

Modeling the Impact of Knowledge Management on the Sustainability of Economic Institutions: An Analytical Study of Employees' Perceptions in CNAS, CASNOS, and CNAC Institutions across the Provinces of El Oued, Biskra, and Ouargla, Algeria

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Abstract:

This study aims to highlight the impact of knowledge management on the sustainability of economic institutions, through a case study of the institutions (CNAS, CASNOS, and CNAC) in the provinces of El Oued, Biskra, and Ouargla in Algeria, to achieve this objective, a descriptive approach was adopted for the theoretical aspect and an analytical approach for the field study. A questionnaire was distributed to a sample of 200 employees at the institutions under study, and SPSS v. 27 was used to analyze and process the results.

The study found a statistically significant positive effect of knowledge management on the sustainability of economic institutions at the significance level ($\alpha=0.05$). The results showed that the multiple regression model explained 35.1% of the variation in overall sustainability, with both "knowledge application" and "knowledge storage" as the most significant dimensions influencing the sustainability of the institutions under study; the study concluded with a set of recommendations, the most important of which is the need to strengthen knowledge management practices collectively and without discrimination, in order to ensure the achievement of overall sustainability that enhances the competitive capabilities of institutions and enables them to achieve their various objectives.

Keywords: knowledge management; knowledge application; sustainability of economic institutions; financial sustainability; social security;

GAL Classification : D83, M10, M15, Q01, Q56.

Introduction:

The growing interest in knowledge, on the one hand, and sustainability, on the other, has led to increasing questions about the nature of the relationship between them, particularly at the organizational level; While knowledge represents a resource that can support learning, adaptation, and better decision-making, the strategic value of this resource remains tied to an organization's ability to manage it systematically and translate it into concrete practices that contribute to achieving its long-term goals.

Conversely, achieving sustainability in its various dimensions requires organizations to possess capabilities that allow them to adapt to changes, draw on past experiences, and continuously acquire, share, and apply new knowledge.

This issue takes on even greater importance in the organizations under study, given the nature of their activities, the diversity of their interactions, and the volume of information and organizational expertise generated by their operations—not to mention the growing demands for digitization, service quality improvement, enhanced performance efficiency, and ensuring organizational continuity; Accordingly, we can say that the issue is not merely the extent to which knowledge is available within these institutions under study, but rather their ability to manage it and transform it into one of the pillars supporting sustainability.

Based on the foregoing, the main research question of our study can be formulated as follows:

Does knowledge management, in its various dimensions, have an impact on achieving sustainability in the institutions under study?

To explore the issue in depth, we pose the following set of sub-questions:

- Does the identification of knowledge have an impact on the sustainability of the organizations under study?
- Does the acquisition of knowledge have an impact on the sustainability of the organizations under study?
- Does the storage of knowledge have an impact on the sustainability of the organizations under study?
- Does the dissemination of knowledge have an impact on the sustainability of the organizations under study?
- Does the application of knowledge have an impact on the sustainability of the organizations under study?
- Are there statistically significant differences in the responses of the sample participants regarding the study variables that can be attributed to personal and job-related characteristics?

1) Research Hypotheses:

Based on the research problem and the study's objectives, the following research hypotheses were formulated to be tested empirically:

1.2) Main Hypothesis:

There is a statistically significant effect of knowledge management in its various dimensions on achieving the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$).

2.2) Sub-hypotheses:

- There is a statistically significant effect of knowledge diagnosis on achieving the sustainability of the studied institutions at the significance level ($\alpha \leq 0.05$).
- There is a statistically significant effect of knowledge acquisition on achieving the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$).
- There is a statistically significant effect of knowledge storage on achieving the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$).
- There is a statistically significant effect of knowledge distribution on achieving the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$).
- There is a statistically significant effect of knowledge application on achieving the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$).

2) Significance of the Study: The significance of this study stems from the importance of its variables and the relationship it examines between them within economic organizations. This significance is evident in the following aspects:

2.1) Scientific Significance: This is reflected in:

- To examine the relationship between knowledge management and sustainability on two levels: the first concerns the impact of “each knowledge dimension individually,” and the second concerns the impact of “the dimensions collectively.”
- To determine the extent to which the impact of knowledge management dimensions varies in explaining the sustainability of the organizations under study, which allows us to delve deeper into the impact of knowledge management on sustainability without limiting ourselves to the overall relationship between the two variables.
- To attempt to help bridge part of the research gap related to studying the relationship between “knowledge management and sustainability” in the Algerian organizational context, particularly in public institutions.

2.2) Practical Significance: This includes:

- Identifying the knowledge management processes and practices that play the greatest role in supporting the sustainability of the organizations under our field study, thereby helping their management teams to “prioritize their knowledge needs.”
- Supporting decision-makers in the organizations under study with findings that help them understand the impact of knowledge management on “financial, social, environmental, institutional, and technological performance.”
- Providing recommendations that can benefit the organizations in our field study in particular, and economic organizations in general, with regard to enhancing the positive impact of knowledge practices to maintain the sustainability of these organizations.

3) Objectives of the Study: Our study seeks to achieve a set of objectives, the most important of which are highlighted below:

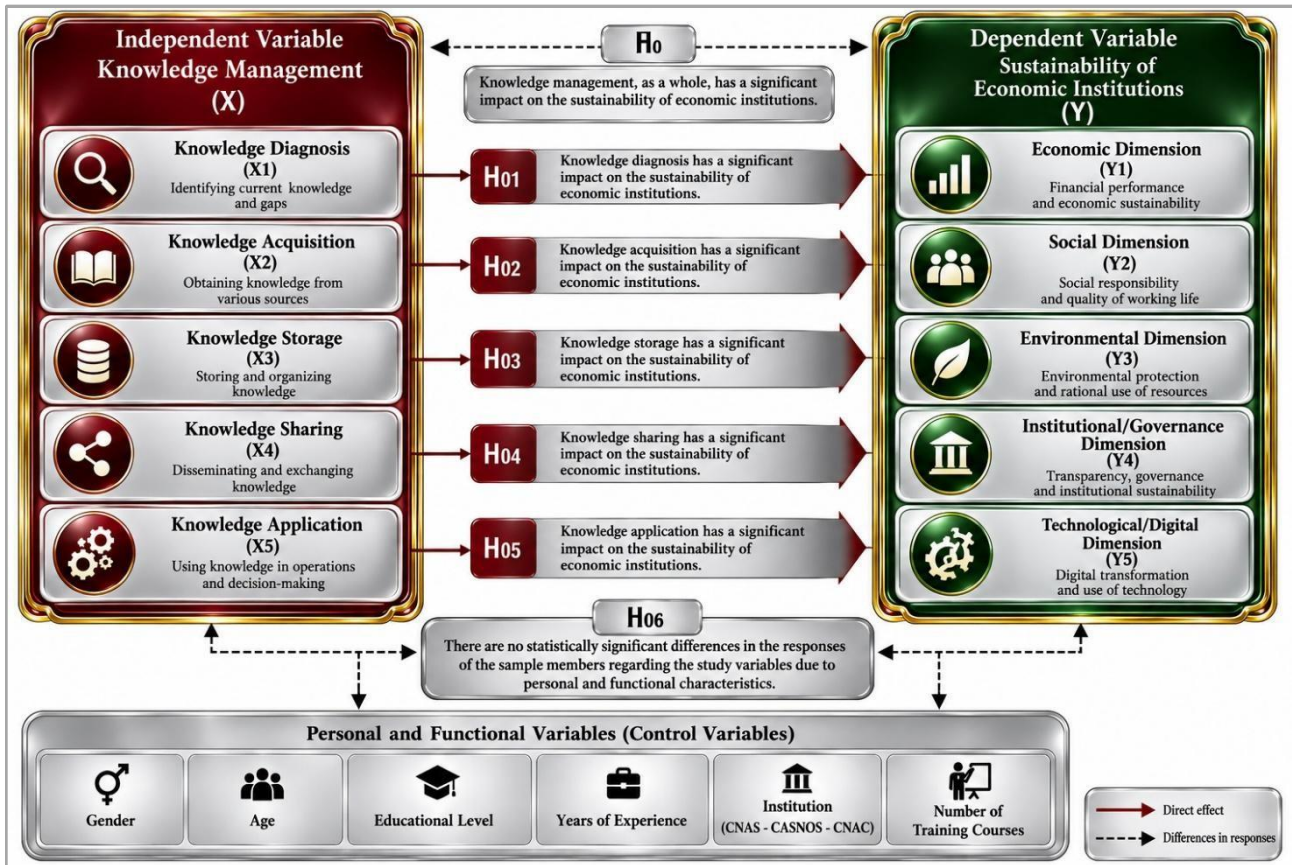
- To understand the current state of knowledge management and sustainability within the organizations under study
- To model the impact of the dimensions of knowledge management individually and collectively on achieving sustainability in the organizations under study.
- To verify whether there are differences in the responses of the sample participants toward knowledge management and sustainability attributable to gender, age, educational qualifications, work experience, the number of training courses attended, and institutional affiliation.
- To propose a set of recommendations that could help the institutions (CNAS, CASNOS, and CNAC) and the agencies in El Oued, Biskra, and Ouargla utilize knowledge more effectively to enhance their sustainability.

