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The impact of investment in human resources from the perspective of knowledge management: A managerial approach to enhancing education and achieving sustainable development "Case study: Algerian Telecom"

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***Abstract*---**The future and well-being of society are closely tied to the outcomes of the educational process. Implementing managing knowledge effectively practices in education represents one of the most effective approaches to achieving the principles of sustainable development and realising its positive effects on both society and the state. In this study, we explore how is to evaluate the characteristics and effectiveness of applying managing knowledge effectively practices in education to foster sustainable development. To accomplish this, a structured questionnaire was distributed to a random sample of 65 employees working at Algerian Telecom. Out of these, 61 valid responses were collected and analysed using statistical methods. The study's findings indicate: A positive relationship between investment in human resources through managing knowledge effectively practices and the enhancement of education to support sustainable development; A positive association between managing knowledge effectively and employee motivation; A positive correlation between managing knowledge effectively and employee performance.

***Keywords*---**Human Resource, Knowledge management, Learning, Sustainable Development**.**

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1. Introduction

In a 2007 speech, UN Secretary-General Ban Ki-moon stated, “We hold the future in our hands. Together, we must ensure that our grandchildren are not forced to ask why we failed to do what was right, leaving them to suffer the consequences” (Sengupta, Blessinger, and Yamin, 2020, p. 4). According to Obeso, María, et al. (2020, p. 1859), knowledge and learning are essential for an organisation's success and its ability to achieve economic growth. As a result, organisations aim to transform individual knowledge, which comprises information, personal experience, and understanding, into organisational knowledge. However, this transformation is neither simple nor easy. Therefore, organisations employ various managing knowledge effectively practices, defined as dynamic activities and processes aimed at managing and exploiting knowledge resources to generate valuable insights.

Paoloni, Mauro, et al. (2020, p. 1798) argue that today, knowledge and information have become strategic assets for organisations, far surpassing traditional resources such as land, capital, or labour in driving production. Najam Ul Zia (2020, p. 1822) adds that, from a knowledge-based perspective, knowledge is the primary strategic resource of an organisation.

Knowledge is a valuable asset for both individuals and society, and knowledge-based resources, such as skills, capabilities, expertise, and adaptability, are crucial for achieving a sustainable competitive advantage (Herlina, Maria Grace, et al., 2020, p. 17). According to Yang Jie (2010, p. 217), for organisations implementing managing knowledge effectively, knowledge is a critical strategic resource due to its uniqueness and irreplaceability. Thus, knowledge becomes a potential source of innovation and value creation. However, it is not merely the possession of knowledge that gives an organisation a competitive edge; rather, it is how the organisation applies that knowledge in its processes that shapes its managing knowledge effectively strategy. The core of managing knowledge effectively lies in developing an organisation's ability to acquire, create, accumulate, and exploit knowledge. When knowledge is integrated into unique organisational processes, core competencies are developed, leading to positive returns and sustainable competitive advantage.

Knowledge management (KM) plays a crucial role in fostering teamwork and collaboration within an organisation by facilitating the sharing and communication of diverse ideas. The integration of knowledge among individuals is of paramount importance. Knowledge integration has been defined as “the combining of specialised knowledge held by individuals into general knowledge relevant to specific situations.” This process results in positive collaborative outcomes, as team members are better able to understand differences and collectively find solutions to problems when they combine their knowledge (Sun Yao, et al., 2020, pp. 2128-2129). Pawlowski (2016, p. 3) also emphasises that KM supports knowledge-related activities within organisations, particularly in knowledge discovery, creation, sharing, and distribution, which lead to balanced improvements in both organisational performance and individual well-being.

Similarly, KM has a positive impact on any organisation, enabling it to reach higher levels of success through effective implementation (Agrawal and Mukti, 2020, p. 44).

Moreover, Obeso, María, et al. (2020, p. 1860) point out that the relationship between knowledge and performance is more complex than a direct correlation, as knowledge needs to be embedded within the organisation to improve performance. We can achieve this by organisational learning (OL). Empirical evidence shows that OL mediates managing knowledge effectively processes (KMPS), helping to enhance organisational outcomes.

