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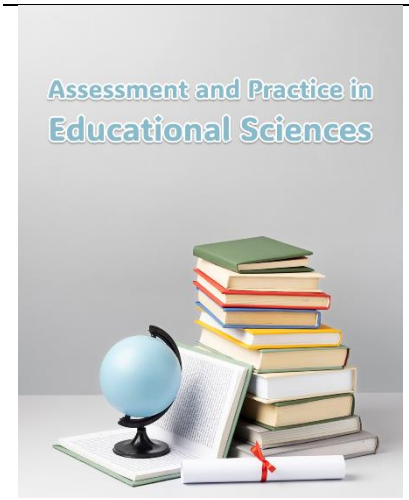

Identification of Factors Affecting the Implementation of Knowledge Management at the National University of Skills Based on the Paradigmatic Model (Case Study: National University of Skills, Tehran Province Branch)

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ABSTRACT

The present study aimed to identify the factors affecting the implementation of knowledge management at the National University of Skills. In terms of purpose, this research is applied, and in terms of methodology, it is qualitative and based on Grounded Theory. The study setting comprised the faculties and colleges of the National University of Skills in Tehran. The participants included university vice presidents, general directors, deans of faculties and colleges, faculty members, and experts in the field of skills-based education, who were selected through purposive sampling. Data were collected using semi-structured interviews. Interviews were conducted with 18 participants until theoretical saturation was achieved. Based on the findings, the factors influencing the implementation of knowledge management at the National University of Skills were categorized according to the paradigmatic model. Causal conditions included leadership and management, budget and financial support, and human resources. Intervening conditions comprised resistance to change, the university's political climate, and organizational structure. Contextual conditions included organizational culture, information technology, and environmental conditions. Strategies consisted of strengthening university–industry relations, developing information technology infrastructure, and promoting education and development. The consequences included increased productivity, enhancement of academic standards, greater university social engagement, and the promotion of creativity and innovation among human resources.

Keywords: Knowledge Management Implementation, National University of Skills, Paradigmatic Grounded Theory.

Introduction

In the contemporary knowledge-based economy, knowledge is widely recognized as one of the most strategic organizational assets and a key source of sustainable competitive advantage. Unlike tangible resources, knowledge possesses the capacity to create value through generation, sharing, application, and continuous development. Organizations that effectively manage their knowledge resources are better positioned to improve performance, foster innovation, enhance decision-making processes, and adapt to environmental changes. Consequently, knowledge management (KM) has emerged as a critical managerial approach for organizations seeking long-term effectiveness and sustainability in increasingly complex and dynamic environments (1).

The growing importance of knowledge management has led researchers and practitioners to consider it not merely as an information-processing mechanism but as a comprehensive organizational philosophy that integrates human, technological, structural, and cultural dimensions.

Knowledge management encompasses a systematic process through which organizations identify, create, acquire, store, share, transfer, and apply knowledge to achieve organizational objectives. Effective knowledge management facilitates organizational learning, preserves valuable experiences, prevents the loss of tacit knowledge, and improves organizational responsiveness to environmental demands. Research has demonstrated that organizations capable of developing robust knowledge management systems exhibit higher levels of innovation, productivity, and strategic effectiveness (2). Furthermore, knowledge management contributes significantly to organizational adaptability by enabling institutions to utilize collective expertise and intellectual capital in addressing emerging challenges.

The significance of knowledge management becomes even more pronounced within higher education institutions. Universities are inherently knowledge-intensive organizations whose primary functions revolve around the creation, dissemination, transfer, and application of knowledge. Faculty members, researchers, administrators, and students continuously generate and exchange knowledge through teaching, research, innovation, and community engagement activities. As a result, universities require effective mechanisms for managing intellectual assets and organizational knowledge to maximize their educational and societal contributions (3). The increasing complexity of higher education systems, combined with rapid technological advancements and evolving stakeholder expectations, has further highlighted the necessity of implementing comprehensive knowledge management practices within universities.

