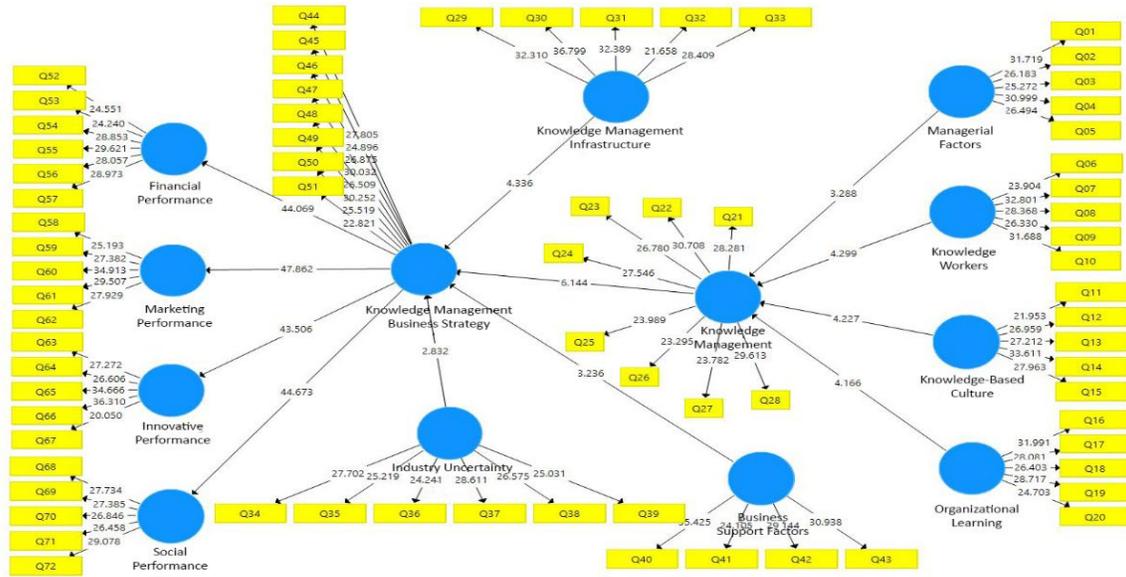


Figure 3. Significance of the knowledge management model for enhancing business performance

OUTER MODEL (MEASUREMENT MODEL) EVALUATION

The external component of the model (measurement model) demonstrates the relationship between observable variables and latent variables. The degree of association between the questions and the main constructs is indicated by factor loadings. The results presented in Figures 2 and 3 show that the factor loadings exceed 0.6 in all cases, and the t-statistics are greater than 1.96 in all instances. Therefore, the measurement model exhibits acceptable validity. For further assurance, the external (measurement) model was evaluated based on convergent validity indices, rho coefficients, composite reliability, and Cronbach’s alpha. The average variance extracted (AVE) should be greater than 0.5, while the rho coefficient, composite reliability, and Cronbach’s alpha should all exceed 0.7 (Hair et al., 2021). A summary of the results evaluating the measurement model’s fit is presented in Table 4.

Table 4. Evaluation of the measurement model for knowledge management framework for enhancing business performance

Main constructs	Cronbach’s alpha	Composite reliability (CR)	Rho coefficient (Rho)	Ave
Knowledge Management Business Strategy	0.871	0.871	0.899	0.526
Knowledge Management Infrastructure	0.808	0.809	0.867	0.568
Industry Uncertainty	0.829	0.830	0.875	0.540
Social Performance	0.798	0.798	0.861	0.553
Marketing Performance	0.811	0.812	0.868	0.569
Financial Performance	0.833	0.833	0.878	0.545
Innovative Performance	0.804	0.806	0.864	0.561
Business Support Factors	0.768	0.769	0.852	0.590
Managerial Factors	0.810	0.810	0.868	0.568
Knowledge-Based Culture	0.790	0.792	0.856	0.544
Knowledge Management	0.868	0.868	0.896	0.519
Knowledge Workers	0.805	0.806	0.865	0.562
Organizational Learning	0.799	0.800	0.862	0.555

According to Table 4, the AVE values are greater than 0.50, confirming convergent validity. Additionally, the Rho coefficient, composite reliability (CR), and Cronbach’s alpha for all variables exceed 0.70, indicating that the reliability of all variables is confirmed. The relationships between the main constructs are referred to as the inner model (structural section). These relationships were examined based on path coefficients and t-statistics. A summary of the test results for the relationships between the main constructs is presented in Table 5.