Similarly, Bari, M. W., Ghaffar, M., and Ahmad, B. (2020, pp. 2171-2172) argue that knowledge-sharing and exchange processes are key to organisational success. Sustainable knowledge sharing is linked to positive outcomes for individuals, teams, and organisations, including innovative work behaviour, employee creativity, team creativity, and organisational learning.

1.1 Study Problem

According to contemporary studies, achieving the right balance between a modern, responsible state, developing a dynamic society, and integrating the principles of sustainable development—such as environmental protection, economic growth, and social welfare—has become a key task for the education sector. One way to achieve sustainability in education is through the implementation of managing knowledge effectively practices. In this study, managing knowledge effectively is considered a purposeful and systematic approach to processes, methods, and tools, with the aim of fully leveraging the organisation's knowledge potential to shape strategic goals, make effective decisions, and create value for the organisation. Sustainable development in this context is defined as development that meets the needs of the present society without compromising the ability of future generations to meet their own needs (Raudeliūnienė, J., Tvaronavičienė, M., & Blažytė, M., 2020, pp. 1-2).

Prusak (2001, p. 1006) notes that human capital, by definition, focuses on the individual, while most managing knowledge effectively work is designed for groups, communities, and networks. However, managing knowledge effectively builds upon the concept of human capital. From the resource-based approach, pioneered by figures such as Barney (1992), investments in human resources have been shown to significantly impact organisational performance (Khodakarami Panteha, Zakaria Zukarnain, and Kakar Abdul Samad, 2018, p. 449).

Wenyuan Sun and Xiuhong Du (2013, p. 436) point out that Peter Drucker, a leading thinker in management studies, first introduced the term "human resources" in 1954. According to Drucker, human resources differ from other types of resources because they refer to people. Human resources encompass all individuals who contribute to building society, advancing social progress, and being managed through a set of administrative policies and regulations that influence the overall behaviour and attitudes of employees. Based on this premise, this study seeks to examine human resource investment from the

perspective of managing knowledge effectively as a conceptual approach aimed at enhancing education to support sustainable development. From here, the research problem arises, which can be formulated as follows:
How can human resource investment, from the perspective of managing knowledge effectively, enhance education and support sustainable development?
To answer this central question, the following sub-questions are posed:

- What do we mean by knowledge, and how can it be managed?
- Can managing knowledge effectively and learning support sustainable development?
- Is there a significant relationship between managing knowledge effectively and education? 2.1 Study

1.2 Hypotheses

Based on the previously raised questions, the primary statistical hypothesis for this study can be formulated as follows:
There is no statistically significant relationship between managing knowledge effectively and the education function at the organisation under study.
The main hypothesis is further divided into the following sub-hypotheses:

- H0: There is no statistically significant relationship at the level of $\alpha \leq 0.05$ between managing knowledge effectively and the education system at the organisation under study.
- H0: There is no statistically significant relationship at the level of $\alpha \leq 0.05$ between managing knowledge effectively and the rewards system at the organisation under study.
- H0: There is no statistically significant relationship at the level of $\alpha \leq 0.05$ between managing knowledge effectively and the performance evaluation system at the organisation under study.

1.3 Importance of the study

The importance of this study lies in the added value that managing knowledge effectively provides in enhancing education through the creation of new knowledge, the storage of knowledge, and the sharing of knowledge among all employees within the organisation. Finally, the application of this knowledge within the organisation helps achieve its goals efficiently and effectively. All of this contributes to improving the quality of education and strengthens support for sustainable development.

1.4 Study Objectives

- Review concepts related to managing knowledge effectively, education, and sustainable development.
- Highlight the relationship between managing knowledge effectively, education, and sustainable development.
- Understand the nature of the relationship between managing knowledge effectively and education.

2. Theoretical Framework

Chin Andy Zhi Rong et al. (2020, p. 326) noted that knowledge is increasingly regarded as a strategic resource for improving organisational performance. The authors stated that organisations that implement managing knowledge effectively gain a competitive advantage compared to those that do not. Knowledge management helps an organisation's administrative system provide the right information in the appropriate format, at the right time, to the right employee. By the mid-1980s, organisations began to appreciate and focus on individual knowledge and its importance (Agrawal, A., & Mukti, S. K., 2020, p. 43).