In recent years, higher education institutions have encountered numerous challenges, including intensified competition, resource limitations, technological transformations, changing labor market demands, and increasing expectations regarding educational quality and accountability. These developments have encouraged universities to seek innovative approaches for enhancing organizational effectiveness and maintaining relevance in rapidly changing environments. Knowledge management has been identified as one of the most effective approaches for addressing these challenges because it supports evidence-based decision-making, organizational learning, and continuous improvement processes (4). Through systematic management of organizational knowledge, universities can improve collaboration among stakeholders, strengthen institutional memory, and enhance their capacity for innovation and problem-solving.

The implementation of knowledge management is closely associated with organizational performance. Numerous studies have demonstrated that organizations adopting knowledge management practices experience improvements in operational efficiency, service quality, innovation capability, and overall organizational effectiveness. Knowledge management enables organizations to utilize accumulated experiences, reduce duplication of effort, streamline processes, and improve resource utilization. In this regard, evidence suggests that successful implementation of knowledge management contributes significantly to enhanced organizational performance and competitive advantage (5). These benefits are particularly important for educational institutions that must continuously improve their academic, administrative, and research functions while responding to changing societal needs.

Another important aspect of knowledge management is its relationship with innovation. The effective management of organizational knowledge creates an environment conducive to creativity, collaboration, and knowledge sharing, thereby facilitating innovation processes. Knowledge management supports the generation of new ideas, encourages experimentation, and enhances organizational learning capabilities. Research examining the relationship between knowledge management and innovation has demonstrated that organizations with well-developed knowledge management systems are more likely to

achieve innovative outcomes and maintain competitive positions within their respective sectors (6). Therefore, knowledge management represents a critical foundation for fostering innovation in higher education institutions.

The growing emphasis on organizational agility and strategic adaptability has further increased the relevance of knowledge management. Modern organizations operate within highly dynamic environments characterized by uncertainty, technological disruption, and rapidly changing stakeholder expectations. In such contexts, knowledge management facilitates organizational agility by improving access to relevant information, enhancing strategic flexibility, and supporting informed decision-making processes. Studies have shown that effective utilization of organizational knowledge contributes significantly to agility and innovation capabilities, enabling organizations to respond more effectively to environmental changes (7). Consequently, knowledge management has become an essential strategic capability for organizations seeking long-term sustainability.

The successful implementation of knowledge management, however, depends upon the presence of various organizational, technological, managerial, and environmental conditions. Research has consistently shown that knowledge management initiatives often encounter challenges related to organizational culture, leadership commitment, technological infrastructure, resource availability, and employee resistance to change. The identification and understanding of these factors are therefore essential for ensuring successful implementation. Studies investigating factors influencing knowledge management implementation have identified leadership support, organizational culture, technological readiness, employee participation, and strategic alignment as among the most critical determinants of success (8, 9). Without appropriate organizational conditions and supporting mechanisms, knowledge management initiatives may fail to achieve their intended outcomes.

Within the context of higher education, the implementation of knowledge management presents unique opportunities and challenges. Universities possess substantial intellectual resources, yet these resources are often dispersed across departments, faculties, and administrative units. The existence of disciplinary boundaries, organizational silos, and decentralized structures can hinder effective knowledge sharing and integration. Consequently, universities require comprehensive frameworks that facilitate collaboration, knowledge exchange, and organizational learning across institutional boundaries. Research conducted within higher education institutions has emphasized the importance of designing context-specific knowledge management models that address the unique characteristics and requirements of academic environments (10). Such models can help universities leverage their intellectual assets more effectively while supporting educational and research excellence.

Technical and vocational higher education institutions occupy a particularly important position within national development systems because they serve as a bridge between education, industry, and labor market needs. These institutions are responsible for developing practical skills, promoting innovation, and preparing graduates for professional careers. Given their close interactions with industry and their emphasis on applied knowledge, effective management of organizational knowledge is essential for ensuring responsiveness to technological developments and workforce requirements. Research focusing on technical and vocational universities has highlighted the importance of establishing structured knowledge management systems to enhance institutional effectiveness, strengthen industry relationships, and improve educational quality (11). Therefore, understanding the factors influencing knowledge management implementation within such institutions is of considerable practical significance.