4) Research Methodology: In line with the nature of the study, which seeks to assess the reality of the variables and analyze the causal relationships among them, the following methodology was adopted:

- **Descriptive-analytical approach:** to establish the theoretical foundation and describe the reality of the variables in the field.
- **Statistical approach:** Using SPSS v.27 software for data analysis (simple and multiple regression, t-tests, and analysis of variance).

5) Study Model: The following figure illustrates the study model posited by the researcher based on her variables and objectives:

Figure 1: Study Model



Source: Prepared by the researcher based on the study's variables and hypotheses.

II. A Conceptual Introduction to Knowledge Management:

1) Definition of Knowledge Management:

Given the variety of perspectives from which researchers have approached knowledge management, the definitions of this concept presented in the scientific literature have varied. The following are the most important of these definitions:

Wiig defines it as: "the planning, organization, coordination, and control of knowledge and all matters related to intellectual capital including processes, capabilities, and personal and organizational potential to achieve the greatest possible positive impact on the competitive advantage sought by the organization, in addition to working to sustain, utilize, disseminate, and invest in knowledge, and to provide the necessary resources for it, such as knowledge workers, computers, and networks" (Hegazi, 2005, p. 22), "Cross" defines it as: "A thriving work generation system and an environment that encourages the generation, aggregation, and use of both personal and organizational knowledge in pursuit of new business value" (Little & Ray, 2005, p. 9), Meanwhile, Pesra I. Becerra argues that the term "knowledge management" refers to: "identifying and leveraging collective knowledge to support an organization's competitiveness, as an organization's performance generally depends on its ability to mobilize the knowledge resources possessed by individuals and work teams and transform them into value-creating activities" (Becerra-Fernandez & Rajiv, 2008, p. 6) , As for "Nonaka," he defined knowledge management as: "the process of applying a specific approach to managing, structuring, and disseminating knowledge throughout an organization in order to work more quickly, document best practices for later reuse, and reduce the costs of developing solutions from one project to the next" (Foray, 2000, p. 167), "Daft" defines it as: "A new way of thinking about the organization and sharing of an organization's intellectual and creative resources; it refers to organized efforts to identify, organize, and make available the organization's intellectual capital and to foster a culture of continuous learning and knowledge sharing in order to build organizational activities upon its prior knowledge" (Daft, 2010, p. 312).

Based on the previous definitions, we can offer a simplified definition of knowledge management as follows: "It is an intellectual and organizational system aimed at enabling individuals and organizations to

generate knowledge from information and human experience, then organize, share, and utilize it in a conscious and purposeful manner, thereby ensuring that tacit individual knowledge is transformed into explicit collective capital used for decision-making, performance improvement, and the achievement of a sustainable competitive advantage.”

2) The Importance of Knowledge Management: Peter Drucker noted that the importance of knowledge management lies in the value it adds to achieving the goals of both the individual and the organization; it is not enough to simply do what others do, as this does not lead to a leading position, but rather, it is outperforming others that gives us the edge in achieving goals and doubling revenue. According to a survey conducted by the American Management Association in 1999, 79% of corporate executives agreed that knowledge management has become essential to their companies’ success. In general, the importance of knowledge management can be highlighted as follows:

- Knowledge management helps reduce costs and increase profits, which are fundamental goals for every organization.
- Knowledge management contributes to raising the performance level of organizations and achieving their goals.
- It enables an organization to identify, document, and develop its intangible assets; determine the knowledge required; and bridge the gap between them.
- It improves organizational performance because knowledge management generates new knowledge and distributes it for practical use, which inevitably leads to the enhancement of both individual and collective performance.
- Knowledge management is an investment in intellectual capital, as employees become more aware and better versed in their roles and activities, enabling them to produce higher-quality work and correct errors without needing to consult or seek intervention from supervisors (Al-Salem, 2014, p. 26).

Knowledge management is also of great importance because of its role in supporting the transition to a knowledge-based economy, especially in light of intense competition, increasing innovation, and competitive pressures. Consequently, organizations are paying increasing attention to knowledge management, viewing it as a fundamental element that is linked to all their activities and contributes to improved performance (Lefebvre, 2000, p. 26). Interest in knowledge management has grown because it represents a shift toward innovation and focuses on intellectual assets namely, knowledge and how to manage them; it enables an organization to gain insight into its future and learn from its own experience (Tiwana, 1999, p. 8).

3) Objectives of Knowledge Management: Today, knowledge has become the key to the success of economic institutions, organizations, and even nations, and knowledge management aims to achieve this success. The most important of these objectives are as follows:

- **Improving the Quality of Management Decisions:** Knowledge management works to make knowledge, information, and data available, secure, documented, and accessible throughout the service lifecycle, thereby improving the quality of decisions made (University of Alaska Office of Information Technology, 2012).
- **Providing information:** Knowledge management aims to provide comprehensive and accurate information when needed and at any time.
- **Enhancing strategic positioning:** By developing distinctive knowledge, leveraging this knowledge, and applying it to innovation in the products and services offered, thereby increasing the organization’s competitiveness (Owen, 2019).
- **Increasing Efficiency:** Improving the quality of service to make it more efficient is one of the goals of knowledge management. This is achieved by enabling service or product providers to better satisfy customers and by reducing costs through the elimination of the need to rediscover knowledge (University of Alaska Office of Information Technology, 2012).
- **Increased effectiveness:** This refers to the extent to which objectives can be achieved and problems solved, without taking into account the costs involved in doing so (Abed Ghers, 2023, p. 19).

4) Knowledge Management Processes:

1.4) Knowledge Diagnosis:

Defined as: “A new, implicit or explicit development of knowledge from data and information or from the synthesis of prior knowledge, where the latter represents the first process in knowledge management and primarily contributes to initiating the other processes. Diagnosis refers to the process intended to identify and discover the organization’s knowledge, who possesses it and their organizational roles, and identifying where this knowledge is located in organizational documents and databases” (Becerra-Fernandez & Sabharwal, 2010, p. 131). Al-Kubaisi believes that knowledge assessment is “one of the key elements of any knowledge management program, and based on this assessment, policies and other operational programs are developed, because one of the outcomes of the assessment process is identifying the type of knowledge available and comparing it with what is needed to determine the knowledge gap and the effort required by the organization to continue investing in new knowledge. Another outcome of the assessment process is discovering the organization’s knowledge and identifying the individuals who possess it and their locations” (Al-Kubaisi, 2005, p. 68).

2.4) Knowledge Generation and Acquisition:

The process of knowledge generation and acquisition is one of the most important processes of knowledge management. It includes the creation, acquisition, and purchase of knowledge; the ability to understand and assimilate explicit knowledge; and the extraction of tacit knowledge from the minds of innovators. It is important to understand that this does not merely mean acquiring new knowledge, but also the ability to innovate and develop ideas and solutions as added value (Khelifi, 2019-2020, p. 28) . This knowledge management process refers to: “all activities through which an organization seeks to acquire knowledge from its various sources; furthermore, this process does not stop at acquiring new knowledge, but extends to the ability to create and develop ideas and solutions as added value, as well as to integrate explicit and tacit knowledge to form new meanings”; There are four sub-processes of this process through which knowledge is generated via the interaction and transformation between tacit and explicit knowledge, namely: (Taher, 2018, p. 59)

- **Socialization:** In this process, tacit ideas are formed through the exchange of ideas and experiences among individuals.
- **Externalization:** In this process, tacit knowledge is transformed into explicit knowledge through communication, dialogue, and collective thinking.
- **Combination:** In this process, explicit knowledge is integrated and categorized to transform it back into explicit knowledge, as occurs in the educational process.
- **Internalization:** Through learning and using the resources available within the organization, the individual infuses the acquired knowledge with personal characteristics and experiences.

3.4) Knowledge Storage:

Storage processes include retention, preservation, search, access, deposit, and retrieval. Many organizations attach great importance to the storage process because, when individuals leave an organization for one reason or another, these organizations stand to lose a great deal of their knowledge as soon as those individuals depart, since they carry their tacit knowledge within their minds (undocumented knowledge; documented knowledge, on the other hand, remains stored in databases (Al-Kubaisi S.-D. , 2002, p. 47) . Knowledge is stored through various methods, the most important of which are: (Al-Lihyani, 2010, p. 54)

- Each individual in the organization records everything that happens to them and any new information in a specific location whether in regular files or on the computer network so that it is available to all members of the organization if they wish to access it.
- A designated person collects and stores the information accurately and in a way that makes it easy for everyone to use, without focusing on analyzing and refining the knowledge or on disseminating and sharing it effectively.
- All members submit the knowledge they possess to a specific person or department, which then analyzes and refines this knowledge before storing it in the best and most accurate format, so that it can be easily and conveniently shared throughout the organization.