2.1 The Transition from a Resource-Based Approach to a Knowledge-Based Approach

The resource-based approach focuses on how organisations can achieve a competitive advantage, which is derived from the unique (tangible or intangible) resources they possess. Specifically, organisational resources include all assets, capabilities, processes, knowledge, stable characteristics, and information owned by the organisation that enable it to "formulate and implement strategies to improve its efficiency and effectiveness." For these resources to generate sustainable competitive advantage, Barney (1991) identified specific characteristics that they must possess: they must be valuable, rare, unique, and irreplaceable. These resources significantly influence business strategies and objectives. Such unique and rare resources can also be acquired externally, contributing to improved organisational performance.

Similarly, identifying knowledge as a key driver of economic development has expanded the vision of knowledge-based business strategies. The knowledge-based approach is considered an evolution of the resource-based approach, as knowledge is viewed as an even more strategically important resource. The primary role of the organisation is to absorb specific knowledge that resides within individuals and institutions, forming the foundation of its capabilities. As a result, an organisation's competitive advantage depends on its ability to internalise specific knowledge assets that can create core competencies to enhance sustainable performance. These knowledge resources are often difficult to imitate, as they reside within specialised individuals. Additionally, the diversity of knowledge resources and capabilities are key sources of competitive advantage, further contributing to enhanced sustainable performance (Shahzad Mohsin et al., 2020, pp. 03-04).

2.2 Knowledge

Knowledge is defined as "information processed by individuals, including ideas, facts, experiences, and judgments relevant to the performance of individuals and organisational entities." In the same context, thinking and experience are essential for acquiring knowledge, which "resides within individuals" (Rese, A., Kopplin, C. S., & Nielebock, C., 2020, p. 2329). Knowledge is also described as a "justified true belief." Other scholars define it as a state of knowing, which includes facts, concepts, principles, insights, judgments, and emotions. In the context of management, the definition of knowledge arises from social

interactions; therefore, knowledge is a dynamic and human process (Herlina Maria Grace et al., 2020, p. 17).

3.2 Types of Knowledge

There are several classifications of knowledge, but the most common categorisation divides knowledge broadly into two categories: tacit knowledge and explicit knowledge (Agrawal, A., & Mukti, S. K., 2020, p. 44). Similarly, knowledge is classified into two types: explicit and tacit (Herlina Maria Grace et al., 2020, p. 18).

3.2.1 Tacit Knowledge

Tacit knowledge includes subjective insights, intuition, and ideas (Rese, A., Kopplin, C. S., & Nielebock, C., 2020, p. 2329). It can also be defined as knowledge that cannot be stored or expressed in written form, whereas explicit knowledge is what is written down on paper (Agrawal, A., & Mukti, S. K., 2020, p. 44). In the same context, tacit knowledge is highly personal, representing a collection of experiences and efforts from networks and alliances. This includes practical skills, experiences, best practices, know-how, and more (Herlina Maria Grace et al., 2020, p. 18).

3.2.2 Explicit Knowledge

Another type of knowledge that is easier to transfer and share is explicit knowledge. This type includes guidelines, procedures, databases, and reports. Some scholars have stated that 99% of an organisation's work is knowledge-based. Most knowledge-related activities reside in the minds of individuals (Herlina Maria Grace et al., 2020, p. 18).

Shin, K., & Pérez-Nordtvedt, L. (2020, pp. 2040-2041) noted that organisations evolve by learning and acquiring knowledge that exists externally, as this knowledge can be reintegrated with the organisation’s internal knowledge. This process enables the organisation to develop solutions to problems or create products for underserved markets, or both. In fact, knowledge acquired from external actors enhances organisational performance (Shahzad Mohsin et al., 2020, pp. 2081-2082).

2.4 Knowledge Management

Knowledge management stems from the resource-based theory of the firm, which emphasises the use of strategic resources to gain a competitive advantage. According to the knowledge-based theory, the most important strategic asset for an organisation is knowledge. There is consensus among researchers that organisations need to manage their knowledge resources effectively to survive and grow in today’s competitive environment. Knowledge management is the deliberate strategy of enabling individuals to access, share, and apply knowledge to improve organisational performance. It operates as a process of creating, storing, sharing, and applying knowledge. Knowledge management can be practised at both the individual and organisational levels. Literature reports

various outcomes from the implementation of managing knowledge effectively, including improved problem-solving skills, individual and team performance, financial performance, innovative capacity, and job performance, among others (Najam Ul Zia, 2020, p. 1823).

