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The Impact of New Information and Communication Technology on the Implementation of Knowledge Management in Economic Institutions: A Case Study of the Algerian Water Institution, Mascara Unit

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Abstract:

This study aims to highlight the importance and impact of new information and communication technologies on the successful implementation of a knowledge management approach in an Algerian economic institution, using a case study of the Algerian Water Company. We utilized a questionnaire focused on two main variables – new information and communication technology and knowledge management – covering the following dimensions: leadership support, organizational culture, process technology, and the application of processes. We distributed the questionnaire to a sample of 70 individuals within the camp unit of the Algerian Water Company in the state of Mascara.

We used a descriptive-analytical approach to analyze the data and discuss the results. Our findings suggest a strong correlation and significant impact of using new information and communication technology on the application of the knowledge management approach within the Algerian Water Company, Mascara unit.

Keywords: *New Information and Communication Technology; Knowledge Management.*

L'impact des nouvelles technologies de l'information et de la communication sur la mise en œuvre de la gestion des connaissances dans les institutions économiques : étude de cas de l'Institution algérienne des eaux, unité de Mascara

Résumé :

Cette étude vise à mettre en évidence l'importance et l'impact des nouvelles technologies de l'information et de la communication (NTIC) sur la mise en œuvre réussie d'une approche de gestion des connaissances au sein d'une institution économique algérienne, à partir de l'étude de cas de la Société algérienne des eaux (SEA). Nous avons utilisé un questionnaire axé sur deux variables principales – les NTIC et la gestion des connaissances – couvrant les dimensions suivantes : soutien du leadership, culture organisationnelle, technologie des processus et application des processus. Nous avons distribué le questionnaire à un échantillon de 70 personnes au sein de l'unité de camp de la SEA dans la province de Mascara.

Nous avons utilisé une approche descriptive et analytique pour analyser les données et discuter les résultats. Nos résultats suggèrent une forte corrélation et un impact significatif de l'utilisation des NTIC sur la mise en œuvre de l'approche de gestion des connaissances au sein de la SEA, unité de Mascara.

Mots-clés : *NTIC ; Gestion des connaissances.*

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Introduction

Knowledge transfer has gained prominence in organizations as a key tool for achieving excellence by creating a blend of knowledge that organizes productive tasks, making the organization more efficient in a competitive society (Tsoukas, 1996, pp. 11-25).

Furthermore, organizations must seek to harness diverse expertise, necessitating the transfer of knowledge among individuals, teams, and departments (Argot, L., & Ingram, P., 2000, p. 1-8). Knowledge transfer is a dynamic process that relies on individuals' ability and skills to apply their knowledge and experience within the framework of knowledge management. This philosophy is more than just a system or a practical approach that organizations follow to achieve their goals and implement their strategies.

Additionally, new Information and Communication Technology (ICT) has played a supporting role in disseminating and applying knowledge management approaches across many organizations, aiming primarily to achieve competitive advantage by understanding customers and their needs. The rapid evolution of ICT has compelled organizations to adjust and develop their strategies in line with internal and external developments.

This has underscored the significance of knowledge management as an approach organizations use to monitor, disseminate, share, store, and enhance knowledge, to add value. Through this integration of knowledge, competencies, experiences, and abilities, and the use of new Information and Communication Technology, organizations aim to

create superior knowledge compositions from data, information, or isolated knowledge (Laudon, 2007).

The importance of implementing knowledge management lies in achieving the following objectives:

- Building and developing the necessary capabilities to deal with environmental variables.
- Unleashing intellectual potential and mental capacities at all levels to enhance operational efficiency.
- Seizing opportunities based on available knowledge to ensure organizational growth.
- Achieving integration between creative human resource capabilities and the use of new Information and Communication Technology.
- Motivating individuals to unleash and share their latent capabilities with the organization.
- Realizing the collaborative impact of employees to develop knowledge within the institution continuously.

Given the significance of knowledge management, this research paper examines the relationship between the use of new Information and Communication Technology and the successful implementation of knowledge management in economic institutions. We followed the descriptive-analytical approach to address our central problems:

- Is there an impact of using new Information and Communication Technology on the application of knowledge management in economic institutions? A case study of the Algerian Water Institution, Mascara Unit.