- Knowledge is collected in an organized and systematic manner, analyzed and refined, then arranged, coordinated, and segmented to be stored in the best possible format, ensuring that it can be easily circulated, disseminated, and retrieved accurately and conveniently by members of the organization.

4.4) Knowledge Sharing:

It is defined as: “The process of circulating and transferring knowledge to employees who need it at the right time in order to perform core tasks. It involves the exchange of ideas, experiences, and practices among employees, which requires them to communicate with one another and use what they know to solve problems creatively. Knowledge truly grows when it is shared and applied, and it is transferred across different levels within the organization. For example, knowledge may be disseminated from one individual to another, from an individual to a group, from an individual to an explicit source, from one group to another, or from a group to the organization” (Gottschalk, 2007, p. 52).

5.4) Knowledge Application:

This concept refers to the terms “use,” “reuse,” “benefit,” and “investment,” and states that knowledge application is the ultimate goal of knowledge management it means investing in available knowledge. Simply acquiring, storing, and sharing knowledge is not enough; what matters is transforming this knowledge into action, Knowledge that is not reflected in action becomes merely a wasted cost, and the success of any organization in implementing its knowledge management programs depends on the amount of knowledge put into practice relative to what is available to it. The gap between what is known and what has been implemented based on that knowledge is one of the most important evaluation criteria in this field (Al-Khairo & Jalal, 2004);

The application of knowledge involves transforming it into operational processes with the aim of directing it toward improving the organization’s performance in decision-making and enhancing job performance. Knowledge is applied through two types of processes: the first is routine and involves utilizing knowledge derived from stored instructions, systems, regulations, laws, and models that guide the behavior of others; the second is directive and involves individuals directly conveying knowledge to others without intermediaries; more precisely, it involves transferring knowledge to the person for whom it is intended (Abbawi, 2016, p. 138).

III. A Conceptual Introduction to the Sustainability of Economic Institutions:

1) Definition of the Sustainability of Economic Institutions:

It is defined as: “the ability of an institution to meet the needs of its current direct and indirect stakeholders without compromising its ability to meet those needs in the future” (Joshi & Li, 2016, p. 2).

It is defined as: “the activities that help organizations achieve their economic, social, and environmental goals and ensure accountability to internal and external stakeholders, within the framework of a comprehensive and coherent system of effective corporate governance that regulates operations and evaluates and monitors performance in order to achieve sustainability goals” (Sobhani, Amran, & Zainuddin, 2012, p. 85).

It is also defined as: “the efforts made by economic entities to improve the well-being of societies and humanity by providing a suitable environmental and social context, without this conflicting with those organizations’ goals of generating profits and strengthening their competitive position” (Sharma & Starik, 2002, p. 2).

Others define it as “the adoption by an organization’s management of strategies that help produce sustainable products and provide sustainable services, as well as the adoption and implementation of ethical business practices, the creation of sustainable jobs, and, consequently, the maximization of the economic entity’s value by capitalizing on opportunities and addressing threats arising from economic, social, and environmental practices” (Montiel & Delgado-Ceballos, 2014, p. 121).

2) The Importance of Sustainability in Economic Institutions: Institutions that work to achieve sustainable development by implementing changes whether related to policies, processes, or products can realize a range of benefits, including the following: (Nasr Ali, 2009, p. 522)

- Enhancing competitive advantage.
- Reducing risks.
- Maintaining stakeholder loyalty.
- Strengthening corporate governance.

The concept of institutional sustainability has gained importance in recent years in both theory and organizational practice, although there remains a lack of clarity regarding what constitutes institutional sustainability and how best to achieve it. Many scholars have emphasized that the path to organizations adopting sustainability principles lies in fostering a culture of sustainability within the organization (Linnenluecke & Griffiths, 2010, p. 357).

3) Dimensions of the Sustainability of Economic Institutions:

1.3) The Economic and Financial Dimension (Financial Sustainability):

Sustainability, from an economic perspective, is: “the protection, provision, and safeguarding of productive capacities from one generation to the next, through which any society can achieve continuous development, both in terms of its technical capabilities and its ability to ensure rising income levels from one generation to the next” (Cagnin, Loveridge, & Butler, 2010, p. 2).

Financial sustainability is defined as: “the extent to which an organization’s current profitability can be sustained in future periods; organizations achieve more sustainable financial performance when the resources that drive value creation in the organization’s current operations continue to create value in future periods, as sustainably performing organizations are those least vulnerable to external shocks that affect value creation within the organization” (Banker, Mashruwala, & Tripathy, 2014, p. 874).

It is also defined as: “an organization’s ability to generate revenue from its operations to cover its expenses both now and in the future” (Said, Annuar, & Hamdan, 2019, p. 245).

2.3) The Social Dimension (Social Sustainability):

There is general agreement that corporate social responsibility involves taking social and environmental concerns into account in business operations and in managing relationships with stakeholders, with the aim of satisfying their needs (Boyd & Sandu, 2008, p. 12); social sustainability is a state in which people are able to grow and develop through equality in income and wealth and by addressing unemployment and rising crime rates; consequently, a lack of security leads to environmental destruction (Smouts, 2005, p. 5). Social sustainability is defined as: “a positive state characterized by a strong sense of social cohesion and equal access to key services, including health, education, transportation, housing, and recreation” (McKenzie, 2004, p. 4).

3.3) The Environmental Dimension (Environmental Sustainability):

The environmental dimension of sustainability primarily involves the conservation and optimal use of natural resources on a sustainable basis, as well as anticipating the potential impacts of development on ecosystems for the purposes of precaution and prevention (Ghnaim & Abu Zant, 2010, p. 40).

Environmental sustainability is used to refer to: “efforts to reduce the impacts of organizations on the environment by limiting energy use and greenhouse gas emissions, regulating human activities that negatively affect the environment, and adapting to climate change” (Pendergrass, Sampson, Walsh, & Alagna, 2019, p. 166).

It is defined as: “ensuring that the needs of today’s population are met without compromising the ability of future generations to meet their own needs; this is achieved through the interaction between humans and the environment to avoid the depletion or degradation of natural resources” (Robinson, 2020, p. 47).

Environmental sustainability, green business practices, and eco-friendly operations are not a new phenomenon of the 21st century; rather, their roots date back to the early 19th century (Abbey, 2012, p. 94); there is a range of general practices for environmental sustainability in organizations of various types, including: (Ministry of Planning and Economic Development (MPED), 2021)

- Developing sustainable development plans, formulating development goals, and aligning them with the national plan.
- Proper waste management (separation and recycling).
- Reducing the consumption of plastic in all its forms.
- Going paperless and working remotely.

4.3) Institutional and Governance Dimension (Institutional Sustainability):

An organization’s ability to achieve sustainability is also linked to the soundness of its organizational structure and the effectiveness of its management, oversight, and decision-making systems. Even with sufficient financial resources and positive results, an organization may face risks that threaten its

continuity if transparency and accountability are lacking, oversight is weak, or levels of risk or conflicts of interest are high.

The 1992 Cadbury Report defined corporate governance as: “the system by which companies are directed and controlled”;

the International Finance Corporation (IFC) defined corporate governance as: “the system by which companies are managed and their business is controlled”;

and according to the Organization for Economic Cooperation and Development (OECD): “Corporate governance encompasses the set of relationships between a company’s management, its board of directors, its shareholders, and other stakeholders. Corporate governance also provides the framework through which objectives are set, the means to achieve those objectives are determined, and performance is monitored” (International Finance Corporation (IFC), 2010, p. 6).

5.3) The Technological and Digital Dimension (Digital Sustainability):

Digital sustainability is defined as: “a means of maintaining the infrastructure that supports all functions of digital objects, encompassing a wide range of technical and social concerns and issues associated with the creation and management of digital objects, which contribute to the longevity of digital information throughout its entire life cycle” (Bradley, 2007, p. 150).

From the perspective of the business environment and organizations, it refers to: “an organization’s or company’s comprehensive vision of how to achieve enhanced sustainability through technology” (Wut, Lee, Ip, & Lee, 2021).

It is also defined as a tool for social change and evaluation as: “an approach that harnesses one of the most powerful forces for social change digitalization to achieve what we need and want in a sustainable manner; furthermore, it serves as a 21st-century tool for discussing, reflecting on, and evaluating our actual individual and societal needs and desires” (Panda & Ranish, 2021, p. 31).