The National University of Skills, as a major provider of skills-based and technical education, faces numerous challenges associated with knowledge creation, transfer, retention, and utilization. The university operates within a rapidly changing educational and technological environment that requires continuous adaptation and organizational learning. Effective implementation of knowledge management can contribute to improved educational quality, enhanced collaboration with industry, increased organizational productivity, and stronger innovation capabilities. Nevertheless, achieving these outcomes

requires a comprehensive understanding of the causal conditions, contextual factors, intervening variables, implementation strategies, and potential consequences associated with knowledge management implementation.

Despite the increasing importance of knowledge management within higher education, existing research has primarily focused on identifying isolated factors, evaluating specific dimensions, or proposing conceptual frameworks. While previous studies have contributed significantly to the literature, there remains a need for comprehensive investigations that examine the implementation of knowledge management through an integrated and systematic theoretical framework. Meta-synthesis studies have emphasized the multidimensional nature of knowledge management implementation and the necessity of considering interactions among organizational, managerial, technological, and environmental factors (3). Similarly, research has underscored the importance of analyzing both antecedents and consequences of knowledge management implementation to obtain a more holistic understanding of the phenomenon (4). Furthermore, studies have suggested that the effectiveness of knowledge management is contingent upon organizational contexts and strategic alignment, highlighting the need for institution-specific investigations (2, 12).

In addition, knowledge management has been linked to broader organizational outcomes, including innovation, performance enhancement, organizational learning, competitiveness, and sustainability. Organizations that successfully integrate knowledge management into their strategic and operational processes are better able to create value from intellectual capital and achieve long-term development objectives (1, 13). Consequently, examining the implementation of knowledge management within the National University of Skills can provide valuable insights into the mechanisms through which educational institutions can enhance their effectiveness and fulfill their educational missions more successfully.

Accordingly, the present study aimed to identify the factors affecting the implementation of knowledge management at the National University of Skills based on the paradigmatic model of grounded theory.

Methods and Materials

The present study was applied in terms of purpose and qualitative in nature, employing the Grounded Theory methodology. In qualitative research, the objective is to identify, classify, and extract concepts through library-based studies and/or interviews with experts in the field under investigation. To achieve the study objective, Grounded Theory was adopted. Grounded Theory enables researchers to examine collected data and transform them into concepts, categories, and ultimately a paradigmatic model (Mohammadi et al., 2025). The study population consisted of university vice presidents, general directors, deans of faculties and colleges, faculty members, and experts in the field of skills-based education. Purposive sampling was employed. In this type of sampling, it is not possible to determine in advance the exact number of participants required to fully identify the phenomenon under study. Therefore, interviews continue until theoretical saturation is reached. A total of 18 participants were interviewed. Data were collected through semi-structured interviews. In addition to having at least four years of executive experience, participants were selected based on their expertise and willingness to participate in the study.

To ensure data validity, the criteria of credibility and transferability were employed. Credibility was established through repeated review and examination of interview files during data collection. Furthermore, the researchers meticulously documented all stages of the research and interviews and discussed the findings extensively during several meetings. Transferability was enhanced by providing detailed and in-depth descriptions of the results, thereby satisfying the criterion of thick description. To ensure reliability, dependability and confirmability were utilized. Dependability was achieved through systematic documentation of recorded interviews, interview transcripts, interview guides, lists of interviewees, categories inferred from the data, and researchers' field notes. Confirmability was established by systematically recording and documenting all research data, interpretations, inferences, and findings from the outset of the study. The extracted concepts

and categories, together with the findings, were subsequently shared with the interviewees, whose corrective feedback was incorporated. Following revision, the results were again submitted to the experts for final confirmation. Data analysis and theory development were conducted using theoretical coding procedures.

Findings and Results

Following the coding process and extraction of key points and issues emphasized by the interviewees, the main categories were identified in order to determine the factors and components affecting the implementation of knowledge management at the National University of Skills. The findings related to the research questions are presented below.

