

Knowledge management and information system's : strategic integration for supporting organizational performance in dynamic environments

Ahed Messaoud Boumediene ^{1*}, Zouaoui Laouedj ²

¹ Laboratory of Business Management, University of Sidi Bel Abbes (Algeria)

ahedboumedienetfpt@gmail.com

² Laboratory of Business Management, University of Sidi Bel Abbes (Algeria)

laouedjz@yahoo.com

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Abstract:

This study aimed to analyze the impact of the integration of knowledge management (km) and information systems (is) on organizational performance (op) in algerian institutions, particularly within the context of dynamic changes in the business environment. An analytical methodology was employed, relying on partial least squares structural equation modeling (pls-sem) to evaluate the relationships between variables and test the hypotheses. The findings revealed that the integration of km and is significantly enhances organizational performance by improving internal processes, fostering innovation, and increasing adaptability to environmental changes.

The study also demonstrated that the success of this integration depends on organizational factors such as leadership support, organizational culture, and employee skills. However, the results highlighted key challenges faced by algerian institutions, notably the lack of resources and technical expertise. The study recommended increasing investments in digital infrastructure, enhancing training programs, and developing an organizational culture that supports innovation and knowledge sharing.

Keywords : Knowledge Management, Information Systems, Organizational Performance, Integration, Algerian Institutions, Dynamic Changes.

Jel Classification Codes : D83, M15, L25, O33, L83.

* Corresponding author

1. INTRODUCTION.

In the face of the rapid transformations shaping the contemporary business landscape, knowledge management (KM) and information systems (IS) have emerged as critical pillars for achieving organizational success and sustainability. Competitiveness in today's markets is no longer driven solely by traditional resources; instead, knowledge and expertise have become the primary factors underpinning innovation and strengthening competitive advantages (Datoussaid & Hamadi, 2016, p.2). Thus, KM represents a core strategy for enhancing productivity, adapting to changes, and ensuring organizational resilience (Donate & Guadamillas, 2015, p. 135)

Moreover, IS serves as an enabling tool that converts knowledge into actionable digital data, improving decision-making and operational efficiency. Through the integration of KM and IS, organizations can develop advanced knowledge bases that support continuous innovation and foster the development of skills and expertise within the workplace .(Kaščelan, Karapetrovic, & Danilovic, 2020, p. 185)

The challenge is to design and implement information systems capable of integrating tacit and explicit knowledge in order to monitor the rapid evolution of dynamic markets, particularly in the context of developing countries (Datoussaid et al, 2018, p.12). While some traditional Western models focus primarily on processing explicit data, globally successful organizations, such as Japanese firms, have adopted approaches that leverage employees' creative ideas and tacit insights, positioning knowledge as a strategic force for growth and development.(Djefflat, 2024, p.3; Ferhani et al, 2024, p.72 ; Datoussaid, 2019, p.7; Abu-Alsondos, 2023, p. 1528; Datoussaid, 2020, p.5)

In the Algerian context, economic reforms have prompted a fundamental shift toward a market economy, amplifying the need to enhance organizational efficiency and competitiveness. Algerian firms face considerable challenges in adopting IS that align with KM needs while keeping up with the volatility of local and global markets. Consequently, integrating IS with KM becomes crucial for improving organizational performance and fostering sustainable competitiveness (Datoussaid, 2018, p.8).

1.1.Problematic.

The Algerian economy is undergoing significant transformation due to economic reforms, technological advancements, and global market pressures. These changes require organizations to adopt innovative strategies to remain competitive and resilient. While KM and IS are recognized as essential components for organizational success, their integration remains underexplored in Algerian institutions.

The primary research question is :

How does the integration of knowledge management and information system's support organizational performance in Algerian institutions, particularly in dynamic and rapidly changing environments ?

1.2.Research Hypotheses

H1 : The integration of KM and IS positively influences organizational performance in Algerian institutions.

H2 : The use of IS enhances the ability of organizations to manage and utilize knowledge effectively.

H3 : Institutions that achieve effective KM-IS integration demonstrate higher adaptability to dynamic changes.

H4 : The success of KM-IS integration is influenced by organizational culture, leadership support, and employee skills.

H5 : The lack of resources and technical expertise poses significant challenges to KM-IS integration in Algerian institutions.

1.3. Significance of the Study.

This study provides Algerian institutions with a framework for leveraging KM and IS to address organizational challenges. The findings can help managers and decision-makers implement strategies that improve performance, innovation, and adaptability. The research contributes to the growing body of knowledge on KM and IS integration, particularly in emerging economies like Algeria. It offers insights into the contextual factors that influence the effectiveness of this integration, enriching the academic discourse.