IV. Modeling the Impact of Knowledge Management on the Sustainability of Institutions (CNAS–CASNOS–CNAC) in the Provinces of El Oued, Biskra, and Ouargla:

1) Study Population and Sample:

Our study population consists of all employees working in the institutions under study. To test the hypotheses and model the impact of knowledge management on these institutions, we relied on a random sampling method to ensure accurate representation of the population. We ensured that the questionnaires were distributed randomly to represent various administrative and functional ranks within the organization. This random selection adds a scientific aspect to our results and allows us to generalize the conclusions drawn. The sample size of our study was 200 individuals, whose questionnaires were valid for analysis, representing 97.26% of the distributed questionnaires. Below are the main characteristics of the surveyed sample:

Table No. 01: General Characteristics of the Study Sample

Category	Variable	Frequency	Percentage
Gender	Male	112	56%
	Female	88	44%
Age	Under 30 years	21	10.5%
	30–39 years	67	33.5%
	40–49 years	66	33%
	50 years and above	46	23%
Educational Qualification	Secondary Education	27	13.5%
	Technician / Senior Technician	42	21%
	Bachelor’s Degree	63	31.5%
	Master’s Degree / Engineer	56	28%
	Postgraduate Studies	12	6%
Years of Work Experience	Less than 5 years	26	13%
	5–10 years	59	29.5%
	10–15 years	46	23%

	More than 15 years	69	34.5%
Number of Training Courses	No courses	33	16.5%
	One course	64	32%
	Two courses	31	15.5%
	More than two courses	72	36%
Institution	CNAC	53	26.5%
	CNAS	94	47%
	CASNOS	53	26.5%
Total		200	100%

Source: Prepared by the researcher based on the outputs of SPSS v27.

It is clear from the table that our study sample is characterized by diverse traits, making it suitable for our research. Regarding the gender variable, the two categories were close, with a slight difference favoring the male category, which can be explained by the increasing role of women in public institutions, reflecting the Algerian state's direction. As for the age group, we notice a significant diversity where the (30-39 and 40-49 years) categories were close, and their combined percentage was about two-thirds of the sample. This group is considered to be at the peak of their professional productivity, having overcome the difficulties of starting out and adapting and learning over the years. This distribution is also reflected in the sample distribution according to the professional experience variable, where the percentage of those with more than five years of experience reached 85% of the sample size. Returning to the educational qualification variable, the table shows that most of the sample members are university graduates, with a significant percentage of vocational training certificate holders exceeding 20%, which also reflects the state's recent trend toward employing qualified individuals, especially in economic public institutions. Considering the number of training courses received by the sample individuals, it is clear that institutions are inclined to train their employees to enhance their knowledge and achieve their goals and sustainability in the long term. The highest percentage was for those who received more than two training courses, amounting to (36%). When we asked about the percentage that did not receive any courses, the response from the institution's executives under study was that they are registered to receive training and that most of them are newly hired. Finally, we observe a notable number of employees from (CNAC) with a percentage close to half, reaching (47%), with equal percentages for the other two institutions. This can be justified by the fact that the National Social Security Fund is the most prominent among these funds as it directly concerns wage earners, with the growing importance of both (CASNOS) for non-wage earners and (CNAC) for unemployment insurance.

2) Stability of the study tool:

We measured it using the Cronbach's Alpha coefficient, which determines the acceptance level of the measurement tool at (0.60) or higher. We also calculated the validity, which is the square root of the reliability coefficient, and the results were as follows:

Table 02: Cronbach's Alpha test for measuring the reliability and validity of the study's axes and dimensions

Axis	Dimension	Number of Items	Reliability Coefficient	Validity Coefficient
Knowledge Management	Knowledge Diagnosis	06	0.869	0.932
	Knowledge Acquisition	06	0.823	0.907
	Knowledge Storage	06	0.649	0.805
	Knowledge Distribution	06	0.720	0.848
	Knowledge Application	06	0.766	0.875
	Total	30	0.922	0.960
Sustainability of Economic Institutions	Financial Sustainability	05	0.805	0.897
	Social Sustainability	05	0.855	0.925
	Environmental Sustainability	05	0.834	0.913
	Institutional Sustainability	05	0.824	0.907
	Digital Sustainability	05	0.879	0.937
Total		25	0.934	0.966

Source: Prepared by the researcher based on the outputs of SPSS v27.

The table above shows that the study tool (the questionnaire) is characterized by a high degree of reliability and validity, which enables us to measure what it was designed for (the impact of knowledge management on the sustainability of the studied institutions) with a high degree of accuracy. The table indicates that all the reliability coefficients measured have exceeded the acceptable limit, with very high reliability for the study axis as well as the overall reliability of the questionnaire, all of which exceeded the value of (0.900). As for the dimensions, we recorded the lowest percentage for the knowledge storage dimension in the first axis with a value of (0.649). Although it is the weakest value, it exceeded the acceptance threshold (0.600), and its high validity value allowed us to maintain it as a fundamental dimension. The decrease in its value can be attributed to the varying opinions of the study sample regarding the statements of this dimension. The highest coefficients were for the dimensions of "knowledge acquisition" in the first axis, and "social sustainability" and "digital sustainability" in the second axis, which indicates the importance of knowledge acquisition as a fundamental step in knowledge management within the studied institutions. As reflected in the reality of public institutions in Algeria, which are moving toward digitization and enhancing their social responsibility in recent years, it can be concluded that the high reliability coefficients confirm that the study tool measures what it was designed for, and that we can trust the results we will obtain, and then provide practical recommendations and generalize them.

3) Testing the sub-hypotheses:

1.3) Testing Sub-Hypothesis 01. Modeling the impact of knowledge diagnosis on achieving the sustainability of the studied institutions:

Table 03: Results of the simple regression analysis of the impact of knowledge diagnosis on the sustainability of economic institutions and its dimensions

Dependent Variable (Sustainability Dimensions)	R	R ²	Adjusted R ²	F	Sig.	t-test	Regression Equation
Financial Sustainability	0.297	0.088	0.084	19.14	0.001	4.375	$Y_1 = 2.571 + 0.306(X)$
Social Sustainability	0.508	0.258	0.254	68.73	0.001	8.29	$Y_2 = 1.518 + 0.571(X)$
Environmental Sustainability	0.471	0.222	0.218	56.41	0.001	7.51	$Y_3 = 1.693 + 0.514(X)$
Institutional Sustainability	0.461	0.213	0.209	53.52	0.001	7.316	$Y_4 = 1.809 + 0.519(X)$
Digital Sustainability	0.244	0.060	0.055	12.58	0.001	3.546	$Y_5 = 3.184 + 0.233(X)$
Sustainability of Economic Institutions	0.256	0.066	0.061	13.91	0.001	3.730	$Y_6 = 3.030 + 0.240(X)$

Source: Prepared by the researcher based on the outputs of SPSS v27.

Table headings:

General Model Summary — ANOVA — t-test — Regression Equation.

Notes:

Y₁: Financial Sustainability. **Y₂:** Social Sustainability. **Y₃:** Environmental Sustainability. **Y₄:** Institutional Sustainability. **Y₅:** Digital Sustainability. **Y₆:** Sustainability of Economic Institutions. **X:** Knowledge Diagnosis. The table of statistical results shows the following:

- The correlation coefficients (R) between knowledge diagnosis and economic sustainability across its various dimensions were moderate to low, and all were positive. This indicates the presence of a correlation that varies in strength from one dimension to another. The correlation between knowledge diagnosis and social sustainability was the strongest, with a value of (0.508), representing (50.8%). On the other hand, the correlation with digital sustainability was the weakest, with a value of (0.244). This can be explained by the fact that knowledge diagnosis contributes more to aspects related to human and social practices, while its impact remains limited on other aspects, especially digital sustainability, as it requires interaction with other practices to enhance it.
- The values of the coefficient of determination (R²) varied, which are the values that determine the percentage of knowledge diagnosis explaining the change in the sustainability of the studied institutions and their dimensions. The highest value was also for social sustainability, at a rate of

(25.8%). Overall, knowledge diagnosis explains only (6.6%) of the changes occurring in the sustainability of the studied institutions, and the remaining percentage is attributed to other variables not included in the model.

- All significance level values were less than (0.001), which is smaller than the (0.05) threshold used in our study. These values indicate that all the models we tested were significant, supported by the (t) values, which were all greater than the tabulated value.
- All simple regression equations confirmed the positive impact of knowledge diagnosis on the sustainability of economic institutions and their various dimensions, which means that any increase in the level of knowledge diagnosis in the studied institutions will inevitably enhance their sustainability. Overall, the regression equation for knowledge diagnosis and sustainability showed that any increase in knowledge diagnosis by one unit would contribute to an increase of (0.240) in the overall sustainability level of the studied institutions. Additionally, the positive signs in all regression equations confirmed that the relationship between the various dimensions and knowledge diagnosis is positive, with clear differences in their strength.