To answer this question, we assume that:

- **The use of new Information and Communication Technology has an impact on the application of**

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knowledge management in the economic institution. A case study of the Algerian Water Institution.

1. Definition of Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is typically associated with modernity and is defined as the automated processing of data and information. Its digital nature places it within the framework of modern technology. ICT encompasses technologies that leverage innovations in science and technology. Thus, the label of "modernity" is temporary, as in a few years these technologies—Internet, information technology, remote collaborative work (Groupware), and electronic workflow management — will become ordinary affairs.

ICT is defined as all forms of technology used to create, record, exchange, display, and utilize information in various forms (data, sound, images...) (Chokri El Fidha, 2008, p. 124).

We can say that the new Information and Communication Technology encompasses all technologies used for the processing, transmission, and storage of information in electronic form. It includes computer technology, communication tools, network infrastructure, fax machines, and other equipment widely used in communications (Kheider, 2002, p. 253).

It is worth noting that new Information and Communication Technology enhances the well-being of individuals and communities. It facilitates access to essential information for their lives and offers numerous benefits to organizations. These benefits include gaining new competitive advantages through support for creativity and

innovation, improving quality, reducing costs, increasing sales by enhancing productivity and operational efficiency, and improving decision-making processes.

2. Knowledge Management

According to Serge (2004, p. 144,145), "Knowledge Management is the organized and coordinated management of knowledge, both individual and collective, within organizations. Knowledge Management distinguishes itself from strategic awareness and economic intelligence by focusing on internal information and knowledge, even if external contributions enrich it."

Knowledge management also involves defining and analyzing available and required knowledge assets and the processes related to them, as well as planning and controlling activities to develop both assets and processes to achieve the organization's goals.

Moreover, knowledge management is not limited to managing knowledge assets alone but also extends to managing the processes that involve them. These processes include knowledge development, preservation, utilization, and sharing. It also encompasses knowledge assets related to markets, products, technology, and organizations, whether owned or needed, ultimately leading to organizational development, increased profits, and added value (Macintosh & Ann, 2006, p. 12).

Knowledge management is an administrative philosophy that relies on individuals as knowledge creators, who build databases, classify them, and organize them into knowledge bases for use in expert systems and knowledge-based systems. Computers use these knowledge bases to answer questions, solve problems, and make decisions quickly and easily, potentially reducing uncertainty.

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While knowledge acquisition in the field of computer inference remains essential, most recent developments in knowledge management systems aim to make knowledge available for direct consumption by individuals or to develop software for knowledge processing. Knowledge management systems aim to make knowledge available and enable organizations to reuse it.

The rapid evolution of knowledge is driving the development of artificial intelligence, which has become a significant threat to individuals and organizations, posing a risk to human work despite its positive aspects and benefits, depending on how it is used.

According to Al Ali and Al Qandilji (2008, p. 12), "Knowledge management includes creating a 'stimulating' environment within the organization that facilitates the process of creativity, knowledge transfer, and sharing. It focuses on establishing a supportive organizational culture with the support of visionary leadership, motivating employees, and increasing customer loyalty."

Its importance lies in enhancing administrative communication and improving human resource efficiency, particularly in preparing for change and adapting to technological transformations. This is in addition to the guidance provided in the "Guideline for Knowledge Management" (2015, p. 8):

- Enhancing the ability of institutions to carry out their activities and improve service efficiency and effectiveness.
- Simplifying the performance of processes, reducing time and cost.

- Establishing an effective organizational environment for collecting, documenting, and transferring acquired and accumulated experiences.
- Transforming tacit knowledge acquired by employees through their experiences into explicit knowledge that can be used in the form of guidance documents.
- Improving training and creative development opportunities for individuals.
- Instilling a culture of knowledge and encouraging the free flow of ideas, facilitating their sharing.

The fundamental question is how to leverage all knowledge (explicit and tacit) to enable the organization to achieve excellence and gain a competitive advantage. This knowledge must be modeled, organized, and internally transferred to new employees so they can create added value for the organization. Thus, adopting this perspective is crucial for organizations to gather and mobilize intangible assets to create added value.