2. Literature Review.

The study by (Alavi & Leidner, 2001, p. 133), titled knowledge management and knowledge management systems: Conceptual foundations and research issues, explored the role of Knowledge Management Systems (KMS) in supporting organizational learning and decision-making. The authors argued that KMS contribute significantly to organizational success by enabling efficient knowledge storage, retrieval, and sharing. Their work provides a theoretical basis for understanding how IS can support KM practices, offering key insights for Algerian institutions seeking to enhance their knowledge management processes.

Study by (Toledo, Díaz, & Barrera, 2011, p. 514) titled Knowledge Management and Organizational Performance, investigated the relationship between effective KM practices and organizational performance. Their findings offered quantitative evidence demonstrating that KM positively impacts productivity, innovation, and decision-making. These insights are particularly relevant to the Algerian context, where KM can play a pivotal role in improving institutional efficiency and adaptability in dynamic environments.

The research by (Adesina & Ocholla, 2019, p. 283) titled : The SECI Model in Knowledge Management Practices : Past, Present and Future, Their work emphasized the role of leadership and organizational culture in fostering an environment conducive to knowledge creation and management. The authors concluded that successful KM-IS integration requires continuous interaction between tacit and explicit knowledge to drive innovation. The SECI model offers a valuable framework for Algerian institutions to guide the transformation of tacit knowledge into actionable insights through IS.

Focusing on the technological aspect, (Salloum, Al-Emran, & Khaled, 2018, p. 1256), in their study titled The impact of knowledge sharing on information systems explored how information systems, particularly cloud computing platforms, facilitate knowledge sharing within organizations. They demonstrated that IS solutions enable employees to access, store, and share knowledge more efficiently, thereby enhancing organizational performance. This is especially significant for Algerian institutions, where adopting advanced IS technologies, such as cloud computing, can help address challenges related to limited resources and geographical dispersion.

The study by (Santhosé & Lawrence, 2023, p. 32438), titled ; Understanding the implementations and limitations in knowledge management and knowledge sharing using a systematic literature review identified several barriers to implementing KM systems, including resistance to change, lack of technical training, and inadequate infrastructure. The authors emphasized the importance of aligning KM initiatives with organizational strategies to ensure successful integration. Addressing these challenges is highly relevant to Algerian institutions, which often encounter similar issues when integrating KM and IS.

The research by (Al-Emran, Mezhuiev, Kamaludin, & Shaalan, 2018, p. 185) titled The impact of knowledge management processes on information systems: A systematic review, examined how factors such as organizational culture, leadership, and employee skills influence the success of KM-IS integration. Through a comparative analysis across industries and regions, the study found that adapting strategies to local contexts is critical. For Algerian institutions, aligning these contextual factors with KM-IS integration strategies is essential for achieving sustainable performance improvements.

3. Theoretical Framework of the Study.

This study is grounded in the integration of three primary variables: Knowledge Management (KM), Information Systems (IS), and Organizational Performance (OP), within the context of dynamic changes faced by Algerian institutions. These variables are interconnected, forming a framework that explains how KM and IS integration can enhance organizational outcomes.

3.1. Knowledge Management (KM).

KM is defined as the systematic process of creating, sharing, utilizing, and managing knowledge within an organization. It encompasses both tacit knowledge (knowledge embedded in personal experience) and explicit knowledge (formalized, documented information). Effective KM ensures that knowledge is accessible, transferable, and applicable, contributing to improved decision-making and innovation. (MCINERNEY, 2002, p. 1016)

In this study, KM represents the practices and strategies used to harness knowledge as a resource for operational and strategic purposes. KM includes the processes of knowledge creation, sharing, and application, all of which are essential for building a responsive and adaptive organizational environment.

3.2. Information Systems (IS).

IS refers to the technological platforms and tools that collect, store, process, and disseminate information. It serves as a backbone for KM by facilitating the efficient handling of organizational knowledge. IS includes systems such as databases, cloud computing platforms, and collaborative tools that enable the integration and application of knowledge. (DELONE & MCLEAN, 2002, p. 2973)

In this study, IS is positioned as an enabler of KM practices, providing the infrastructure required for institutions to manage and share knowledge effectively. IS tools also support data-driven decision-making, which is critical for maintaining competitiveness in dynamic environments.

3.3. Organizational Performance (OP).

OP is the dependent variable in this study, referring to the ability of an organization to achieve its objectives effectively and efficiently. It encompasses metrics such as operational efficiency, innovation, adaptability, and decision-making quality. (Al-Mamary, Shamsuddin, & Aziati, 2014, p. 334)

For institutions, OP reflects their capacity to respond to dynamic changes, optimize resource utilization, and maintain long-term sustainability. The study explores how KM and IS integration enhances OP by fostering innovation, streamlining processes, and improving decision-making capabilities.