Accordingly, based on the results obtained from the statistical analysis tables, we reject the null hypothesis H0: which states: "There is no statistically significant effect of knowledge diagnosis on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)," and we accept the alternative hypothesis H1: which states: "There is a statistically significant effect of knowledge diagnosis on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)"; thus, the first sub-hypothesis of our study is validated.

It is clear from the result of this hypothesis that knowledge diagnosis is considered one of the cognitive processes that support the sustainability of the institutions under study, especially economic institutions in general, with an emphasis on the variation in its interpretative ability from one dimension to another. It has been shown that knowledge diagnosis and identification have a greater impact on improving practices related to social responsibility. Nevertheless, it can be said that knowledge diagnosis is the first station for the institutions under study to achieve their sustainability of various types, but it is not sufficient on its own for that purpose.

2.3) Testing Sub-Hypothesis 02. Modeling the impact of knowledge acquisition on the sustainability of the studied institutions:

Table 04: Results of the simple regression analysis of the impact of knowledge acquisition on the sustainability of economic institutions and its dimensions

Dependent Variable (Sustainability Dimensions)	R	R ²	Adjusted R ²	F	Sig.	t-test	Regression Equation
Financial Sustainability	0.275	0.076	0.071	16.21	0.001	4.027	$Y_1 = 2.827 + 0.245(X)$
Social Sustainability	0.414	0.171	0.167	40.88	0.001	6.394	$Y_2 = 2.169 + 0.402(X)$
Environmental Sustainability	0.379	0.144	0.139	33.18	0.001	5.761	$Y_3 = 2.293 + 0.358(X)$
Institutional Sustainability	0.310	0.096	0.092	21.06	0.001	4.589	$Y_4 = 2.603 + 0.302(X)$
Digital Sustainability	0.291	0.085	0.080	18.3	0.001	4.278	$Y_5 = 3.211 + 0.240(X)$
Sustainability of Economic Institutions	0.264	0.070	0.065	14.86	0.001	3.855	$Y_6 = 3.161 + 0.214(X)$

Source: Prepared by the researcher based on the outputs of SPSS v27.

Table headings:

General Model Summary — ANOVA — t-test — Regression Equation.

Notes:

Y_1 : Financial Sustainability. Y_2 : Social Sustainability. Y_3 : Environmental Sustainability. Y_4 : Institutional Sustainability. Y_5 : Digital Sustainability. Y_6 : Sustainability of Economic Institutions. X : Knowledge acquisition.

The table of statistical results shows the following:

- The correlation coefficients (R) between knowledge acquisition and economic sustainability across its various dimensions were moderate to low, and all were positive, indicating a varying degree of correlation from one dimension to another. The correlation between knowledge acquisition and

social sustainability was the strongest, with a value of (0.414), representing (41.4%). On the other hand, the correlation with financial sustainability was the weakest, with a value of (0.275). This means that the sensitivity of the social and environmental dimensions to the institutions under study acquiring new knowledge is greater compared to the other dimensions.

- The values of the coefficient of determination (R^2) varied, which are the values that determine the percentage of knowledge acquisition's explanation for the change in the sustainability of the studied institutions and their dimensions. The highest value was also for social sustainability at a rate of (16.7%). Overall, knowledge acquisition explains only (7%) of the changes occurring in the sustainability of the studied institutions, while the remaining percentage is attributed to other variables not included in the model.
- All significance level values were less than (0.001), which is smaller than the (0.05) threshold used in our study. These values indicate that all the models we tested were significant, supported by (t) values that were all greater than the tabulated value.
- All simple regression equations confirmed the positive impact of knowledge acquisition on the sustainability of economic institutions and its various dimensions. This means that any increase in the level of knowledge acquisition in the institutions under study will inevitably enhance their sustainability, albeit at varying rates. Overall, the regression equation for knowledge acquisition and the overall sustainability of the institutions under study indicated that any increase in knowledge acquisition by one unit would contribute an increase of (0.214) to the level of this sustainability. Additionally, the positive signs in all regression equations confirmed that the relationship between the various dimensions and knowledge acquisition is positive, with clear differences in their strength.

Accordingly, based on the results obtained from the statistical analysis tables, we reject the null hypothesis H_0 : which states: "There is no statistically significant effect of knowledge acquisition on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)," and we accept the alternative hypothesis H_1 : which states: "There is a statistically significant effect of knowledge acquisition on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)"; thus, the second sub-hypothesis of our study is validated.

It is evident from the result of this hypothesis that knowledge acquisition is considered one of the mechanisms supporting the sustainability of the institutions under study, especially economic institutions in general. However, its impact varies depending on the dimension of sustainability. It has been shown that knowledge acquisition and possession have a greater effect on social and environmental aspects, and a lesser effect on institutional aspects. This means that merely possessing knowledge and having it within these institutions is not sufficient to achieve a direct impact, especially on financial and digital sustainability. Nevertheless, it can be said that knowledge acquisition is a necessary input for the institutions under study to achieve their sustainability of various types, with the confirmation that its impact increases when integrated with other knowledge management practices.

3.3) Testing Sub-Hypothesis 03. Modeling the impact of knowledge storage on achieving the sustainability of the studied institutions:

Table 05: Results of the simple regression analysis of the impact of knowledge storage on the sustainability of economic institutions and its dimensions

Dependent Variable (Sustainability Dimensions)	R	R^2	Adjusted R^2	F	Sig.	t-test	Regression Equation
Financial Sustainability	0.473	0.223	0.219	56.94	0.001	7.55	$Y_1 = 1.598 + 0.549(X)$
Social Sustainability	0.474	0.224	0.220	57.24	0.001	7.57	$Y_2 = 1.248 + 0.600(X)$
Environmental Sustainability	0.341	0.116	0.112	26.07	0.001	4.11	$Y_3 = 1.891 + 0.419(X)$
Institutional Sustainability	0.324	0.105	0.101	23.27	0.001	4.82	$Y_4 = 2.054 + 0.411(X)$
Digital Sustainability	0.445	0.198	0.194	48.77	0.001	6.98	$Y_5 = 2.225 + 0.477(X)$
Sustainability of Economic Institutions	0.473	0.223	0.220	56.99	0.001	7.55	$Y_6 = 2.018 + 0.498(X)$

Source: Prepared by the researcher based on the outputs of SPSS v27.

Table headings:

Notes:

Y₁: Financial Sustainability. **Y₂:** Social Sustainability. **Y₃:** Environmental Sustainability. **Y₄:** Institutional Sustainability. **Y₅:** Digital Sustainability. **Y₆:** Sustainability of Economic Institutions. **X:** Knowledge storage. The table of statistical results shows the following:

- The correlation coefficients (R) between knowledge storage and economic sustainability across its various dimensions were moderate to low, and all were positive. This indicates the presence of a correlation that varies in strength from one dimension to another, with the correlation between knowledge storage and social sustainability being the strongest at a value of (0.474), representing (41.4%). On the other hand, the correlation with institutional sustainability was the weakest at a value of (0.324), which means that the sensitivity of the social and environmental dimension to institutions in the study possessing new knowledge is greater compared to the other dimensions.
- The values of the coefficient of determination (R²) varied, which are the values that determine the percentage of knowledge storage's explanation for the changes in the sustainability of the studied institutions and their dimensions. The highest value was also for social sustainability, at a rate of (22.3%). Overall, knowledge storage explains (22.3%) of the changes occurring in the sustainability of the studied institutions, which is a very significant percentage, almost reaching a quarter, and the remaining percentage is attributed to other variables not included in the model.
- All significance level values were less than (0.001), which is smaller than the (0.05) threshold used in our study. These values indicate that all the models we tested were significant, supported by (t) values that were all greater than the tabulated value.
- All simple regression equations confirmed the positive impact of knowledge storage on the sustainability of economic institutions and its various dimensions. This means that any increase in the level of knowledge storage in the institutions under study will enhance their sustainability, albeit at different rates. Overall, the regression equation for knowledge storage and the overall sustainability of the institutions under study indicated that any increase in knowledge storage by one unit would contribute an increase of (0.498) to the level of this sustainability. Additionally, the positive signs in all regression equations confirmed that the relationship between the various dimensions and knowledge storage is positive, with clear differences in their strength, which are higher than the rates of previous practices.

Accordingly, based on the results obtained from the statistical analysis tables, we reject the null hypothesis H0: which states: "There is no statistically significant effect of knowledge storage on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)," and we accept the alternative hypothesis H1: which states: "There is a statistically significant effect of knowledge storage on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)"; thus, the third sub-hypothesis of our study is validated.