Table 1. Open, Axial, and Selective Coding Results for Factors Affecting the Implementation of Knowledge Management at the National University of Skills

Selective Coding	Axial Coding	Open Codes
Causal Conditions	Leadership and Management	Promotion of participatory management and utilization of councils, committees, and working groups based on collective wisdom; establishment of a knowledge management executive committee; attention of senior managers to organizational knowledge; support of senior managers for knowledge management implementation; establishment of two-way communication between managers and employees for information and knowledge exchange
	Budget and Financial Support	Allocation of budget for knowledge management implementation in faculties/colleges; provision of appropriate software infrastructure for knowledge management; financial support mechanisms for teamwork and knowledge sharing
	Human Resources	Enhancement of employee knowledge and empowerment for knowledge management; development of required human-resource skills, including documentation skills; fostering a culture of knowledge enhancement among human resources
Intervening Conditions	Resistance to Change	Lack of acceptance of new technologies; resistance of personnel to learning and applying new knowledge
	University Political Climate	Lack of meritocracy within the university; pressure from external political groups on the university
	Organizational Structure	Centralization within the university headquarters; extensive geographical dispersion of the university nationwide; weak relationship between the university and the Ministry of Science, Research and Technology
Contextual Conditions	Organizational Culture	Degree of loyalty and commitment of human resources to the university; incorporation of knowledge management values into the university's professional ethics charter; existence of a culture of organizational interaction; importance of ethical values among university personnel; encouragement of knowledge sharing among employees
	Information Technology	Availability of knowledge portal infrastructure within the university; existence of a university knowledge repository
	Environmental Conditions	Attention to knowledge-related activities in the university's strategic and operational plans; trust of industry senior managers in the university's knowledge potential
Strategies	Development of University–Industry Relationships	Strengthening relationships and building trust between the university and industry; providing efficient and attractive knowledge outputs to stakeholders
	Development of Information Technology Infrastructure	Expansion of technological infrastructure for knowledge exchange within university workgroups; utilization of information technology for extracting organizational knowledge; knowledge sharing through information technology platforms
	Education and Development	Conducting training courses on the necessity of knowledge management implementation; organizing workshops to strengthen employee knowledge; emphasizing knowledge development in the university's strategic and operational plans
Consequences	Increased Productivity	Cost reduction and savings; documentation and recording of experiences with reduced organizational errors; reduction of unnecessary activities and processes; increased efficiency of human resources; increased effectiveness of human resources
	Enhancement of Academic Standards	Improvement of the university's academic ranking at national and international levels; enhancement of educational quality; improvement of university work processes
	Increased University Social Participation	Increased public trust in the university; enhanced university social responsibility; improved competitive advantage of the university
	Enhanced Creativity and Innovation in Human Resources	Increased creativity and registration of new ideas in university affairs; improvement of monitoring processes toward quality assurance; increased organizational commitment among university employees; greater creativity and innovation in research and teaching

As shown in Table 1, leadership and management, budget and financial support, and human resources constitute the most significant causal factors influencing the implementation of knowledge management at the National University of Skills.

Research Question 1: What are the causal factors affecting the implementation of knowledge management at the National University of Skills?

Causal conditions refer to circumstances that influence the core phenomenon. In the present study, causal conditions are the issues and circumstances that facilitate the implementation of knowledge management at the National University of Skills. Based on the interviews and subsequent analysis, 11 open codes were identified during the open-coding stage. In the second stage, axial coding followed by selective coding was performed. Three axial codes were extracted and organized together with the 11 open codes under the selective code of causal conditions.

Research Question 2: What are the intervening conditions affecting the implementation of knowledge management at the National University of Skills?

Intervening conditions are factors that either facilitate causal conditions or interfere with and hinder their effects. Analysis of the interviews resulted in the identification of seven open codes related to intervening conditions. During the second stage, axial and selective coding were conducted, resulting in three axial codes that were organized together with the seven open codes under the selective category of intervening conditions.

Research Question 3: What are the contextual conditions and infrastructures necessary for the implementation of knowledge management at the National University of Skills?