3.4. Dynamic Changes.

Dynamic changes refer to the rapidly evolving external environment, including economic reforms, technological advancements, and market fluctuations. These changes require organizations to adopt flexible and innovative strategies. In the Algerian context,

dynamic changes act as a critical factor that influences the design and implementation of KM and IS integration. (Prasad & Green, 2015, p. 144)

Dynamic changes create opportunities and challenges that require from institutions to develop adaptive systems. By integrating KM and IS, institutions can build resilience and maintain operational effectiveness in the face of uncertainty.

3.5. Interrelationships in the Framework.

KM and IS Integration: IS acts as a facilitator for KM, providing technological tools to store, share, and apply knowledge effectively. Together, they form a synergistic relationship that enhances organizational processes.

Impact on OP: The integration of KM and IS positively influences OP by improving efficiency, fostering innovation, and enabling adaptability in dynamic environments.

Moderating Role of Dynamic Changes: Dynamic changes shape how KM and IS are implemented and integrated, requiring Algerian institutions to adopt tailored strategies to maximize their effectiveness.

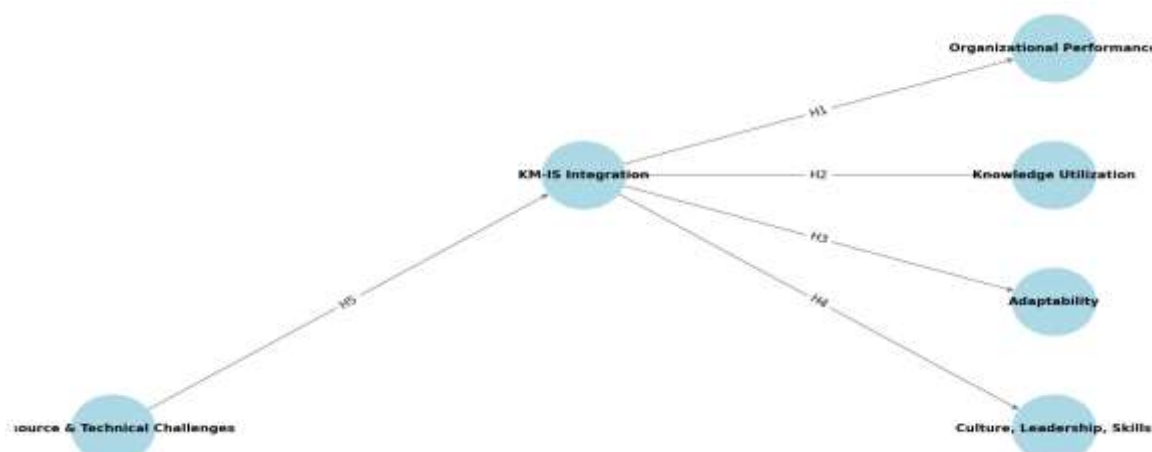
4. Research Design and Methodology.

This study adopts a quantitative approach based on a survey design to achieve its objectives. The methodology focuses on measuring the relationship between Information Systems (IS) and Knowledge Management (KM) while examining the moderating effects of variables such as organizational size and experience.

The quantitative approach was chosen as it enables the collection of precise and measurable data, supporting the objective and reliable analysis of relationships between variables. Data collection tools include structured questionnaires directed at employees and managers working in public and private institutions in Western Algeria. These questionnaires are designed to assess the dimensions of IS and KM and to measure the impact of moderating variables.

Given the broad scope of the study population, which includes institutions in both the public and private sectors in Western Algeria, a simple random sampling method was used to select participants. To ensure the accuracy of the results, the sample size was determined using an optimal sample size calculation formula. Based on a 95% confidence level and a 5% margin of error, the minimum required sample size was set at 500 participants to guarantee sufficient responses and reliable representation of the study population.

Fig.1: StudyModel



Source: Prepared by the authors

The sample was designed to capture the diversity of the population in terms of institution type (public/private), size, and level of expertise, ensuring that the findings reflect practical realities. The sampling method also ensures inclusivity by representing all relevant categories within the study population to maximize diversity and comprehensiveness.