It is evident from the result of this hypothesis that knowledge storage is considered one of the important foundations for supporting and enhancing the sustainability of the institutions under study, especially economic institutions in general. This is because merely diagnosing and possessing knowledge is not sufficient; it is necessary to maintain this knowledge and the accumulated experiences to minimize their loss and support the continuity of the institutions. However, its impact varies with the dimension of sustainability. It has been shown that proper knowledge storage and preservation enhance the social, environmental, and digital aspects of sustainability, while its impact on the institutional and environmental aspects is weaker. This means that enhancing these aspects requires greater effort beyond just knowledge storage and preservation. Nevertheless, it can be said that the value of knowledge storage in achieving the sustainability of the institutions under study lies not only in preserving knowledge but also in organizing the organizational memory and utilizing it as a knowledge resource that can be directly exploited and employed in the activities of these institutions, with the ability to retrieve it when needed.

4.3) Testing Sub-Hypothesis 04. Modeling the impact of knowledge distribution on achieving the sustainability of the institutions under study:

Table 06: Results of the simple regression analysis on the impact of knowledge distribution on the sustainability of economic institutions and its dimensions

Dependent Variable (Sustainability Dimensions)	R	R ²	Adjusted R ²	F	Sig.	t-test	Regression Equation
Financial Sustainability	0.287	0.083	0.078	17.81	0.001	4.22	$Y_1 = 2.502 + 0.307(X)$
Social Sustainability	0.477	0.228	0.224	58.43	0.001	7.64	$Y_2 = 1.446 + 0.557(X)$
Environmental Sustainability	0.308	0.095	0.090	20.68	0.001	4.55	$Y_3 = 2.176 + 0.348(X)$
Institutional Sustainability	0.424	0.180	0.176	43.38	0.001	6.59	$Y_4 = 1.785 + 0.495(X)$
Digital Sustainability	0.262	0.069	0.064	14.64	0.001	3.82	$Y_5 = 3.039 + 0.260(X)$
Sustainability of Economic Institutions	0.299	0.089	0.085	19.38	0.001	4.40	$Y_6 = 2.800 + 0.290(X)$

Source: Prepared by the researcher based on the outputs of SPSS v27.

Table headings:

General Model Summary — ANOVA — t-test — Regression Equation.

Notes:

Y₁: Financial Sustainability. **Y₂:** Social Sustainability. **Y₃:** Environmental Sustainability. **Y₄:** Institutional Sustainability. **Y₅:** Digital Sustainability. **Y₆:** Sustainability of Economic Institutions. **X:** Distribution of knowledge.

The table of statistical results shows the following:

- The correlation coefficients (R) between knowledge distribution and economic sustainability across its various dimensions were moderate to low, and all were positive. This indicates the presence of a correlation that varies in strength from one dimension to another, with the correlation between knowledge distribution and social sustainability being the strongest at a value of (0.477), representing (47.7%). On the other hand, the correlation with digital sustainability was the weakest at a value of (0.262), reflecting the interactive nature of knowledge distribution, which is linked to the exchange of information, experiences, and teamwork.
- The values of the coefficient of determination (R²) varied, which are the values that determine the percentage of knowledge distribution's explanation for the changes in the sustainability of the studied institutions and their dimensions. The highest value was also for social sustainability, at 22.8%. Overall, knowledge distribution explains 8.9% of the changes occurring in the sustainability of the studied institutions, which is a weak percentage indicating that the relationship is statistically significant but its explanatory power is very limited. The remaining percentage is attributed to other variables not included in the model.
- All significance level values were less than (0.001), which is smaller than the (0.05) threshold used in our study. These values indicate that all the models we tested were significant, supported by the (t) values, which were all greater than the tabulated value.
- All simple regression equations confirmed the positive impact of knowledge distribution on the sustainability of economic institutions and their various dimensions. This means that any increase in the level of knowledge distribution within the studied institutions will enhance their sustainability, albeit at different rates. Overall, the regression equation for knowledge distribution and the overall sustainability of the studied institutions indicated that any increase in knowledge distribution by one unit would contribute to an increase of (0.290) in the level of this sustainability. Additionally, the positive signs in all regression equations confirmed that the relationship between the various dimensions and knowledge distribution is positive, with clear differences in their strength, which are greater than the rates of previous practices.

Accordingly, and based on the results obtained from the statistical analysis tables, we reject the null hypothesis H0: which states: "There is no statistically significant effect of knowledge distribution on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)," and we accept the alternative hypothesis H1: which states: "There is a statistically significant effect of knowledge distribution on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)"; thus, the fourth sub-hypothesis of our study is validated.

It is evident from the result of this hypothesis that knowledge distribution is fundamentally important for supporting and enhancing the sustainability of the institutions under study, especially economic institutions in general. This is because it is a crucial practice that enables the transformation of available

knowledge within institutions into a collective resource that can be better utilized. The results also show that the impact of knowledge distribution was greater on social and institutional sustainability, as sharing and distributing knowledge increases coordination, facilitates transactions, and enhances institutional work. However, the weak impact of knowledge distribution on other dimensions, especially the financial and digital aspects, indicates that merely sharing and distributing knowledge among different departments is not sufficient to improve financial and digital aspects. It requires real application and maximum utilization of this knowledge. Therefore, we can say that the effectiveness of knowledge distribution in enhancing sustainability is linked to the ability of institutions and their employees to transition from merely sharing and accumulating knowledge to benefiting from and investing it in various departments and activities.

5.3) Testing Sub-Hypothesis 05. Modeling the impact of knowledge application on achieving the sustainability of the studied institutions:

Table 07: Results of the simple regression analysis of the impact of knowledge application on the sustainability of economic institutions and its dimensions

Dependent Variable (Sustainability Dimensions)	R	R ²	Adjusted R ²	F	Sig.	t-test	Regression Equation
Financial Sustainability	0.527	0.277	0.274	76.01	0.001	8.72	$Y_1 = 1.692 + 0.558(X)$
Social Sustainability	0.441	0.194	0.190	47.77	0.001	6.91	$Y_2 = 1.694 + 0.509(X)$
Environmental Sustainability	0.439	0.193	0.189	47.32	0.001	6.88	$Y_3 = 1.736 + 0.492(X)$
Institutional Sustainability	0.403	0.163	0.158	38.45	0.001	6.20	$Y_4 = 1.959 + 0.466(X)$
Digital Sustainability	0.357	0.127	0.123	28.83	0.001	5.37	$Y_5 = 2.772 + 0.349(X)$
Sustainability of Economic Institutions	0.520	0.270	0.267	73.41	0.001	8.57	$Y_6 = 2.125 + 0.499(X)$

Source: Prepared by the researcher based on the outputs of SPSS v27.

Table headings:

General Model Summary — ANOVA — t-test — Regression Equation.

Notes:

Y₁: Financial Sustainability. **Y₂:** Social Sustainability. **Y₃:** Environmental Sustainability. **Y₄:** Institutional Sustainability. **Y₅:** Digital Sustainability. **Y₆:** Sustainability of Economic Institutions. **X:** Application knowledge.

The table of statistical results shows the following:

- The correlation coefficients (R) between knowledge application and economic sustainability across its various dimensions were moderate to low, and all were positive. This indicates the presence of a correlation that varies in strength from one dimension to another, with the strongest correlation being between knowledge application and financial sustainability, valued at (0.527), representing (52.7%). On the other hand, the correlation with digital sustainability was the weakest, valued at (0.357). This reflects the importance of using available knowledge and applying it correctly to improve performance, especially financial performance, thereby enhancing the efficiency of resource utilization to ensure continuity.
- The values of the coefficient of determination (R²) varied, which are the values that determine the percentage of knowledge application explaining the change in the sustainability of the institutions under study and its dimensions. The highest was for financial sustainability at a rate of (27.4%), which is a relatively significant and large percentage that also reflects the importance of applying knowledge and not just possessing and storing it. Overall, knowledge application explains (27%) of the changes occurring in the sustainability of the institutions under study, which is the largest percentage among various knowledge management practices, highlighting the importance of actual knowledge application. The remaining percentage is attributed to other variables not included in the model.
- All significance level values were less than (0.001), which is smaller than the (0.05) threshold used in our study. These values indicate that all the models we tested were significant, supported by the (t) values, which were all greater than the tabulated value.

- All simple regression equations confirmed the positive impact of knowledge application on the sustainability of economic institutions and their various dimensions. This means that any increase in knowledge application within the studied institutions will enhance their sustainability, especially financial sustainability. Overall, the regression equation for knowledge application and the overall sustainability of the studied institutions indicated that any increase in knowledge application by one unit would contribute to an increase of (0.499) in the level of this sustainability. Additionally, the positive signs in all regression equations confirmed that the relationship between the various dimensions and knowledge application is positive, with clear differences in their strength.