Agrawal, A., & Mukti, S. K. (2020, p. 43) also highlighted that managing knowledge effectively interprets experience and how to access knowledge and expertise, leading to the creation of new competencies, enabling superior routines, fostering innovation, and increasing customer satisfaction. Furthermore, managing knowledge effectively refers to a set of methods, tools, techniques, and values through which organisations can acquire, develop, measure, and distribute their intellectual assets, ensuring a return on them. This process-driven approach focuses on organisational processes, structure, and IT applications that empower individuals to utilise their capabilities and creativity to deliver business value and seize opportunities quickly and effectively (Yang Jie, 2010, p. 216). Knowledge management is also defined as the process of transforming tacit knowledge into explicit knowledge to facilitate organisational knowledge flows (Yang Jie, 2010, p. 216). Agrawal, A., & Mukti, S. K. (2020, p. 43) provided another definition: "Knowledge management is a system that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an organisation's informational assets."

2.5 Knowledge Management Processes

According to Shahzad Mohsin et al. (2020, p. 2080), managing knowledge effectively processes (KMP) have been recognised as a critical component in the design and development of new products and services, as well as in managing operational processes in today's business world. For this reason, organisations strive to adopt new and effective managing knowledge effectively strategies to achieve sustainable goals. Modern economies are built using innovative ideas from human intellectual capital, which contribute to both sustainability and profitability. The following figure illustrates the managing knowledge effectively processes.

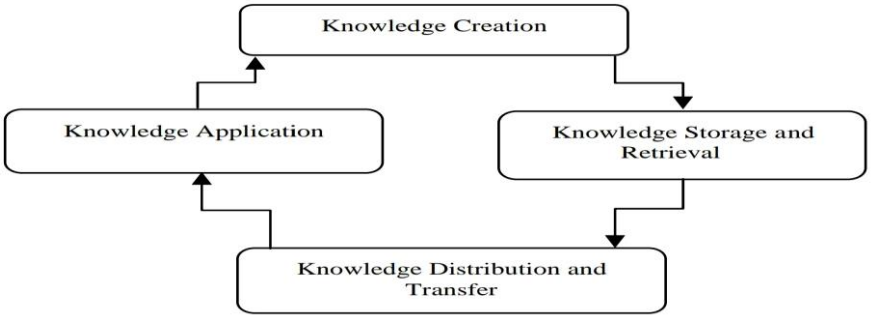

Fig 1. Knowledge Management Processes

Source: TorabiMir Hamid Reza *et al.*, (2016), **An Investigation of the Impact of Knowledge Management on Human Resource Performance in Management of Keshavarzi Bank Branches in Tehran**, 3rdInternational Conference on New Challenges in Management and Business: Organization and Leadership, Dubai, UAE, 2 May 2016, p 474.

2.5.1 Knowledge Creation

According to Najam Ul Zia (2020, p. 1823), knowledge acquisition refers to gathering new knowledge from both internal and external sources. This process can lead to the replacement of existing organisational knowledge, whether tacit or explicit. Creating new knowledge from scratch is often an internal activity based on research and development.

Knowledge acquisition also involves the ability to recognise and internalise new knowledge, which is critical for effective organisational operations. Primarily, employees acquire new knowledge from internal company sources, such as colleagues and team members. Through knowledge acquisition, organisations gather additional information from various credible sources, helping employees address business-related issues and enhancing both individual and organisational productivity. Researchers have noted that investing in research and development can help organisations generate new ideas, potentially leading to improvements in innovative performance. Therefore, knowledge acquisition is a crucial process for building capabilities, fostering innovative behaviours, and gradually enhancing performance (Shahzad Mohsin et al., 2020, pp. 2085-2186).