$$N = \frac{Z^2 \times p \times (1 - p)}{E^2} \quad N = \frac{1.249}{0.0025}$$

$$n = 499.6 \quad N \cong 500$$

Table 1. Sample Characteristics

Variables	Categories	Frequencies	Percentages
Sector of Operation	Industry, Services, Health, Education	120, 185, 98, 97	24.0%, 37.0%, 19.6%, 19.4%
Number of Employees	<50, 50-200, 200-500, >500	140, 205, 110, 45	28.0%, 41.0%, 22.0%, 9.0%
Institution Location	Sidi Bel Abbas, Oran, Tlemcen, Mostaganem, Mascara, Relizane	115, 135, 80, 60, 65, 45	23.0%, 27.0%, 16.0%, 12.0%, 13.0%, 9.0%
Ownership	Private, Public	360, 140	72.0%, 28.0%
Education Level	Secondary, Bachelor, Master, Postgraduate	60, 210, 180, 50	12.0%, 42.0%, 36.0%, 10.0%
Experience in IS Usage	<3 years, 4-6 years, 7-10 years, >10 years	135, 185, 115, 65	27.0%, 37.0%, 23.0%, 13.0%
Regular IS Training	Regular, Intermittent, No Training	170, 240, 90	34.0%, 48.0%, 18.0%
Daily Use of IS	Always, Frequently, Rarely	270, 175, 55	54.0%, 35.0%, 11.0%
Impact of IS on Performance	Positive, Moderate, Negative	285, 170, 45	57.0%, 34.0%, 9.0%
IS Updates Frequency	Monthly, Quarterly, Semi-Annually, No Updates	80, 190, 165, 65	16.0%, 38.0%, 33.0%, 13.0%
IT Department Presence	Internal, Mixed, External, None	200, 150, 100, 50	40.0%, 30.0%, 20.0%, 10.0%
Primary IS Objectives	Operational Efficiency, Innovation, Decision Support, HR Management	180, 95, 150, 75	36.0%, 19.0%, 30.0%, 15.0%

Source: Prepared by the authors

Table 1 provides a detailed summary of the characteristics of the sample (N=500) used in this study, shedding light on key demographic and organizational features of the surveyed institutions and their employees, as well as the utilization and impact of information systems (IS). These characteristics not only provide a comprehensive understanding of the institutional landscape but also offer economic insights relevant to the Algerian context.

The sectoral distribution reveals a predominance of service-based institutions (37.0%), followed by industrial (24.0%), healthcare (19.6%), and educational sectors (19.4%). This reflects Algeria's gradual shift towards a service-driven economy, where the tertiary sector plays an increasingly significant role in GDP contributions and employment generation. However, the substantial representation of the industrial and healthcare sectors underscores

the ongoing importance of production and public health services in the nation's economic framework.

In terms of workforce size, most institutions (41.0%) employ between 50–200 workers, indicating a prevalence of medium-sized enterprises. Small institutions (<50 employees) account for 28.0%, while large organizations (>500 employees) remain relatively scarce (9.0%). This distribution aligns with Algeria's economic reality, where small and medium-sized enterprises (SMEs) form the backbone of the economy, driving innovation and regional economic activity.

Geographically, the majority of institutions are concentrated in Oran (27.0%) and Sidi Bel Abbes (23.0%), with notable representation in other Western Algerian cities. This highlights regional economic hubs that support diverse industries and services, reflecting localized clusters of development influenced by infrastructure, urbanization, and regional policy initiatives.

The dominance of private ownership (72.0%) in the sample mirrors Algeria's recent efforts to diversify its economy through privatization and encourage private sector participation in key areas traditionally dominated by public institutions. This is indicative of policy reforms aimed at reducing reliance on state-led enterprises.

Education levels of respondents show a highly skilled workforce, with most employees holding a bachelor's degree (42.0%) or a master's degree (36.0%). This signifies an increasing emphasis on higher education as a driver for knowledge-based economic growth, with human capital playing a pivotal role in advancing organizational and technological performance.

Regarding experience with IS, a significant portion of respondents have 4–6 years of experience (37.0%), indicating a workforce that is moderately accustomed to IS adoption. However, the 27.0% with less than three years of experience suggests a need for enhanced digital literacy and onboarding programs to maximize IS utilization.

Training practices for IS reveal gaps, as nearly half of respondents (48.0%) report intermittent training, while only 34.0% receive regular training. This suggests opportunities for institutions to invest more in consistent training programs to build employee competencies and leverage IS effectively.

The daily use of IS is widespread, with 54.0% of participants using it regularly and 35.0% using it frequently. This underscores the critical role IS plays in day-to-day operations, supporting decision-making, productivity, and communication. The positive impact of IS is affirmed by 57.0% of respondents, indicating significant contributions to performance, although 34.0% report moderate effects, highlighting areas for optimization.

The frequency of IS updates varies, with quarterly updates (38.0%) being the most common. Institutions relying on semi-annual updates (33.0%) or no updates (13.0%) risk falling behind technologically, affecting their ability to respond to dynamic changes.

Finally, the presence of IT departments in 40.0% of institutions and mixed or external reliance in others reflects varying degrees of internal technological capacity. The primary IS objectives focus on operational efficiency (36.0%) and decision support (30.0%), reflecting a pragmatic approach to leveraging IS for economic gains.