Accordingly, and based on the results obtained from the statistical analysis tables, we reject the null hypothesis H0: which states: "There is no statistically significant effect of knowledge application on the sustainability of the studied institutions at the significance level ($\alpha \leq 0.05$)," and we accept the alternative hypothesis H1: which states: "There is a statistically significant effect of knowledge application on the sustainability of the studied institutions at the significance level ($\alpha \leq 0.05$)"; thus, the fifth sub-hypothesis of our study is validated.

It is evident from the result of this hypothesis that the application of knowledge is considered the most important practice of knowledge management in enhancing the sustainability of the institutions under study, especially economic institutions in general. This is because the true value of knowledge is revealed through its application and proper utilization, as well as the institutions' ability to employ it in problem-solving, continuous improvement, and the development of work methods. The results also show a significant impact of knowledge application on all dimensions of sustainability, making it the most comprehensive practice among various other knowledge management practices. Therefore, we can say that enhancing the sustainability of the institutions under study is not achieved merely by possessing, storing, and sharing knowledge, but rather by transforming this knowledge from an available resource into actual practices integrated into the activities of the institutions across their various departments.

4) Testing the main hypothesis:

1.4) Simple regression for the main hypothesis:

Table 08: Results of the simple regression analysis of the impact of knowledge management on the sustainability of economic institutions and its dimensions

Dependent Variable (Sustainability Dimensions)	R	R ²	Adjusted R ²	F	Sig.	t-test	Regression Equation
Financial Sustainability	0.362	0.131	0.127	29.88	0.001	5.47	$Y_1 = 2.233 + 0.403(X)$
Social Sustainability	0.420	0.177	0.173	42.51	0.001	6.52	$Y_2 = 1.706 + 0.511(X)$
Environmental Sustainability	0.404	0.163	0.159	38.52	0.001	6.21	$Y_3 = 1.808 + 0.476(X)$
Institutional Sustainability	0.433	0.188	0.184	45.74	0.001	6.76	$Y_4 = 1.769 + 0.527(X)$
Digital Sustainability	0.294	0.086	0.082	18.67	0.001	4.32	$Y_5 = 2.942 + 0.302(X)$
Sustainability of Economic Institutions	0.344	0.118	0.114	26.61	0.001	5.159	$Y_6 = 2.656 + 0.348(X)$

Source: Prepared by the researcher based on the outputs of SPSS v27.

Table headings:

General Model Summary — ANOVA — t-test — Regression Equation.

Notes:

Y₁: Financial Sustainability. **Y₂:** Social Sustainability. **Y₃:** Environmental Sustainability. **Y₄:** Institutional Sustainability. **Y₅:** Digital Sustainability. **Y₆:** Sustainability of Economic Institutions. **X:** Knowledge Management.

The table of statistical results shows the following:

- The correlation coefficients (R) between knowledge management (combined with all its dimensions) and economic sustainability with its various dimensions were medium to low, and all were positive. This indicates the presence of a correlation that varies in strength from one dimension to another, with the correlation between knowledge management and institutional and social sustainability being the strongest, with values of (0.433) and (0.420) respectively, representing (43.3%) and (42%) respectively. The correlation with digital sustainability was the weakest, with a value of (0.294), reflecting the impact of knowledge management on the sustainability of the studied institutions and

its various dimensions. It was found that this impact is more pronounced in institutional and social sustainability.

- The values of the coefficient of determination (R^2) varied, which are the values that determine the percentage of knowledge management's explanation for the changes in the sustainability of the studied institutions and their dimensions. The highest value was for institutional sustainability at (17.7%), which is a relatively significant percentage reflecting the importance of knowledge management and its impact on institutional work and governance, especially in Algerian public institutions that are moving toward more oversight and higher institutional organization. Overall, knowledge management explains (11.8%) of the changes occurring in the sustainability of the studied institutions, which means that a large part of the sustainability of the studied institutions is related to other factors not included in the model. These results indicate that when knowledge practices are integrated, they have a greater impact on the organizational and institutional aspects of the studied institutions, which may be due to the public nature of the studied institutions.
- All significance level values were less than (0.001), which is smaller than the (0.05) threshold used in our study. These values indicate that all the models we tested were significant, supported by (t) values that were all greater than the tabulated value.
- All simple regression equations confirmed the positive impact of knowledge management on the sustainability of economic institutions and its various dimensions. This means that any increase in the level of knowledge management in the institutions under study will enhance their sustainability, especially institutional sustainability. Overall, the regression equation for knowledge management and the overall sustainability of the institutions under study indicated that any increase in their knowledge management by one unit would contribute to an increase of (0.348) in the level of this sustainability. The positive signs in all regression equations also confirmed that the relationship between the various dimensions and knowledge management (combined with its various practices) is positive, with clear differences in their strength.

Accordingly, based on the results obtained from the statistical analysis tables, we reject the null hypothesis H_0 : which states: "There is no statistically significant effect of knowledge management on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)," and we accept the alternative hypothesis H_1 : which states: "There is a statistically significant effect of knowledge management on the sustainability of the institutions under study at the significance level ($\alpha \leq 0.05$)"; thus, the main hypothesis of our study is validated. It is clear from the result of this hypothesis that knowledge management, when practiced comprehensively across its various dimensions, is considered a very important resource for supporting the sustainability of the institutions under study. This is because it allows them to diagnose their knowledge, attempt to acquire new knowledge, then maintain it, distribute it, and share it among different departments, and finally apply it in a way that supports and enhances their economic performance. The results also show that knowledge management cannot operate alone in isolation from the other resources and capabilities of the institutions.

2.4) Multiple regression for the main hypothesis:

Table 09: Results of the multiple regression analysis on the impact of knowledge management (in its various dimensions) on achieving the sustainability of economic institutions.

Model Summary

R	R^2	Adjusted R^2
0.592	0.351	0.334

ANOVA

F	Regression	Sig.
20.959	52.102	0.001

Coefficients

Independent Variables	B	Std. Error	Standardized Coefficients (Beta)	t	Sig.
Constant	1.397	0.270	—	5.177	0.000
Knowledge Diagnosis	-0.042	0.070	-0.045	-0.606	0.545

Knowledge Acquisition	-0.003	0.059	-0.004	-0.050	0.960
Knowledge Storage	0.341	0.076	0.324	4.488	0.000
Knowledge Distribution	0.010	0.068	0.010	0.142	0.887
Knowledge Application	0.382	0.065	0.398	5.909	0.000
Multiple Regression Equation					
$Y = 1.397 - 0.042X_1 - 0.003X_2 + 0.341X_3 + 0.010X_4 + 0.382X_5$					

Source: Prepared by the researcher based on the outputs of SPSS v27.

Where: Y = Sustainability of Economic Institutions; X_1 = Knowledge Diagnosis; X_2 = Knowledge Acquisition; X_3 = Knowledge Storage; X_4 = Knowledge Distribution; X_5 = Knowledge Application.

The table of statistical results shows the following:

- The correlation coefficient (R) between the dimensions of knowledge management and economic sustainability was (0.592), which is a large and positive value indicating a significant and real correlation between the two variables.
- The value of the coefficient of determination (R^2) was (0.351), which means that the multiple model of knowledge management practices explains (35.1%) of the changes occurring in the sustainability of the institutions under study. This is a greater and better explanatory power than the simple regression models that tested each dimension individually. The significance level value of less than (0.001), which is smaller than the (0.05) threshold adopted in our study, also confirms the model's significance. It indicates that the combined introduction of knowledge dimensions produces a statistically significant explanation for the changes in the sustainability of the institutions under study.
- The results also show that when analyzing the contribution of each dimension while controlling for the effects of the other dimensions, only the application and storage of knowledge had statistically significant effects, as indicated by the significance level value which was less than the threshold value set in our study. This can be interpreted as the sustainability of these institutions being more closely related to their ability to effectively apply, maintain, and store knowledge, ensuring it is not wasted and can be retrieved when needed. As for the other dimensions—knowledge diagnosis, acquisition, and distribution—they lost their statistical significance in the multiple regression model. This does not mean that these dimensions are unimportant or unrelated to the sustainability of the institutions studied, but rather that part of the non-significant dimensions' effects overlap with the effects of the other dimensions.
- The multiple regression equation shows the direction of these relationships, and the two negative indicators for knowledge diagnosis and acquisition cannot be interpreted as having a negative effect on the sustainability of the institutions under study. As shown in the statistical results table, their coefficients lost their statistical significance in the multiple model. Additionally, simple regression models eliminate any doubt that any increase in knowledge diagnosis, acquisition, or even distribution will lead to a decrease in the sustainability of the institutions under study.

In conclusion, it can be said that the impact of knowledge management on the sustainability of the economic institutions under study varies with the practice of knowledge and does not equally depend on all dimensions. This means that institutions should not only focus on possessing knowledge after identifying it, nor on storing and distributing it, but they must also maintain and apply it in a way that enables these institutions to ensure their continuity and enhance their economic performance, achieving sustainability.