2.5.2 Knowledge Storage

As organisations grow and acquire knowledge, there are opportunities for the loss of that acquired knowledge. In such cases, it is important to store this knowledge. Knowledge storage and documentation activities may include organising knowledge to preserve organisational memory, either by codifying it into standard operating procedures, storing it in expert systems, or saving information in electronic databases (Najam Ul Zia, 2020, p. 1823). Knowledge storage (KS) processes refer to the systems and procedures used to store and retain knowledge within an organisation. These processes involve activities such as classifying knowledge and storing it in database systems. This knowledge can be made accessible through guides, guidelines, books, databases, manuals, intranet systems, or documents containing updated information on customers, suppliers, the environment, or the organisation itself (Obeso María et al., 2020, pp. 1863-1864).

2.5.3 Knowledge Sharing

According to Najam Ul Zia (2020, p. 1823), knowledge transfer activities allow employees to share their own knowledge with other members of the organisation. Organisations need formal or informal communication channels to facilitate knowledge exchange. The process of disseminating and sharing knowledge involves collecting, transferring, and distributing information among employees to enable improvements. This process has two main aspects: knowledge sharing, which refers to the act of providing knowledge, and knowledge gathering, which refers to collecting knowledge from employees. These activities can be supported by meetings, discussions, social networks, and collaboration. Interaction among employees creates opportunities for learning and knowledge exchange. This system enhances organisational processes, financial forecasting, coordination

with stakeholders, and ultimately helps achieve institutional sustainability goals (Shahzad Mohsin et al., 2020, p. 2086).

The process of Knowledge Flow (KF) is defined as "the total volume of know-how and information transmitted within a certain time period." In line with this definition, knowledge flow refers to the distribution of knowledge within the organisation. This process utilises mechanisms such as seminars, teaching, storytelling, conversations, blogs, networks, and IT systems to improve communication. It also includes meetings to disseminate information about new initiatives, periodic reports, and multidisciplinary teams to share knowledge (Obeso María et al., 2020, p. 1864).

2.5.4 Knowledge Application

According to Najam Ul Zia (2020, p. 1823), knowledge application refers to using knowledge to solve problems. Similarly, Shahzad Mohsin et al. (2020, p. 2087) state that knowledge application makes information more powerful and relevant to an organisation in creating competitive advantages and meeting customer demands. This system is also known as knowledge responsiveness, where an organisation collects information about customer needs and market trends, and, based on this data, responds quickly to problems or opportunities. The resulting improvements in quality and reduced response times reflect the organisation's agility, ultimately influencing customer satisfaction levels.

2.6 Education

Jucevičienė Palmira and Leščinskij Robert (2017, p. 413) argue that education is a field that heavily relies on social, cultural, and economic contexts. The shift towards a knowledge-based economy presents new challenges for educational systems. Knowledge-based organisations depend on their ability not only to process but, more importantly, to create knowledge. Organisational learning occurs when an individual identifies as a member of the organisation, acknowledges, understands, and follows its objectives. Shu-Hsien Liao et al. (2012, p. 54) suggest that, from a knowledge-based perspective, knowledge forms the foundation of learning. An organisation cannot compete effectively in a rapidly changing environment if it lacks sufficient knowledge and the ability to innovate. Therefore, organisational learning encompasses all knowledge-related processes, including the generation, refinement, enhancement, and dissemination of knowledge.

2.7 The Relationship Between Knowledge Management, Education, and Sustainable Development

2.7.1 The Relationship Between Knowledge Management and Education

Knowledge Management (KM) and Organisational Learning (OL) are complementary yet distinct concepts. "Knowledge Management (KM) aims to build and apply a knowledge base," while "Organisational Learning (OL) focuses on managing the learning process within an organisation." Knowledge is viewed as a stock, whereas OL refers to the processes through which knowledge flows within

the company. Through KM, knowledge resources and processes are developed, and these processes are enhanced by OL to achieve competitive advantages. OL "helps the organisation integrate organisational knowledge into its operations by fostering the creation, transfer, and application of knowledge." Thus, OL acts as a catalyst because knowledge is realised through learning. Therefore, knowledge is a fundamental requirement for OL. The concepts of learning and knowledge are interconnected, and one cannot exist without the other (Obeso María et al., 2020, pp. 1864-1865).