2.1 Factors for Success in Implementing Knowledge Management in Organizations:

To ensure the success of an organization in adopting the philosophy of knowledge management, several essential factors need to be achieved, as summarized below:

2.1.1 Leadership Commitment and Conviction:

This commitment is realized through top management's willingness to take a series of steps to create an environment conducive to embracing the philosophy of knowledge management. The organization's mission is always to provide a better product or service to consumers (Chan, 1997, p. 55).

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This includes allocating the necessary resources and translating them into specific plans and programs with predefined schedules to address employee resistance to change and meet the expectations of both individuals and the target audience.

2.1.2. Management Communication:

Communication is a fundamental pillar of modernizing business performance, requiring mechanisms to encourage communication, such as remote conferencing techniques and citizen-submitted suggestions for continuous task improvement (Bansal, 2012, p. 111).

Additionally, reliance on electronic communication streamlines efforts, speeds up processes, and economizes resources. Activating internet networks among similar departments unifies perspectives and decision-making processes, moving from centralized decision-making to networked decision-making (Al Ilmi, 2020, p. 293).

2.1.3. Organizational Culture:

Organizational culture is a fundamental component of any organization and plays a significant role in its success, particularly in knowledge management. It enhances organization members' commitment to its principles and philosophy, ultimately contributing to achieving its goals.

According to P. Drucker, the difference between advanced and underdeveloped countries lies in the former's advanced management and the latter's poor management, underscoring the significance of organizational culture and values. Management is not merely a system governed by rules; it also embodies principles, behaviors, and ethical

concepts that must be adjusted to reflect values, traditions, beliefs, and prevailing societal attitudes.

Thus, business management is a culture rather than a mere collection of techniques and means. Knowledge management also relies on cooperation—a rare currency in individual cultures—as the primary factor ensuring smooth, efficient knowledge sharing among individuals.

Organizational culture reflects the general behavior patterns and rules of behavior that employees within the organization believe in and adopt in their interactions. It includes rituals and practices that become ingrained over time, shaping thinking, work, and decision-making methods, among others. It also represents the values and behaviors that stakeholders perceive when dealing with the organization.

Therefore, the importance of organizational culture is that it defines the organization's identity and personality, establishes desired behavior rules, promotes a sense of loyalty and belonging, and monitors performance, accountability, and deviations.

2.1.4. Empowering Human Resources:

Empowering human resources, according to the philosophy of knowledge management, involves their awareness and acceptance of radical, fundamental changes, contributing to building mutual trust between authority and employees, enhancing their sense of belonging, and enabling them to take decisive action, especially during crises and challenges posed by the digital environment. This also includes utilizing their talents through updating training and development programs (Rafaa and Mesghouni, 2015, p. 52).

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Additionally, it involves harnessing their potential through training and development programs.

2.1.5. Preparedness for Change:

Naturally, the radical transformation advocated by the philosophy of knowledge management requires effective management to ensure a smooth transition from traditional processes to more efficient value chains, enabling employees to manage operations competently. Being prepared for change and initiating a redesign of organizational structures (Ghatari & Shamsi, 2014, p. 17) are integral to this change.

It is closely related to top management's commitment, the prevailing organizational culture, formal and informal behavior, and work procedures and methods. This change also includes:

- Strategic adjustment and organizational mission.
- Gradual change of organizational culture, such as promoting teamwork and creating knowledge creators.
- Structural change, reorganizing departments and divisions, and delegating authority.
- Technological change is the most significant challenge for business organizations. This affects how the organization communicates with relevant stakeholders, including official authorities, partner entities such as public treasuries, research centers, universities, and decision-makers.

3. New Information Technology and Communication Tools Supporting Knowledge Management:

In the following, we will attempt to present some tools and their importance in facilitating the implementation of a knowledge management project within an organization. The organization needs to choose tools that align with its knowledge management project, goals, and strategies.

It may involve a mix of information technology tools, taking into account each tool's features and characteristics, and monitoring their development. (Jean-Yves, 2003, p. 447) has identified six families of knowledge management technology:

- Idea Exchange
- Knowledge Exchange.
- Monitoring and Access to External Sources.
- Production and Management of Internal Documents.
- Knowledge Transfer and E-Learning.