STRUCTURAL MODEL (INNER MODEL)

The relationships among the main constructs, referred to as the structural model, were evaluated using path coefficients and t-statistics. These metrics assess the strength and significance of the relationships between the constructs. The summary of these relationships and their statistical results is presented in Table 5.

Table 5. Results of structural relationships in the knowledge management model for enhancing business performance

Relationship	Path coefficient	t-statistic	Significance (p-value)	Effect size (F ²)	Result
Knowledge Management Business Strategy → Social Performance	0.861	44.673	0.000	2.868	Confirmed
Knowledge Management Business Strategy → Marketing Performance	0.865	47.862	0.000	2.985	Confirmed
Knowledge Management Business Strategy → Financial Performance	0.865	44.069	0.000	2.970	Confirmed
Knowledge Management Business Strategy → Innovative Performance	0.854	43.506	0.000	2.691	Confirmed
Knowledge Management Infrastructure → Knowledge Management Business Strategy	0.240	4.336	0.000	0.082	Confirmed
Industry Uncertainty → Knowledge Management Business Strategy	-0.176	2.832	0.005	0.042	Confirmed
Business Support Factors → Knowledge Management Business Strategy	0.183	3.236	0.001	0.054	Confirmed
Managerial Factors → Knowledge Management	0.224	3.288	0.001	0.075	Confirmed
Knowledge-Based Culture → Knowledge Management	0.291	4.227	0.000	0.116	Confirmed
Knowledge Management → Knowledge Management Business Strategy	0.373	6.144	0.000	0.139	Confirmed
Knowledge Workers → Knowledge Management	0.244	4.299	0.000	0.084	Confirmed
Organizational Learning → Knowledge Management	0.223	4.166	0.000	0.074	Confirmed

Path coefficients in this section represent the strength and direction of the relationships. Since the t-statistic exceeds 1.96, it indicates that the path coefficients are statistically significant. The effect size (F²) measures the extent to which independent variables influence dependent variables. Specifically,

this index shows the amount of change in the dependent variable if an independent variable is removed. This metric, introduced by Cohen (2013), is categorized as 0.02 (weak), 0.15 (moderate), and 0.35 (strong). Based on the results, the effect sizes of the independent variables are above the moderate threshold of 0.15 in all cases and even exceed 0.35 (strong) in some instances.

The Coefficient of Determination (R^2) and the Predictive Relevance Index (Q^2) were used to assess the predictive power of the model. These indices are calculated for endogenous variables. R^2 represents the proportion of variance in the dependent variable explained by the independent variables. Higher values of R^2 for the endogenous constructs indicate better model fit. The thresholds of 0.19, 0.33, and 0.67 are considered weak, moderate, and strong levels of model fit for the structural section of the model (Chin, 1998).

The Predictive Relevance Index (Q^2), introduced by Stone and Geisser, is also referred to as the Stone-Geisser index (Hair et al., 2021). A positive Q^2 value indicates that the model exhibits appropriate predictive power. The predictive power indices (R^2 and Q^2) are reported in Table 6. Based on the results in Table 6, the R^2 for the implementation of digital banking is reported as 0.747, which is a highly acceptable value. This indicates that the model variables account for 75% of the variance in the implementation of digital banking. Additionally, the Q^2 index is positive across all cases, confirming that the model possesses strong predictive capability.

Table 6. Predictive power of the knowledge management model for enhancing business performance

Main constructs	R^2	Adjusted R^2	Q^2
Knowledge Management Business Strategy	0.819	0.817	0.400
Social Performance	0.741	0.741	0.387
Marketing Performance	0.749	0.748	0.400
Financial Performance	0.748	0.747	0.382
Innovative Performance	0.729	0.728	0.385
Knowledge Management	0.830	0.829	0.402

To evaluate model fit, the indices GOF, RMS_theta, and SRMR are used. For the GOF index, the thresholds of 0.01, 0.25, and 0.36 are categorized as weak, moderate, and strong, respectively. For RMS_theta, values below 0.12 indicate a good fit, while higher values suggest a poor fit. For the SRMR index, values below 0.10 and more strictly below 0.08 indicate a good fit (Habibi & Jalalnia, 2023).

In this study, the GOF index was calculated as 0.653, which exceeds the strong threshold of 0.36. The RMS_theta value was 0.107, which is below the 0.12 threshold, and the SRMR value was 0.055, which is under the stricter threshold of 0.08. Therefore, the model fit is deemed satisfactory.

CONCLUSION AND DISCUSSION

DISCUSSION

The present study was conducted with the aim of designing and validating a knowledge management model to enhance business performance in knowledge-based companies. Based on the paradigm model of the study, it was found that managerial factors, knowledge workers, a knowledge-based culture, and organizational learning influence knowledge management. The findings of Bagh Mirani and Sheleh Kar (2023) and Fischer et al. (2022) also emphasize the importance of culture and knowledge management, aligning with the results of the present study.