V. Conclusion:

This study aimed to demonstrate and model the impact of knowledge management in its various dimensions (knowledge diagnosis, knowledge acquisition, knowledge storage, knowledge distribution, and knowledge application) on the sustainability of economic institutions, considering it as a multi-dimensional construct that includes (financial, social, environmental, institutional, and digital sustainability). This was achieved through a study of the opinions of employees from the institutions (CNAS, CASNOS, CNAC) in the provinces of El Oued, Biskra, and Ouargla in Algeria. We concluded that knowledge management represents a fundamental and important pillar for achieving and enhancing sustainability. We obtained a set of results confirming the varying strength of the impact of the

dimensions of knowledge management on sustainability and its various aspects. Below, we present the most significant findings:

1) Study results:

- The presence of a statistically significant positive effect of knowledge management in all its dimensions on the sustainability of the economic institutions under study.
- There is a statistically significant positive effect of knowledge diagnosis on the sustainability of institutions, which was more evident in social sustainability, followed by institutional and environmental sustainability.
- The presence of a statistically significant positive effect of knowledge acquisition on sustainability, with its impact being more pronounced in social and environmental sustainability.
- There is a statistically significant positive effect of knowledge storage on the sustainability of economic institutions, with its impact being particularly evident in social, financial, and digital sustainability.
- There is a statistically significant positive effect of knowledge distribution on sustainability, which was more evident in social and institutional sustainability.
- There is a statistically significant positive effect of knowledge application on all dimensions of sustainability, with its impact being particularly pronounced in financial sustainability. When testing each dimension of knowledge management individually, knowledge application achieved the highest explanatory power for overall sustainability at 27%, followed by knowledge storage at 22.3%. This highlights the importance of converting available knowledge into actual practices and maintaining the organization's knowledge base.
- The results showed that knowledge management, as a composite variable, positively and statistically significantly affects all dimensions of sustainability, with its impact being more pronounced on institutional and social sustainability compared to other dimensions.
- The multiple regression model showed that the combined dimensions of knowledge management explain (35.1%) of the variance in the sustainability of economic institutions, with the adjusted R-squared being (33.4%), reflecting a considerable explanatory power of the model.
- The results of the multiple regression showed that knowledge application and knowledge storage are the two dimensions that retained an independent and statistically significant effect on sustainability when the dimensions of knowledge management were introduced together. Knowledge application ranked first among the dimensions in terms of independent relative contribution to the multiple regression model with a standardized coefficient (Beta=0.398), followed by knowledge storage with a coefficient (Beta=0.324).
- Knowledge diagnosis, knowledge acquisition, and knowledge distribution did not retain a statistically significant independent effect in the multiple regression model, despite their significant impact when tested individually, indicating an overlap in their contributions with the other knowledge management processes.

The combined results confirm that the effectiveness of knowledge management in supporting sustainability does not depend solely on possessing or circulating knowledge, but is fundamentally linked to the organization's ability to preserve it and transform it into actual decisions, practices, and applications.

2) Regression equations:

The results of the simple linear regression showed positive and statistically significant relationships between the dimensions of knowledge management and the dimensions of the sustainability of economic institutions. The resulting regression equations can be highlighted as follows:

1.2) Regression results for knowledge diagnosis:

- Financial sustainability: $Y_1 = 2.571 + 0.306X_1$.
- Social sustainability: $Y_2 = 1.518 + 0.571X_1$.
- Environmental sustainability: $Y_3 = 1.693 + 0.514X_1$.
- Institutional sustainability: $Y_4 = 1.809 + 0.519X_1$.
- Digital sustainability: $Y_5 = 3.184 + 0.233X_1$.
- Sustainability of economic institutions as a whole: $Y = 3.030 + 0.240X_1$.

These results indicate that knowledge diagnosis had the greatest response in social sustainability, followed by institutional and environmental sustainability.

2.2) Regression results for knowledge acquisition:

- Financial sustainability: $Y_1 = 2.827 + 0.245X_2$.
- Social sustainability: $Y_2 = 2.169 + 0.402X_2$.
- Environmental sustainability: $Y_3 = 2.293 + 0.358X_2$.
- Institutional sustainability: $Y_4 = 2.603 + 0.302X_2$.
- Digital sustainability: $Y_5 = 3.211 + 0.240X_2$.
- Sustainability of economic institutions as a whole: $Y = 3.161 + 0.214X_2$.

The equations show that the greatest response to the change in knowledge acquisition was in social sustainability, followed by environmental sustainability.

3.2) Regression results for knowledge storage:

- Financial sustainability: $Y_1 = 1.598 + 0.549X_3$.
- Social sustainability: $Y_2 = 1.248 + 0.600X_3$.
- Environmental sustainability: $Y_3 = 1.891 + 0.419X_3$.
- Institutional sustainability: $Y_4 = 2.054 + 0.411X_3$.
- Digital sustainability: $Y_5 = 2.225 + 0.477X_3$.
- Sustainability of economic institutions as a whole: $Y = 2.018 + 0.498X_3$.

The results reveal the strong response of sustainability to knowledge storage, particularly in the social and financial dimensions, along with a clear impact on digital sustainability.

4.2) Regression results for knowledge distribution:

- Financial sustainability: $Y_1 = 2.502 + 0.307X_4$.
- Social sustainability: $Y_2 = 1.446 + 0.557X_4$.
- Environmental sustainability: $Y_3 = 2.176 + 0.348X_4$.
- Institutional sustainability: $Y_4 = 1.785 + 0.495X_4$.
- Digital sustainability: $Y_5 = 3.039 + 0.260X_4$.
- Sustainability of economic institutions as a whole: $Y = 2.800 + 0.290X_4$.

The equations show that the distribution of knowledge has a greater impact on social and institutional sustainability.

5.2) Regression results for knowledge application:

- Financial sustainability: $Y_1 = 1.692 + 0.558X_5$.
- Social sustainability: $Y_2 = 1.694 + 0.509X_5$.
- Environmental sustainability: $Y_3 = 1.736 + 0.492X_5$.
- Institutional sustainability: $Y_4 = 1.959 + 0.466X_5$.
- Digital sustainability: $Y_5 = 2.772 + 0.349X_5$.
- Sustainability of economic institutions as a whole: $Y = 2.125 + 0.499X_5$.

The application of knowledge shows a wide impact on various dimensions of sustainability, with the greatest response in financial sustainability, and it also recorded a high coefficient for overall sustainability.

6.2) Regression results for knowledge management across its various dimensions combined:

Regarding the impact of knowledge management as an overall variable on sustainability dimensions, the equations are as follows:

- Financial sustainability: $Y_1 = 2.233 + 0.403X$.
- Social sustainability: $Y_2 = 1.706 + 0.511X$.
- Environmental sustainability: $Y_3 = 1.808 + 0.476X$.
- Institutional sustainability: $Y_4 = 1.769 + 0.527X$.
- Digital sustainability: $Y_5 = 2.942 + 0.302X$.
- Sustainability of economic institutions as a whole: $Y = 2.656 + 0.348X$.

All of these relationships were positive and statistically significant, with the greatest response in institutional sustainability, followed by social, environmental, financial, and digital sustainability.

7.2) Results of multiple regression for the combined dimensions of knowledge management: The model equation was as follows:

$$Y = 1.397 - 0.042X_1 - 0.003X_2 + 0.341X_3 + 0.010X_4 + 0.382X_5$$

Where: Y = Sustainability of Economic Institutions; X_1 = Knowledge Diagnosis; X_2 = Knowledge Acquisition; X_3 = Knowledge Storage; X_4 = Knowledge Distribution; X_5 = Knowledge Application. The results showed that knowledge application and storage are the two dimensions that retained an independent and statistically significant effect within the multiple model, while the independent effects of knowledge diagnosis, knowledge acquisition, and knowledge distribution were not statistically significant.

3) Study Recommendations:

Based on the obtained results, our study recommends the institutions under examination, particularly economic institutions in general, regardless of their types, as follows:

- Enhancing the application of knowledge in the institutions under our study, by striving to transform available knowledge and expertise into practical procedures and solutions that contribute to their sustainability.
- Developing mechanisms for knowledge storage and preservation, ensuring the documentation, preservation, updating, and retrieval of accumulated experiences when needed.
- Building integrated digital knowledge databases and platforms that allow for the preservation, exchange, and access of knowledge among various departments and organizational levels, in line with the Algerian state's initiative to digitize public institutions and all their sectors, including social security and unemployment insurance.
- Enhancing the integration of various knowledge management processes (knowledge diagnosis, acquisition, storage, distribution, and application), and striving not to treat them as separate activities.
- Integrating knowledge management into plans and programs aimed at achieving financial, social, environmental, institutional, and digital sustainability.
- Giving greater attention to digital sustainability by leveraging knowledge in the development of digital processes, information systems, and electronic services.

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