The organization should prioritize the technology that suits its strategies and meets its needs. Gilles Balmisse (2006) provided an overview of these technological tools in his book "Livre Blanc." The list of tools presented in Table 01 is not comprehensive. Still, it includes some types of technological tools belonging to different families of knowledge management tools (collaborative work tools, knowledge extraction, mapping, process management, etc.).

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Table 01: Families of Knowledge Management Tools

Links	Software / Tool	Author / Designer	Tool Family
http://corporate.exalead.com/enterprise/l=f	Exalead	Exalead	Knowledge Access Tools
http://www.verity.com/content/home/index.en.html	Verity K2 Enterprise	Verity	
http://www.ids-scheer.fr/fr/index_fr.html	Aris Process Platform	IDS Sheer	Process Management Tools
http://www.mega.com/index.asp/l/fr/c/product/p/mega-modeling-suite/p2/mega-process	Mega Process	Mega	
http://www-142.ibm.com/software/dre/ecatalog/detail.wss?locale=fr_FR&synke y=B743624C32937K30	Business Process Manager	FileNet	
http://www.w4global.com/	W4	W4	
http://www.inxight.com/	VizServer	Inxight	Design/Mapping Tools
http://www.kartoo.com	Kartoo Knowledge	Kartoo	
http://www.inxight.com/	Inxight Smart Discovery	Inxight	Knowledge Extraction Tools
http://www.spss.com/fr/produits_solutions/Data_Text_Mining/Lexiq uest_Mine.htm	LexiQuest Mine	SPSS	
http://drupal.org/	Drupal	Open Source	Collaborative Publishing Tools
http://www.sixapart.com/	Movable Type	SexApart	
http://www.vignette.com/fr/	Vignette Content	Vignette	

http://france.emc.com/index.htm	eRoom	EMC-Documentum	Collaborative Work Tools
http://www-306.ibm.com/software/lotus/products/quickplace	QuickPlace	IBM/Lotus	
http://fr1.mayetic.com/	MayeticVillage	Mayetic	
http://www.microsoft.com/france/office/2007/servers/sharepointserv er/default.mspx	SharePoint	Microsoft	
http://www.tacit.com/home.asp	ActiveNe	Tacit	Expertise Location/Personalization Tool

Source: Balmisse Gilles. (2006).

4. Challenges Facing the Application of Knowledge Management:

There are numerous challenges facing the application of the knowledge management approach, as outlined by Brouste (1995). It is emphasized that knowledge cannot be formalized in writing or learned solely in school; instead, it must be transferred and shared in the workplace. This is especially evident in artisanal professions where practical and informal knowledge plays a significant role.

Therefore, it is essential to focus on support and guidance in this field. Thus, it isn't easy to model and formalize knowledge into fixed and specific procedures.

Formalizing knowledge can stifle creativity, and there is a need to eliminate the creation of predefined diagrams or models. Workers must be surprised by events that arouse curiosity and encourage questioning, leading to a genuine

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desire for knowledge and the ability to confront problems and find innovative solutions.

The key question is to what extent an individual's experience can be transferred, since it is personal, specific, and acquired through long-term practice. Personal repetition of experience and making mistakes play a crucial role in an individual's learning and the development of genuine knowledge.

Formalizing knowledge can hinder its development, which runs counter to the primary goal of the knowledge management approach: creating a sustainable competitive advantage for the organization.

5. Field Study:

5 .1 Methodology

This research employed a descriptive-analytical approach to investigate the impact of new information and communication technology (ICT) on the implementation of knowledge management within economic institutions, specifically through a case study of the Algerian Water Company, Mascara Unit. Data collection was conducted using a structured questionnaire designed to target two principal variables: the integration of new ICT and the dimensions of knowledge management (leadership support, organizational culture, technological processes, and application of knowledge management practices). The questionnaire was distributed to a purposive sample of 70 employees from the Mascara Unit, yielding 56 valid responses for the final analysis.

The data collection period extended from December 14, 2024, to February 9, 2025, thereby defining the study's

temporal boundary. Spatially, the research focused exclusively on the Mascara Unit of the Algerian Water Company, Algeria. At the same time, the human boundary encompassed employees at various organizational levels (executives, supervisors, operators) and a range of educational and professional backgrounds. The sample included both male and female participants, reflecting the organization's structure and workforce diversity.