Contextual conditions are sets of circumstances that provide the foundation for the phenomenon under study and influence actions and interactions. These conditions affect both the central phenomenon and its outcomes. In this study, contextual conditions refer to factors and circumstances that should be considered to ensure the successful implementation of knowledge management at the National University of Skills. Analysis of the interviews led to the identification of nine open codes. Through axial and selective coding, three axial codes were extracted and organized together with the nine open codes under the selective category of contextual conditions.

Research Question 4: What are the strategies for implementing knowledge management at the National University of Skills?

Strategies refer to actions undertaken by individuals, teams, and organizations in response to causal and contextual conditions and in consideration of intervening factors in order to realize the core category. In this study, strategies refer to actions and solutions related to the implementation of knowledge management at the National University of Skills. Analysis of the interviews resulted in the identification of eight open codes. Through axial and selective coding, three axial codes were extracted and organized together with the eight open codes under the selective category of strategies.

Research Question 5: What are the consequences resulting from the application of knowledge management implementation strategies at the National University of Skills?

Consequences are the outcomes resulting from the implementation of strategies. In the present study, consequences refer to the results, achievements, and outcomes of implementing knowledge management at the National University of Skills. Analysis of the interviews led to the identification of 15 open codes. Through axial and selective coding, four axial codes were extracted and organized together with the 15 open codes under the selective category of consequences.

The findings further indicate that resistance to change, the university political climate, and organizational structure represent the principal intervening conditions affecting knowledge management implementation.

The analysis of contextual conditions demonstrates that organizational culture, information technology, and environmental conditions are the primary enabling factors for successful knowledge management implementation at the National University of Skills.

The findings regarding implementation strategies reveal that the development of university–industry relationships, enhancement of information technology infrastructure, and education and development are the principal strategic dimensions supporting knowledge management implementation.

Finally, the findings indicate that the implementation of knowledge management leads to increased productivity, enhancement of academic standards, greater university social participation, and improved creativity and innovation among human resources.

Based on the research findings, the paradigmatic model of knowledge management implementation at the National University of Skills can be illustrated as follows.