Additionally, the findings revealed that knowledge management infrastructure in knowledge-based companies provides the necessary foundation, while business support factors and environmental uncertainty act as intervening variables. The study by Krupskaya (2025) similarly highlights the importance of organizational support, aligning with the results of this research.

Ultimately, the study's findings demonstrated that a business knowledge management strategy leads to improved business performance in financial, marketing, innovation, and social dimensions. The aspects of performance enhancement are also validated by the studies of Djumaevna (2023) and Sadeghi et al. (2023).

CONCLUSION

The findings of this study highlight a structured approach to knowledge management (KM) as a key driver for improving business performance in knowledge-based enterprises. Effective KM strategies enhance financial stability, operational efficiency, market competitiveness, and innovation potential, aligning with previous research on the role of intellectual capital and organizational learning in sustaining competitive advantage (Fischer et al., 2022; Hussinki et al., 2017). Based on the findings, the following practical recommendations are proposed:

- **Managerial Factors:** Senior managers play a pivotal role in fostering a knowledge-centric organizational culture (Nugroho & Angela, 2024). Their commitment to knowledge-oriented strategies and participatory leadership approaches significantly contribute to organizational creativity and innovation (Truong et al., 2024). Research also suggests that allocating sufficient financial resources for KM implementation positively influences business resilience and long-term sustainability (Farida & Setiawan, 2022).
- **Knowledge Workers:** Recruiting and retaining skilled and talented knowledge workers play a crucial role in enhancing organizational performance and establishing a competitive advantage for knowledge-based companies (Eskandarinia, 2022). To achieve this, organizations should develop effective strategies for talent acquisition and retention while implementing talent development programs to foster the professional competencies of knowledge workers (Donnelly & Hughes, 2023). Additionally, establishing a meritocratic system and providing career advancement opportunities, along with incentive mechanisms to facilitate knowledge sharing, can mitigate the risk of knowledge loss and minimize environmental challenges (J. Ferreira et al., 2020).
- **Knowledge-Based Culture:** Institutionalizing a knowledge management culture within organizations requires strengthening knowledge-driven values and fostering employee belief that knowledge orientation is a fundamental organizational value. Research indicates that reinforcing norms based on knowledge sharing not only enhances decision-making processes and improves organizational efficiency (Caputo et al., 2019) but also enables companies that cultivate this culture to achieve better market performance (Durst et al., 2024). Moreover, adhering to knowledge management principles creates an optimal managerial environment for the successful implementation of knowledge-driven strategies.
- **Organizational Learning:** Assessing educational needs in knowledge management and implementing targeted training programs play a crucial role in enhancing business performance in knowledge-based companies. Research indicates that applying double-loop and triple-loop learning methods significantly enhances organizational innovation capacity and adaptability (Fallah Tafti et al., 2023). Managers should emphasize the continuous implementation of knowledge management training programs, as this not only improves knowledge absorption and application within the organization (Foruzandeh et al., 2025) but also enhances employees' competencies and knowledge-based skills, ultimately driving business growth and improving overall performance.
- **Knowledge Management Implementation:** To optimize business processes, organizations must focus on creating, acquiring, storing, and disseminating knowledge (Harlow,

2018). Open innovation facilitates knowledge acquisition from external sources, enabling companies to leverage external expertise and emerging technologies, thereby fostering a more dynamic knowledge ecosystem (Djumaevna, 2023). Additionally, storing knowledge in large-scale databases and integrating knowledge resources play a crucial role in enhancing business performance in knowledge-based companies. Furthermore, the development of efficient knowledge retrieval mechanisms ensures quick and easy access to stored information, facilitating effective utilization of knowledge in organizational decision-making processes (Mohamed et al., 2025).