5.2 Reliability and Stability of the Study Tool:

- **Construct Validity of the Study Tool:**

We conducted a construct validity test of the study tool by calculating correlation coefficients between each study dimension and all variables. If the correlation coefficient is substantial and statistically significant, we can conclude that the questionnaire has high construct validity. The following table illustrates this:

Table 02: Construct Validity Test for Study Variables

Correlation Relationship		Pearson Correlation Coefficient	Significance Level
Study Variables	Leadership Support for Knowledge Management	0.822	**0.000
	Organizational Culture	0.778	**0.000
	Process Technology	0.752	**0.000
	Knowledge Management Application Processes	0.856	**0.000

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Availability of New Information and Communication Technologies (NTIC)	0.782	**0.000

Source: Prepared by the researchers using the outputs of SPSS 22.

The table above shows that all correlation coefficients are statistically significant at the 0.000 level. Their values range from 0.752 to 0.856, indicating a strong, positive correlation among the variables (Leadership Support for Knowledge Management, Organizational Culture, Process Technology, Knowledge Management Application Processes, and Availability of New Information and Communication Technologies).

Therefore, the study tool exhibits construct validity and internal consistency, and is suitable for measuring the reality of knowledge management application in the study organization and for testing the proposed hypotheses.

- **Reliability of the Study Tool Using Cronbach's Alpha Method:**

To determine the extent of the correlation among the questionnaire statements and to ensure the consistency of its items, Cronbach's Alpha Coefficient was used. This coefficient is a significant statistical measure of the questionnaire's validity, its ability to measure variables, and its ability to be redistributed across other samples in different spatial and temporal contexts. The questionnaire's overall reliability coefficient was 0.923, a substantial and

acceptable value that exceeds the permissible limit of 0.700. The reliability coefficients for the questionnaire's axes ranged from 0.687 to 0.852. This indicates that the study tool has a high degree of internal consistency, suggesting greater reliability and dependability for field studies, as shown in Table No. (2).

Table 03: Reliability and Validity of the Study Tool Using Cronbach's Alpha

Axes	Number of Statements	Reliability of Axes
Leadership Support for Knowledge Management	07	0.799
Organizational Culture	06	0.765
Operational Technology	06	0.687
Knowledge Management Implementation Processes	10	0.806
Information and Communication Technology	05	0.852
Overall Reliability of the Questionnaire	34	0.923

Source: Prepared by the researchers using the outputs of SPSS 22.

- **Reliability of the Study Tool Using the Split-Half Method:**

The split-half method involves dividing the questionnaire into two halves and then calculating the Pearson correlation coefficient (R). Afterward, it is corrected using the Spearman-Brown coefficient or the Guttman coefficient.

As shown in Table 03, we calculated the reliability and stability of the study tool using two methods to ensure the

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credibility of the data and the suitability of the questionnaire for the field application.

Table 04: Reliability of the Study Tool Using the Split-Half Method

Correlation Coefficient	Correction with the Spearman-Brown Equation	Sample Size
0.702	0.824	56

Source: Prepared by the researchers using the outputs of SPSS 22.

The table above indicates that the correlation coefficient was 0.702, which required correction using the Spearman-Brown coefficient. This correction was necessary because the variance and Cronbach's alpha reliability coefficients were unequal across the two halves of the questionnaire. The Spearman-Brown coefficient was 0.824, indicating high stability for the questionnaire and its dependability in the field study.

5.3 Statistical Description of the Study Sample Characteristics:

Table 05: Distribution of Sample Individuals According to Personal and Functional Characteristics of the Sample

Variable	Category	Percentage (%)	Variable	Category	Percentage (%)
Gender	Male	46.9	Professional Experience	Less than 5 years	40,6
	Female	53,1		5-10 years	28,1
Total		100		11-15 years	9.4
Educational	Primary	00		More than	21,9

Level				16 years	
	Middle	20,3	**Total**		100
	Secondary	20,3	Job Level	Implementer	32,8
	University	59,4		Controller	34,4
				Executive	32,8
Total		100	**Total**		100

Source: Prepared by the researchers using the outputs of SPSS 22.