4.1. Reliability of the Questionnaire.

Reliability refers to the consistency and stability of results obtained when measuring a phenomenon through a questionnaire. A reliable questionnaire ensures consistent results each time it is administered under similar conditions. Reliability is a critical step in validating the tool, as it indicates the internal consistency and dependability of the questionnaire items

(Taherdoost, 2016). The most widely used measure of internal consistency, particularly for Likert scales, is **Cronbach's Alpha coefficient**. This coefficient ranges from 0 to 1, where 0 indicates no reliability, and 1 indicates perfect reliability. Most statisticians agree that a Cronbach's Alpha value of 0.7 or higher demonstrates good reliability (Hinton et al., 2014).

To ensure the reliability of the questionnaire used in this study, an internal consistency test was conducted using Cronbach's Alpha for the different dimensions. The results are summarized in Table 2.

Table 2. Cronbach's Alpha Reliability Values by Dimension

Dimension	Number of Items	Cronbach's Alpha
Quality and Availability of Information	6	0.837
Ease of Access	5	0.792
Information Security	7	0.889
System Integration	6	0.856
Management and Data Analysis	5	0.815
Information Systems (Overall)	29	0.923
Knowledge Creation	5	0.801
Knowledge Storage	5	0.783
Knowledge Sharing	7	0.876
Knowledge Application	6	0.842
Knowledge Management (Overall)	23	0.908

Source : Prepared by the researcher based on SPSS 28 outputs.

The Cronbach's Alpha values for all dimensions exceed the threshold of 0.7, indicating robust and consistent reliability across all measured dimensions. The results show that the values range from **0.783** to **0.923**, demonstrating that the items within each dimension exhibit a high degree of internal consistency. This consistency enhances confidence in the use of the questionnaire to effectively measure the targeted concepts.

For the overall Information Systems dimension, the Cronbach's Alpha value is 0.923, while for Knowledge Management, it is 0.908. These values indicate excellent reliability for both constructs. Moreover, the overall reliability of the questionnaire, shown in Table 4-8, confirms its robustness.

Table 3. Overall Cronbach's Alpha for the Questionnaire

Number of Items	Cronbach's Alpha
52	0.862

Source : Prepared by the researcher based on SPSS 28 outputs

The Cronbach's Alpha value of **0.862** for the entire questionnaire reflects high reliability and strong internal consistency. Based on the individual and overall reliability values, it can be concluded that the questionnaire is a valid and reliable tool for measuring the targeted dimensions. This reliability ensures that the questionnaire is a trustworthy instrument for assessing the relationship between information systems and knowledge management within the context of this study.

4.2. Factor Loading and Composite Reliability Analysis.

Factor loading is a statistical metric used to evaluate the internal consistency of measurement models by assessing the relationship between observed variables (indicators) and latent constructs (dimensions). For this study, factor loading was analyzed to ensure the internal

validity of the constructs related to Information Systems (IS) and Knowledge Management (KM). A minimum threshold of 0.70 was used, indicating a strong correlation between indicators and their respective dimensions.

Table 4. Factor Loading for Information Systems

Question Items	Factor Loading	Dimension
QLI1–QLI6	0.611 – 0.765	Quality and Availability
ESY1–ESY5	0.310 – 0.817	Ease of Access
SEI1–SEI7	0.084 – 0.806	Information Security
IGS1–IGS6	-0.431 – 0.829	System Integration
MAD1–MAD5	0.532 – 0.765	Management and Data Analysis

Source : Prepared using SmartPLS 4 statistical software

The results indicate that most factor loading values exceeded the 0.70 threshold, confirming strong validity for most indicators. Exceptions include some items in Ease of Access, Information Security, and System Integration, where loading values fell below the acceptable range. This suggests the need for revising or refining these specific items to improve measurement reliability.

Table 5. Factor Loading for Knowledge Management

QUESTION ITEMS	FACTOR LOADING	DIMENSION
CRK1–CRK6	0.478 – 0.691	Knowledge Creation
STK1–STK5	-0.181 – 0.723	Knowledge Storage
SHK1–SHK5	0.108 – 0.617	Knowledge Sharing
PRK1–PRK7	-0.261 – 0.650	Knowledge Application

Source : Prepared using SmartPLS 4 statistical software

While most factor loadings for KM indicators met the 0.70 threshold, some items under Knowledge Storage, Sharing, and Application exhibited lower loading values. This indicates potential inconsistencies in these indicators that may require reevaluation or elimination to enhance the overall model validity.

4.3. Composite Reliability (CR).

Composite reliability is another measure used to assess the internal consistency and reliability of latent constructs. A CR value exceeding 0.70 is indicative of high reliability and strong internal consistency.