- **Knowledge Management Infrastructure:** Technological advancements such as artificial intelligence, big data analytics, and cloud computing have significantly enhanced knowledge management capabilities, enabling organizations to optimize knowledge flows (Chang & Yen, 2019). In this regard, investing in scalable knowledge management infrastructures improves access to knowledge resources and enhances cross-functional collaboration (J. J. Ferreira et al., 2024). Additionally, employing specialized knowledge management professionals plays a crucial role in processing, storing, and effectively utilizing knowledge (Anabestani et al., 2022). Therefore, organizations should invest in appropriate hardware and leverage the latest knowledge management software. Moreover, expanding access to organizational databases and ensuring the availability of skilled human resources will further optimize knowledge management processes.
- **Business Environment Uncertainty:** Economic fluctuations, geopolitical instability, and regulatory uncertainty pose significant challenges for businesses, necessitating the development of flexible knowledge management strategies (Bashir et al., 2024). In this regard, organizations are advised to formulate strategies to mitigate the impact of widespread economic sanctions and financial system constraints. Additionally, addressing economic recessions and inflationary challenges plays a crucial role in improving business performance. Implementing crisis-resilient, knowledge-driven frameworks enables companies to enhance their adaptability to environmental challenges and make more informed, knowledge-based decisions in uncertain conditions (Krupskaya, 2025). Furthermore, controlling economic volatility and addressing regulatory inconsistencies that undermine investor confidence are essential steps in this direction.
- **Business Support Factors:** Governments and regulatory bodies should formulate effective policies to facilitate the growth of knowledge-based companies (Toghiani, 2022). Adhering to supportive legal frameworks and providing low-interest loans and financial assistance can significantly enhance the performance of knowledge-based businesses. Additionally, access to investment incentives and appropriate financial support plays a crucial role in developing the knowledge management ecosystem (Truong et al., 2024). Furthermore, legal protections for intellectual property and knowledge commercialization are essential for maintaining organizational competitive advantage (Bartus et al., 2025). Establishing clear and well-defined regulations regarding intellectual property rights, patents, and copyrights, along with attracting investors and business angels, can create a stable and supportive environment for knowledge-based enterprises.
- **Business Knowledge Management Strategy:** Organizations must align their knowledge management vision with their overall strategy and clearly define both short-term and long-term knowledge management objectives (Hair et al., 2021). Developing a clear knowledge management strategy, along with setting specific missions and strategic planning, plays a fundamental role in enhancing business performance. Additionally, the successful implementation of knowledge management strategies is strengthened through data-driven decision-making and the development of knowledge management performance indicators (Hair et al., 2021). Furthermore, establishing precise policy frameworks and implementing regulatory and procedural guidelines for knowledge management will significantly contribute to the integration and effectiveness of an organization's knowledge-driven strategies.

The integration of strategic KM initiatives into organizational practices directly contributes to financial performance, market expansion, innovation growth, and social impact (Fischer et al., 2022; Idrus et al., 2023). This study underscores the importance of KM as a foundation for sustainable competitive advantage, providing practical insights for both academics and practitioners.

SUGGESTIONS FOR FUTURE RESEARCH AND RESEARCH LIMITATIONS

Future research can focus on localizing knowledge management models to better align with Iran's cultural and economic conditions. Investigating the impact of emerging technologies, such as artificial intelligence, blockchain, and big data, on optimizing knowledge management in knowledge-based enterprises presents a significant area for further study. Additionally, examining practical strategies to strengthen the culture of knowledge sharing within organizations and the role of organizational leadership in facilitating this process are key areas for future exploration.

PRACTICAL IMPLICATIONS

From a practical standpoint, knowledge-based enterprises can enhance their internal processes and overall productivity by implementing technology-driven knowledge management systems. Developing legal frameworks and supportive policies to protect intellectual assets and facilitate international collaborations can further contribute to their sustainable growth. Moreover, organizing training programs to improve knowledge management competencies among managers and employees, as well as establishing digital platforms to streamline knowledge exchange between knowledge-based enterprises, can be effective measures in this field.

Future research should further explore the intersection of emerging technologies and knowledge ecosystems as firms increasingly rely on intelligent KM frameworks to navigate complex business landscapes.

RESEARCH LIMITATIONS

This study faced several limitations. One of the primary challenges was the lack of accurate and up-to-date data regarding the implementation of knowledge management practices in Iranian companies, which may restrict the depth of scientific analyses. Additionally, cultural and organizational differences between Iranian companies and international benchmarks make it difficult to directly apply successful foreign models in the Iranian context.

Limited access to emerging technologies and advanced knowledge management tools presents another challenge, as many of these technologies require robust infrastructure and substantial investment, which may not be readily accessible to all knowledge-based enterprises in Iran.

Furthermore, legal constraints and intellectual property concerns could hinder the comprehensive implementation of knowledge management, particularly when organizations fear data security risks and potential misuse of proprietary knowledge. The lack of a well-established culture of knowledge sharing in some organizations also prevents the effective transfer of valuable information and expertise, thereby reducing the overall efficiency of knowledge management systems.

Another significant challenge is economic instability and rapid changes in governmental support policies, which may prevent companies from strategically planning and implementing long-term knowledge management initiatives. Additionally, the shortage of skilled professionals in knowledge management and related technologies restricts many companies from effectively leveraging these systems.

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