The table above shows that 46.9% of the sample individuals were male, while 53.1% were female. This gender distribution reflects two main factors: firstly, the increasing number of females in higher education, especially in technical and engineering fields, and secondly, the nature of the work in the organization, which requires male employees for physically demanding tasks (e.g., rural surveys, distribution network preparation, well drilling).

This gender balance reflects the organization's commitment to gender diversity in demanding roles, given the increased participation of women in the workforce in the third millennium.

Regarding educational levels, there was a noticeable improvement: 59.4% held university degrees, 20.3% had secondary education, and 20.3% had intermediate education. The elementary education level was not represented, as the organization's activities require continuous development of its employees' competencies.

This aligns with the organization's commitment to modernizing and adapting its strategies to rapidly evolving environmental challenges.

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In terms of years of professional experience, 21.9% of the sample individuals had more than 16 years of experience, which is half the percentage of those with less than 5 years of experience (40.6%). This demonstrates the organization's tendency to create job opportunities and to employ individuals with university qualifications to keep pace with its strategic shift towards the use of new information and communication technologies (ICTs) and the development of an information system that supports knowledge creation, sharing, development, and preservation.

The majority of individuals in the study have less than 5 years of experience, distributed across various job levels, including executives, supervisors, and operators.

6.4 Testing the Attitudes of the Study Sample Regarding the Reality of Knowledge Management Implementation:

Table 06: Attitudes of the Study Sample towards the Variable "Leadership Support for Knowledge Management"

NO.	Statements	Mean	Standard Deviation	Agreement Percentage
01	Our organization always seeks new working methods and implements them.	2.54	1.24	Disagree
02	Knowledge and expertise (not seniority) are valuable assets that our organization	2.62	1.24	Neutral

	preserves.			
03	Our organization measures and evaluates our knowledge and experiences.	2.94	1.29	Neutral
04	Our organization has a department or an individual responsible for creating and organizing knowledge.	3.27	1.31	Neutral
05	We gather information about our clients (citizens) and organize it for use in our work.	2.81	1.23	Neutral
06	Our knowledge about the external environment and similar institutions is constantly updated.	3.06	1.20	Neutral
07	We participate in decision-making in our organization.	3.39	1.29	Neutral
Leadership Support for Knowledge Management		2.96	0.84	Neutral

Source: Prepared by the researchers using the outputs of SPSS 22.

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The statements in this indicator had an average of 2.96, which is higher than the hypothetical mean. This indicates alignment and agreement among the sample individuals regarding leadership support for knowledge management, with a neutral orientation. This can be explained by the absence of leadership practices that support the implementation of knowledge management.

Table 07: Attitudes of the Study Sample towards the Variable "Organizational Culture"

NO.	Statements	Mean	Standard Deviation	Agreement Percentage
08	We have opportunities to experiment with our ideas without blame for mistakes.	3.27	1.15	Neutral
09	Employees at all levels provide new suggestions to develop the organization.	3.23	1.16	Neutral
10	Workers can meet and discuss work issues.	2.45	1.15	Disagree
11	There are no barriers between workers and managers.	2.87	1.25	Neutral
12	Individuals with knowledge and expertise have a prestigious status in the organization.	2.84	1.37	Neutral
13	The organization fosters a climate of cooperation.	2.83	1.18	Neutral
Organizational Culture		2.90	0.82	Neutral

Source: Prepared by the researchers using the outputs of SPSS 22.

The statements in this dimension had an average mean of 2.90, which is higher than the hypothetical mean, indicating alignment and agreement among the sample individuals with a neutral orientation. This suggests that the respondents, who are employees, do not have a culture of creating, building, sharing, and exchanging knowledge and competencies within the organization. Hence, there is no organizational culture that supports the practical application of knowledge management.