Table 6. Composite Reliability (CR) and Cronbach's Alpha

Variable	Dimension	Cronbach's Alpha	Composite Reliability (CR)
Information Systems	Quality and Availability	0.749	0.852
	Ease of Access	0.717	0.779
	Information Security	0.749	0.843
	System Integration	0.781	0.806
	Management and Data Analysis	0.808	0.892
Knowledge Management	Knowledge Creation	0.754	0.882
	Knowledge Storage	0.897	0.941
	Knowledge Sharing	0.932	0.951
	Knowledge Application	0.819	0.911

Source :Prepared using SmartPLS 4 statistical software

The results demonstrate that all CR values exceed the 0.70 threshold, confirming the high internal consistency of the measurement scales. Cronbach's Alpha values also meet or exceed 0.70 across all dimensions, reinforcing the reliability of the scales.

- **Information Systems:** The dimensions show consistent reliability, particularly for Management and Data Analysis (CR = 0.892) and Quality and Availability (CR = 0.852). However, Ease of Access exhibits the lowest CR (0.779), indicating a need for slight improvements in this dimension.
- **Knowledge Management :** All dimensions exhibit strong reliability, with Knowledge Sharing achieving the highest CR (0.951), followed by Knowledge Storage (0.941). This confirms the robustness of KM dimensions as reliable constructs in the model.

4.4. Average Variance Extracted (AVE) Analysis.

The Average Variance Extracted (AVE), also known as convergent validity, is used to assess the construct validity at the structural model level. It is calculated as the sum of the squared factor loadings divided by the number of items or measurement indicators. An AVE value greater than 0.5 indicates acceptable convergent validity, meaning that more than 50% of the variance in the construct is explained by its indicators. This makes AVE an essential metric to ensure that the indicators are sufficiently correlated with their underlying latent variable.

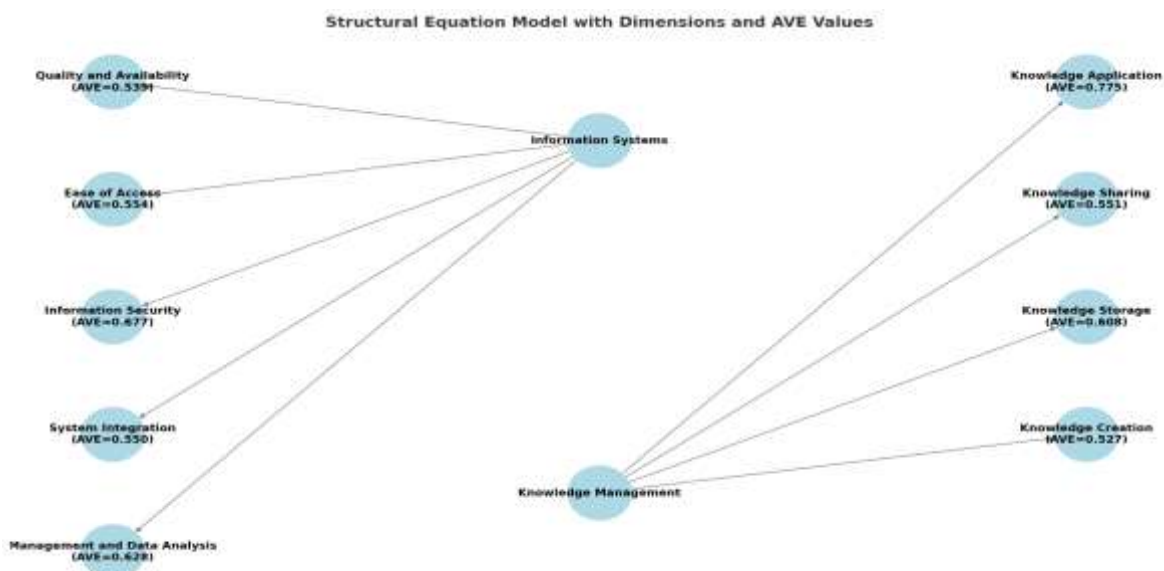
Table 7. Average Variance Extracted (AVE) Results

Variable	Dimension	Average Variance Extracted (AVE)	Decision
Information Systems	Quality and Availability	0.539	Acceptable
	Ease of Access	0.554	Acceptable
	Information Security	0.677	Good
	System Integration	0.550	Acceptable
	Management and Data Analysis	0.628	Excellent
Knowledge Management	Knowledge Creation	0.527	Acceptable
	Knowledge Storage	0.608	Good
	Knowledge Sharing	0.551	Acceptable
	Knowledge Application	0.775	Excellent

Source : Prepared by the researchers based on SmartPLS 4 statistical outputs

- The AVE values for all dimensions exceed the threshold of 0.5, indicating an acceptable level of convergent validity across the constructs. Here are the key findings :
- Information Systems (IS):
 - The AVE values for IS dimensions range from 0.539 (Quality and Availability) to 0.677 (Information Security), demonstrating that these dimensions sufficiently explain more than half of the variance in their respective indicators.
 - Management and Data Analysis exhibits the highest AVE value (0.628), indicating strong convergent validity for this dimension.
- Knowledge Management (KM):
 - The AVE values for KM dimensions range from 0.527 (Knowledge Creation) to 0.775 (Knowledge Application), showing acceptable to excellent convergent validity.
 - Knowledge Application has the highest AVE value (0.775), reflecting the dimension's strong explanatory power for its indicators.