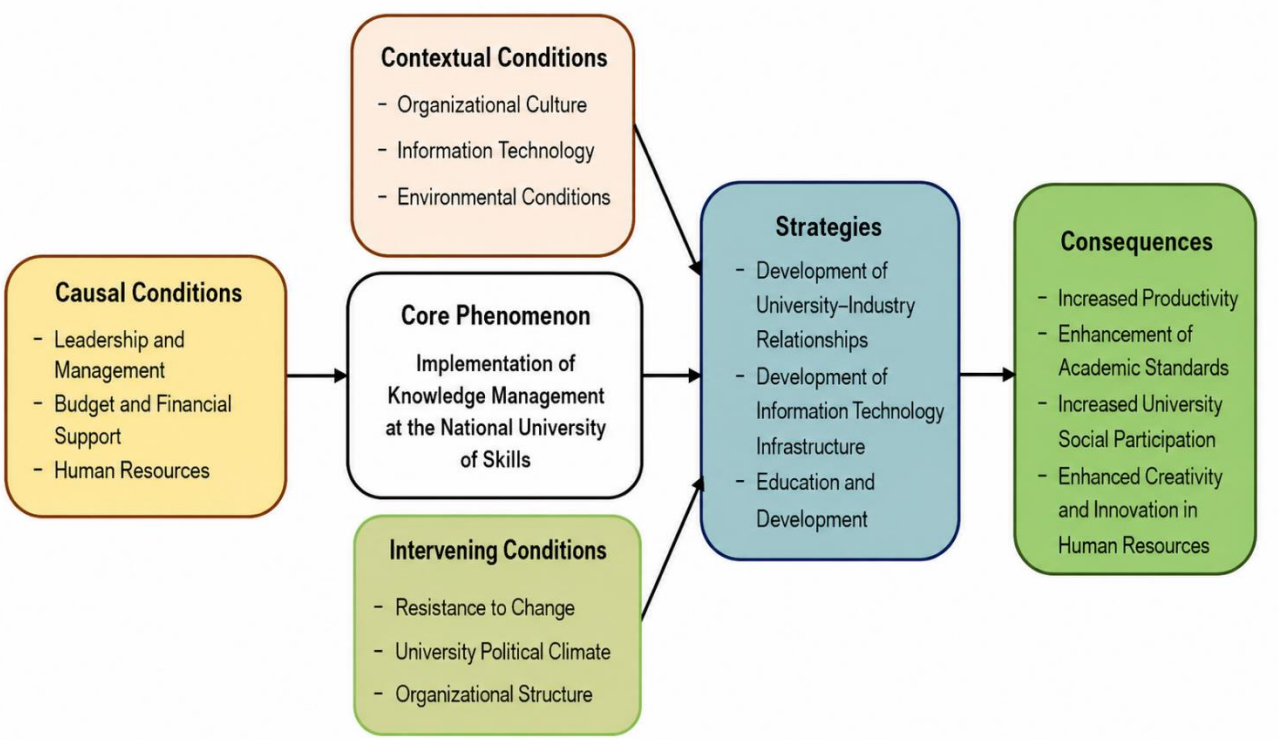

Figure 1. Paradigmatic Model of Knowledge Management Implementation at the National University of Skills

Discussion and Conclusion

The present study aimed to identify the factors affecting the implementation of knowledge management at the National University of Skills using the paradigmatic model of grounded theory. The findings revealed that the implementation of knowledge management in the university is influenced by a network of causal conditions, contextual conditions, intervening conditions, strategies, and consequences. Specifically, leadership and management, budget and financial support, and human resources emerged as the principal causal conditions; organizational culture, information technology, and environmental conditions were identified as contextual factors; resistance to change, university political climate, and organizational structure constituted the major intervening conditions; development of university–industry relationships, development of information technology infrastructure, and education and development were identified as the primary strategies; and increased productivity,

enhancement of academic standards, increased university social participation, and enhanced creativity and innovation in human resources were identified as the key consequences of knowledge management implementation.

One of the most significant findings of this study was the identification of leadership and management as a fundamental causal factor influencing knowledge management implementation. The participants emphasized the importance of managerial support, participatory leadership, attention to organizational knowledge, and the establishment of formal structures such as knowledge management committees. This finding is consistent with the theoretical foundations of knowledge management, which emphasize leadership commitment as a prerequisite for creating a knowledge-oriented organizational environment. Senior managers play a critical role in shaping organizational priorities, allocating resources, encouraging knowledge-sharing behaviors, and establishing a culture that values learning and innovation. Without visible and sustained managerial support, knowledge management initiatives often fail to gain legitimacy and organizational acceptance. This finding aligns with the results reported by (8), who identified managerial commitment and leadership support as key determinants of successful knowledge management implementation in educational organizations. Similarly, (11) emphasized the importance of managerial leadership in establishing knowledge management systems within technical and vocational universities. The findings also support the arguments of (2), who noted that leadership plays a crucial role in integrating knowledge management with organizational strategy and ensuring successful implementation.

Another important causal factor identified in this study was budget and financial support. Participants highlighted the necessity of allocating financial resources for technological infrastructure, knowledge-sharing activities, and implementation processes. Knowledge management initiatives often require substantial investments in information systems, training programs, organizational development interventions, and technological platforms. Consequently, insufficient financial support can significantly hinder implementation efforts. This finding is consistent with previous studies demonstrating that resource availability is a critical success factor in knowledge management projects. For example, (9) identified financial resources and technological investment as major factors affecting knowledge management establishment in educational settings. Likewise, (3) emphasized that sustainable financial support is essential for maintaining knowledge management systems and ensuring their long-term effectiveness within universities.

The findings further indicated that human resources constitute another critical causal condition. Participants emphasized employee empowerment, professional development, skill enhancement, and the promotion of a knowledge-oriented culture among personnel. Since knowledge resides primarily within individuals, employees represent the most valuable resource in any knowledge management initiative. Knowledge management systems cannot function effectively without knowledgeable, motivated, and engaged personnel who are willing to create, share, and utilize knowledge. This finding supports the conclusions of (1), who argued that human capital is the central element of organizational knowledge management. Similarly, (10) emphasized the importance of human resource development and employee competencies in designing effective knowledge management models for higher education institutions.