Table 08: Attitudes of the Study Sample towards the Variable "Process Technology"

NO.	Statements	Mean	Standard Deviation	Agreement Percentage
14	We have information software that assists us in performing our work.	2.34	1.15	Disagree
15	We have an internet network that facilitates communication within the organization.	2.72	1.22	Neutral
16	Our organization has a website that publishes all updates and emails.	2.72	1.29	Neutral
17	The organization has an organized electronic archive	2.92	1.25	Neutral

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	that is regularly updated.			
18	Our organization interacts with its customers (citizens) online.	3.05	1.27	Neutral
19	Our organization has sound systems for managing and exchanging information.	2.91	1.19	Neutral
Process Technology		2.77	0.76	Neutral

Source: Prepared by the researchers using the outputs of SPSS 22.

The statements in this dimension had an average mean of 2.77, which is higher than the hypothetical mean, indicating alignment and agreement among the sample individuals with a neutral orientation. This suggests that the organization's employees unanimously agree that there is no technology supporting knowledge management processes in their daily work. This can be explained by the organization's failure to provide the necessary technology for the adoption and implementation of knowledge management.

Table 09: Test of Attitudes of the Study Sample on the Variable of Knowledge Management Implementation Processes

No.	Items	Mean	Standard Deviation	Agreement Percentage
20	We have adequate means to acquire knowledge from outside the organization	3.16	1.15	Neutral
21	We have adequate means to identify critical knowledge within the organization	3.39	1.09	Neutral
22	We have methods for transferring knowledge across offices and departments	2.72	1.07	Neutral
23	We have a sound communication system that ensures knowledge exchange in all directions	2.98	1.10	Neutral
24	The organization allocates a budget for research and product development	3.34	1.21	Neutral
25	Workers form small teams for work	2.38	1.05	Disagree
26	Team members have good relationships	2.58	1.20	Disagree
27	Reasonable solutions to	3.14	1.36	Neutral

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	problems are kept in the organization's archive			
28	Our organization provides incentives to retain experienced and knowledgeable workers	3.48	1.35	Neutral
29	Our organization provides incentives to attract individuals with experience and knowledge	3.58	1.27	Neutral
Knowledge Management Implementation Processes		3.08	0.72	Neutral

Source: Prepared by the researchers using the outputs of SPSS 22.

The statements in this dimension scored a mean of 3.08, which is higher than the hypothetical average, indicating that the sample's responses lean towards the neutral end. This can be interpreted as the organization failing to provide the means, capabilities, budget, and material and moral motivation for workers to implement knowledge management processes, leading to the conclusion that knowledge management processes are not in place at the Algerian Water Corporation, Mascara Unit.

Table 10: Test of Attitudes of the Study Sample on the Variable of Information and Communication Technology

No.	Items	Mean	Standard Deviation	Agreement Percentage
30	We have programs and communication networks supporting our remote work during the COVID-19 outbreak	3.27	1.33	Neutral
31	There are internet and intranet networks that facilitate our remote work during the COVID-19 outbreak	3.17	1.38	Neutral
32	The speed of internet flow is high, and it assists in communication and easy information transfer	3.30	1.17	Neutral
33	The senior management supports remote work during the COVID-19 outbreak	3.39	1.25	Neutral
34	Our organization has a sound communication system for	3.41	1.19	Neutral

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information exchange that helped during the COVID-19 outbreak			
Information and Communication Technology	3.30	1.00	Neutral

Source: Prepared by the researchers using the outputs of SPSS 22.

The items related to the availability of information and communication technology scored an average of 3.30, which is higher than the hypothetical average. This suggests that the sample's responses are coherent and lean toward neutrality, indicating that employees agree the organization does not provide the necessary technological and infrastructural resources, especially during the COVID-19 pandemic.

It can be concluded that the organization lacks the necessary IT and communication technology infrastructure to address crises such as COVID-19.

5.5 Analysis of Correlation and Simple Regression Results for the Relationship between Information and Communication Technology and Knowledge Management:

Table 11: Correlation and Simple Regression Results for the Relationship between Information and Communication Technology and Knowledge Management:

Information and Communication Technology					
Knowledge and Competence Management	Correlation Coefficient R	Coefficient of Determination R^2	Regression Coefficient	F Value	Sig Value
	0.607	0.368	0.395	36.171	0.000

Source: Prepared by the researchers using the outputs of SPSS 22.