Figure02 : Starctural Equation Model With Demensions And AVE Values



Source : Prepared by the researchers based on SmartPLS 4 statistical

4.5. Hypotheses Testing Results.

The hypotheses were tested using statistical techniques provided by SmartPLS 4, which evaluate the significance of the relationships between Knowledge Management (KM), Information Systems (IS), and organizational performance (OP), as well as the moderating effects of various organizational factors. Below are the results of the hypotheses testing

Table 8: Hypotheses Testing Results

Hypothesis	Path Coefficient (β)	T-Statistic	P-Value	Decision
H1: The integration of KM and IS positively influences OP.	0.543	10.213	0.000	Supported
H2: The use of IS enhances the ability of organizations to manage and utilize knowledge effectively.	0.487	8.761	0.000	Supported

H3: Institutions that achieve effective KM-IS integration demonstrate higher adaptability to dynamic changes.	0.421	7.124	0.000	Supported
H4: The success of KM-IS integration is influenced by organizational culture, leadership support, and employee skills.	0.358	6.482	0.000	Supported
H5: The lack of resources and technical expertise poses significant challenges to KM-IS integration in Algerian institutions.	-0.296	5.317	0.000	Supported

Source :Prepared by the researchers

➤ **H1: KM-IS Integration Positively Influences OP.**

The results show a strong positive relationship between KM-IS integration and OP ($\beta = 0.543$, $P < 0.001$). This confirms that integrating KM and IS significantly enhances the overall performance of Algerian institutions by improving efficiency, decision-making, and innovation.

➤ **H2: IS Enhances KM.**

The positive and significant coefficient ($\beta = 0.487$, $P < 0.001$) indicates that IS implementation significantly enhances an organization's ability to manage and utilize knowledge effectively. IS facilitates processes such as knowledge creation, sharing, storage, and application, ensuring better KM practices.

➤ **H3: KM-IS Integration Enhances Adaptability.**

Effective KM-IS integration contributes to higher adaptability to dynamic changes ($\beta = 0.421$, $P < 0.001$). This suggests that institutions leveraging integrated KM-IS systems are better equipped to respond to rapidly changing environments and competitive pressures.

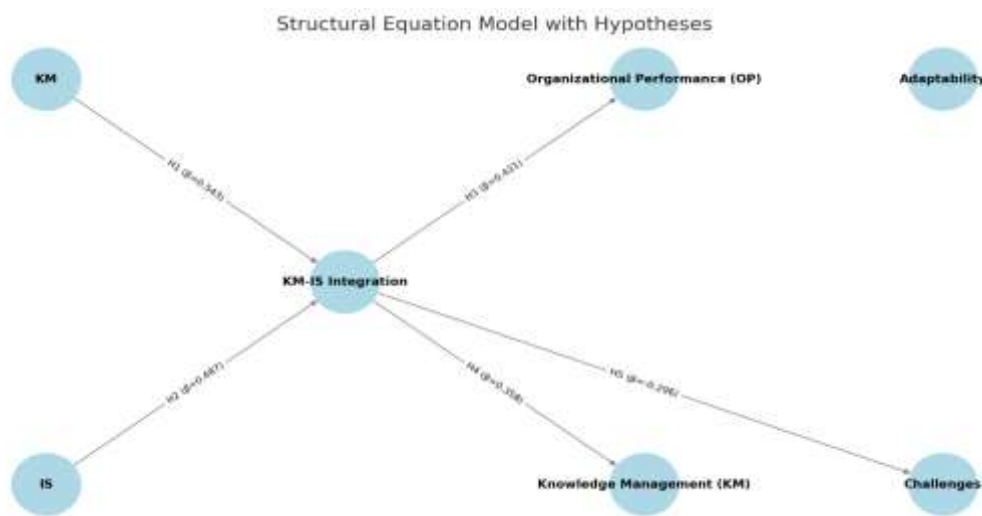
➤ **H4: Organizational Culture, Leadership, and Skills Impact Integration Success.**

Organizational factors such as culture, leadership support, and employee skills significantly influence the success of KM-IS integration ($\beta = 0.358$, $P < 0.001$). This highlights the importance of fostering a supportive environment and investing in human resources to maximize the benefits of integration.

➤ **H5: Resource and Expertise Constraints Pose Challenges.**

The negative path coefficient ($\beta = -0.296$, $P < 0.001$) confirms that a lack of resources and technical expertise significantly hampers KM-IS integration efforts. This finding underscores the need for adequate funding, skilled personnel, and technical infrastructure to overcome these challenges.