Regarding intervening conditions, the findings revealed that resistance to change represents a significant barrier to knowledge management implementation. Participants reported reluctance among employees to adopt new technologies and embrace new knowledge practices. Resistance to change is a common challenge in organizational transformation initiatives because individuals often perceive new systems as threats to established routines, professional identities, or job security. Knowledge management initiatives frequently require changes in organizational behaviors, communication patterns, and information-sharing practices, which may generate uncertainty and resistance. This finding is consistent with the results reported by (8) and (4), who identified resistance to change as one of the primary obstacles to successful knowledge

management implementation in educational organizations. The finding further highlights the necessity of change management strategies, employee involvement, and organizational communication during implementation processes.

The university political climate emerged as another important intervening factor. Participants emphasized issues such as limited meritocracy and external political pressures. This finding suggests that organizational and political dynamics can significantly influence the effectiveness of knowledge management initiatives. Political considerations may affect decision-making processes, resource allocation, and employee motivation, thereby limiting opportunities for knowledge sharing and collaboration. Knowledge management thrives in environments characterized by trust, transparency, and fairness; therefore, political tensions and perceived inequities can undermine implementation efforts. This finding supports the observations of (4), who reported that organizational governance and institutional conditions significantly influence knowledge management implementation outcomes within higher education systems.

Organizational structure was also identified as a significant intervening condition. Participants referred to centralization, geographical dispersion, and weak inter-organizational linkages as factors that complicate knowledge management processes. Highly centralized structures may inhibit knowledge flows by limiting communication and decision-making flexibility. Likewise, geographically dispersed institutions face challenges related to coordination, collaboration, and knowledge exchange. These findings correspond with the conclusions of (3), who emphasized that organizational structure significantly affects knowledge management effectiveness by influencing communication channels and knowledge-sharing opportunities. Similar observations were reported by (2), who highlighted the importance of organizational design in supporting knowledge-based strategic processes.

Among the contextual conditions, organizational culture emerged as the most influential factor. Participants stressed loyalty, commitment, ethical values, organizational interaction, and encouragement of knowledge sharing. Organizational culture represents the collective values, beliefs, and norms that shape employee behaviors and attitudes. A culture characterized by trust, collaboration, openness, and continuous learning provides a supportive environment for knowledge management implementation. Conversely, cultures that discourage information sharing or emphasize individual competition may hinder knowledge-related activities. This finding is strongly supported by previous studies, including (3), (8), and (10), all of which identified organizational culture as one of the most influential determinants of knowledge management success.

Information technology was identified as another essential contextual factor. Participants emphasized the importance of knowledge portals, databases, and technological infrastructure. Information technology provides the mechanisms through which knowledge can be stored, organized, transferred, and accessed across organizational units. In modern universities, technological platforms facilitate collaboration among faculty members, administrators, students, and external stakeholders. The significance of information technology identified in this study aligns with the findings of (12), who demonstrated the critical role of technological systems in enhancing knowledge management performance. Similar conclusions were reported by (9), who identified information technology infrastructure as a prerequisite for successful knowledge management implementation.

Environmental conditions also emerged as important contextual factors. Participants highlighted the inclusion of knowledge activities in strategic plans and the confidence of industry leaders in the university's intellectual capabilities. These findings indicate that external stakeholders and environmental expectations play an important role in shaping organizational knowledge practices. Universities do not operate in isolation; rather, they interact continuously with industries, government agencies, communities, and labor markets. Consequently, environmental support and stakeholder engagement contribute significantly to the success of knowledge management initiatives. This finding supports the conclusions of (7), who demonstrated the importance of environmental responsiveness and strategic flexibility in organizational performance and innovation.