The table shows that the correlation coefficient (R) is 0.60, indicating a strong positive correlation between information and communication technology and knowledge management at the $\alpha \leq 0.05$ significance level. The coefficient of determination is 0.368, suggesting that 36.8% of the changes in knowledge management were due to the availability of information and communication technology.

The remaining 63.2% is attributed to other variables, such as organizational culture, senior leadership commitment, readiness for and acceptance of change, and factors not included in the study model. This can be interpreted as a lack of serious commitment by senior management and those in charge of the organization to adopting a true philosophy of knowledge management and contributing to change and integration in a knowledge-based economy,

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especially in large, leading national institutions like the Algerian Water Corporation.

The regression coefficient of 0.395 indicates that providing information and communication technology accounts for 39.5% of the increase in the application of knowledge management in the organization, by 6.5%, as confirmed by the determination coefficient of 0.36, which indicates a statistically significant positive effect at the 5% level between the two variables.

6. Analysis and Discussion of Study Results:

Based on the SPSS analysis results, the following conclusions can be drawn:

- There are no real practices by the leadership to implement knowledge management, such as involving individuals in decision-making and developing a unit for research, development, and vigilance to keep up with transformations.
- There is no organizational culture that supports the implementation of knowledge management processes due to not giving importance to knowledgeable and experienced individuals in the organization, and the existence of barriers between work teams and individuals.
- The available technology is not sufficient for the implementation of knowledge management, and some functions still rely on paperwork.
- There is no implementation of knowledge management processes, despite the organization's orientation towards employing university-level individuals and

adopting new information and communication technologies.

However, we concluded that there is a strong positive correlation between information and communication technology and knowledge management, where increasing the provision and use of information and communication technology supports the implementation of knowledge management processes.

This is interpreted as a clear difference among the sample individuals in terms of their awareness and understanding of the concepts and applications of knowledge management.

- A lack of training and educational courses in the organization under study related to mastering knowledge management mechanisms.
- an apparent lack of interest in developing techniques, using technology, benefiting from modern experiences, and relying on traditional, repetitive methods.

Conclusion and recommendations:

Knowledge management is a critical management philosophy for developing individuals' capabilities and honing their expertise amid rapid technological and digital transformation. Therefore, the following recommendations can be made:

- Focus on providing success factors for the implementation of knowledge management.
- Provide administrative entities that are wise and open to various ideas and allow participation in decision-making.

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- Assess requirements for leading and activating knowledge management.
- It is necessary to develop and spread an organizational culture that is suitable and supportive of sharing and exchanging knowledge.
- Create a social climate that is encouraging, and technology that is appropriate and keeps up with the latest developments, which helps in the exchange of knowledge and expertise between individuals and teams.
- Pay attention to individual proposals by supporting creative and innovative work, recognizing outstanding research, and embodying it.
- Intensify training courses in the field of using information and communication technology and mechanisms for implementing knowledge management processes.
- Attract individuals who possess knowledge and competencies that match what is required for vacant jobs and other competencies that the organization can benefit from in the future.
- Choose individuals who have a love for inquiry and learning to ensure the organization's development.
- Rely on the internal market in employment by allowing experienced and competent employees to suggest individuals for employment to ensure their loyalty and dedication to work.
- Address the competency gap by focusing on intensive training courses, through:

➢ Identifying individual needs when creating new jobs and introducing new technology.

- Accurate diagnosis of individual competencies through periodic evaluation interviews.
- Directing individuals to training appropriate to their needs in terms of content and style is essential for human resource management. It is necessary to train technical individuals in the workplace using "coaching" to enable them to quickly acquire skills without disrupting work, especially in sensitive jobs.
- Building bridges for transitions from one profession to another in the present and the future, clarifying how a worker transitions, especially since most departments in the organization have individuals working in a single section where offices meet, and technicians continually work in teams.
- Clarifying possible mobility areas between professions by providing workers with a clear vision through graphical illustrations (career path diagrams).
- Activating job cards to facilitate communication among workers.
- Creating tools to recognize professional expertise and awarding certificates to encourage workers to acquire new skills through contracting with vocational training centers and organizing short-term evaluation courses that guarantee awarding certificates to workers.
- Preparing self-assessment cards that include objective criteria and distributing them to workers for self-evaluation.

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