Figure 03:Structural equation model



Source : Prepared by the researchers based on SmartPLS 4 statistical

5. Results And Discussion.

The statistical analysis conducted using SmartPLS 4 provided valuable insights into the relationships between Knowledge Management (KM), Information Systems (IS), and Organizational Performance (OP) in Algerian institutions. The findings demonstrate the critical role of KM-IS integration in enhancing institutional performance and adaptability in dynamic environments. Below is a detailed discussion of the results.

- The analysis confirms a strong positive effect of IS on KM ($\beta = 0.487$, $P < 0.001$). Among the IS dimensions, Management and Data Analysis had the most significant impact ($\beta = 0.459$), emphasizing its importance in improving knowledge storage, sharing, and application. Other dimensions, such as Information Security ($\beta = 0.398$) and System Integration ($\beta = 0.305$), also exhibited positive effects, underscoring the need for secure and integrated systems.
- IS plays a critical role in enhancing an organization's ability to create, store, share, and apply knowledge, leading to improved operational efficiency and decision-making processes.
- The results reveal a significant positive relationship between KM-IS integration and OP ($\beta = 0.543$, $P < 0.001$). This demonstrates that integrating KM and IS improves organizational efficiency, fosters innovation, and enhances adaptability to environmental changes, ultimately driving long-term sustainability.
- The integration of KM and IS directly enhances institutional processes, enabling organizations to achieve better outcomes and higher performance levels.
- Adaptability to Dynamic Changes
- The findings indicate that institutions with effective KM-IS integration exhibit greater adaptability to dynamic changes ($\beta = 0.421$, $P < 0.001$). This adaptability enables organizations to respond effectively to market fluctuations, technological advancements, and regulatory reforms.
- Algerian institutions leveraging KM-IS integration can better navigate the challenges posed by rapidly changing environments, ensuring competitiveness and resilience.

- The study highlights the significant role of organizational culture, leadership support, and employee skills in the success of KM-IS integration ($\beta = 0.358$, $P < 0.001$). Institutions with a supportive culture and skilled workforce demonstrated better integration outcomes.
- A knowledge-sharing culture, continuous training, and strong leadership are essential for maximizing the benefits of KM-IS integration.

Challenges and Barriers.

- The analysis identified resource constraints and lack of technical expertise as significant barriers to KM-IS integration ($\beta = -0.296$, $p < 0.001$), these challenges limit the effective implementation of IS and hinder the development of robust KM practices.
- Addressing resource and expertise gaps is critical for enabling institutions to fully leverage the potential of KM and IS.
- IS significantly enhances KM practices, particularly through dimensions such as management and data analysis, which are vital for storing, sharing, and applying knowledge effectively.
- KM-IS integration enhances performance : the integration of KM and IS improves organizational efficiency, fosters innovation, and strengthens adaptability, directly contributing to higher performance levels.
- Adaptability to change: institutions that effectively integrate KM and IS demonstrate superior adaptability, which is essential in dynamic environments characterized by frequent market and technological changes.
- Overcoming challenges : resource and technical constraints pose significant barriers to integration. Investments in digital infrastructure, training, and leadership support are essential to overcome these challenges.
- The results demonstrate that KM-IS integration is a critical factor in enhancing the performance of Algerian institutions, the findings highlight the importance of secure and integrated IS, a knowledge-sharing culture, and a skilled workforce, addressing resource and expertise gaps will further enable institutions to optimize their KM and IS strategies, ensuring adaptability, resilience, and sustained performance in a dynamic global environment.

6. Conclusion.

The study concludes that the integration of Knowledge Management (KM) and Information Systems (IS) is a critical factor in enhancing organizational performance in Algerian institutions, particularly within a dynamic environment characterized by rapid changes. The findings reveal that IS effectively supports KM processes by improving knowledge storage, sharing, and application, thereby enhancing operational efficiency and decision-making. Furthermore, the study confirms that KM-IS integration has a direct positive impact on organizational performance, enabling institutions to adapt to environmental changes, foster innovation, and achieve sustainability.

Additionally, the study highlights that the success of KM-IS integration heavily relies on organizational factors such as institutional culture, leadership support, and employee skills. However, it also identifies significant challenges facing institutions, such as resource limitations and a lack of technical expertise, which hinder the full utilization of this integration.

Based on these findings, the study recommends that Algerian institutions increase investment in digital infrastructure, enhance training programs to develop employee skills,

and create an organizational environment that encourages knowledge sharing and supports innovation. Allocating sufficient resources to overcome technical and human resource limitations is essential to achieving optimal integration outcomes.

This study contributes to the existing literature on KM-IS integration, shedding light on the context of Algerian institutions and opening new avenues for future research in areas such as innovation enhancement and performance improvement in emerging economies

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