With respect to implementation strategies, the development of university–industry relationships emerged as a central strategy. Participants emphasized trust-building, collaboration, and the delivery of valuable knowledge outputs to stakeholders. This finding reflects the increasingly important role of universities as knowledge producers and innovation partners. Strong university–industry relationships facilitate knowledge exchange, collaborative research, technology transfer, and practical application of academic expertise. The finding aligns with the perspectives of (7) and (10), who emphasized the importance of external partnerships in enhancing organizational learning and innovation.

The development of information technology infrastructure was identified as another major strategy. Participants highlighted the importance of technological systems for facilitating knowledge extraction, exchange, and sharing. This finding reinforces the argument that technology functions as an enabler of knowledge management rather than merely a supporting tool. Advanced technological infrastructure enhances accessibility, communication, collaboration, and organizational learning. Similar conclusions have been reported by (12), who demonstrated that technology-driven knowledge management systems significantly improve organizational performance and sustainability.

Education and development constituted the third strategic category. Participants emphasized training programs, workshops, and the integration of knowledge development objectives into strategic plans. Training and development initiatives are essential for enhancing employee competencies, increasing awareness of knowledge management principles, and promoting knowledge-sharing behaviors. This finding corresponds with previous studies emphasizing the role of organizational learning and continuous professional development in successful knowledge management implementation (1, 8).

The consequences identified in this study further demonstrate the value of knowledge management implementation. Increased productivity emerged as a major outcome, reflecting reductions in unnecessary processes, improved efficiency, enhanced effectiveness, and better utilization of organizational resources. This finding supports previous research indicating that knowledge management contributes significantly to organizational performance improvement (5, 13). The enhancement of academic standards, including improved educational quality and academic reputation, further highlights the strategic value of knowledge management in higher education settings. Similar outcomes were reported by (11) and (4).

The findings also revealed that knowledge management implementation contributes to increased university social participation and stronger stakeholder trust. By facilitating the production and dissemination of valuable knowledge, universities can strengthen their relationships with communities and external organizations. This finding is consistent with the broader literature emphasizing the societal role of universities as knowledge institutions (3). Finally, the enhancement of creativity and innovation among human resources reflects the capacity of knowledge management systems to support idea generation, organizational learning, and continuous improvement. This finding is strongly aligned with previous studies demonstrating positive relationships between knowledge management and innovation outcomes (6, 7).

Overall, the findings suggest that successful implementation of knowledge management at the National University of Skills requires an integrated approach that simultaneously addresses leadership, resources, culture, technology, organizational structure, and stakeholder engagement. The paradigmatic model developed in this study provides a comprehensive framework for understanding the complex interactions among these factors and offers valuable guidance for policymakers and university administrators seeking to establish sustainable knowledge management systems.

One limitation of the present study is that data were collected exclusively through qualitative interviews with a limited number of participants from the National University of Skills. Although theoretical saturation was achieved, the findings may not fully represent the perspectives of all stakeholders across different campuses and organizational levels. In addition, the study focused on a single higher education institution, which may limit the generalizability of the findings to other universities

and educational systems. Another limitation relates to the inherent subjectivity of qualitative data and participant interpretations despite the use of rigorous procedures to ensure trustworthiness.

Future studies could employ mixed-methods or quantitative approaches to validate and test the paradigmatic model developed in this research. Comparative investigations involving multiple universities, technical institutions, and higher education systems could provide broader insights into contextual differences affecting knowledge management implementation. Researchers may also examine the relationships among the identified factors using structural equation modeling or other advanced analytical techniques. Longitudinal studies would further contribute to understanding how knowledge management implementation evolves over time and influences organizational performance, innovation, and educational quality.

University administrators should prioritize the development of a knowledge-oriented culture that encourages collaboration, trust, and knowledge sharing among employees. Adequate financial resources should be allocated to support knowledge management initiatives, technological infrastructure, and professional development programs. Leadership development efforts should focus on strengthening managerial commitment to knowledge management principles and practices. The university should also expand partnerships with industry and external stakeholders to facilitate knowledge exchange and innovation. Furthermore, systematic training programs, knowledge repositories, digital platforms, and incentive systems should be established to support sustainable knowledge management implementation and maximize its organizational benefits.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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