2.7.2 The Relationship Between Knowledge Management and the Reward System

The reward system refers to the financial or economic incentives provided by the organisation to motivate specific behaviours among its employees. Reward systems play a crucial role in encouraging particular behaviours within the organisation. Group behaviours guided by common goals are motivated through performance evaluations that acknowledge the interdependence of various employee tasks. A reward system encourages more employees to participate in the implementation of the managing knowledge effectively strategy. It has been shown that aligning the reward system increases the generation, dissemination, and responsiveness of organisational intelligence. A managing knowledge effectively programme will receive significant support from the reward system, thereby enhancing the organisation's strategic performance. This support mitigates the risk of losing both technology and expertise, as well as the redundancy of reinventing existing solutions (Yang Jie, 2010, pp. 216-217).

2.7.3 The Relationship Between Knowledge Management and Organisational Performance

The relationship between knowledge generation and organisational performance is understood through the process of Knowledge Generation (KG), which aims to develop new knowledge within the company. This new knowledge includes both tacit knowledge (i.e., personal knowledge based on human experience) and explicit knowledge. An organisation can generate knowledge on its own, for example, through Research and Development (R&D) activities within the company, or it can acquire knowledge from external sources. Knowledge can also be obtained through external and collaborative networks. Two studies that analysed the impact of knowledge creation on performance, conducted by Tubigi and Alshawi (2015) and Migdadi et al. (2017), both concluded that the process of knowledge creation enhances organisational performance (Obeso María et al., 2020, pp. 1862-1863).

2.7.4 The Relationship Between Knowledge Management, Education, and Sustainable Development

Climate change, poverty, inequality, prosperity, peace, and justice: these are the key challenges identified by the United Nations in 2015, with the aim of addressing them by 2030 through the achievement of 17 Sustainable Development Goals (SDGs) to build a sustainable future (Paola Bonini, 2020, p. 40). The world is shifting away from a shareholder-driven focus on profit

maximisation and economic development toward a broader stakeholder approach that prioritises social and environmental concerns. Major threats to humanity must be addressed through a sustainability model. Sustainability is a key focus for the future and is often viewed as a long-term goal for our planet. Sustainable development is one of the many approaches that can be adopted to achieve this goal. It impacts all aspects of our lives, from consumption patterns to governance, and includes technology transfer, education, and training (Sengupta, E., Blessinger, P., and Yamin, T.S., 2020, p. 04).

The concept of **Sustainable Development (SD)**, as outlined in the **Broadlands Report** (IISD, 1992; WCED, 1987), refers to development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The European Communities' Statistical Office (2016) stated that the goal of sustainable development is to ensure the quality of life for both current and future generations. Achieving sustainable development has thus become one of the main challenges faced by policymakers globally (Khodakarami Panteha, Zakaria Zukarnain, and Kakar Abdul Samad, 2018, p. 449).

The term "sustainable" first appeared in its modern sense in March 1976 in a report titled "**The Limits to Growth**" by a group of scientists from the Massachusetts Institute of Technology (MIT), where sustainability was linked to the global environment. A widely known definition of sustainability encompasses three main dimensions: environment, society, and economy (El Hilali Wail et al., 2020, p. 54).

Sustainable development includes three key dimensions: economic, environmental, and social. The economic dimension focuses on providing the conditions necessary for stable, long-term economic growth. The environmental dimension involves the sustainable use of natural resources. Lastly, the social dimension addresses meeting individuals' basic needs and improving their quality of life (Mikalauskiene Asta, and Atkociuniene Zenona, 2019, pp. 149-150).

Knowledge is the key to sustainable competitive advantage. Sustainable development, on the other hand, is the result of innovative mechanisms and knowledge production. The wide range of knowledge held by various stakeholders (e.g., experts in teams, project managers, and business owners) has a positive impact on Sustainable Development (SD). There is debate about whether sustainable development depends not only on science (knowledge) and technology but also on the interaction between knowledge and action. Knowledge leads to sustainability when applied practically, and knowledge production often drives sustainable development. Similarly, the Resource-Based View (RBV) theory posits that an organisation's performance depends on the extent of its resources. In other words, an organisation's resources (knowledge) can influence its performance (sustainable development). Based on RBV theory, several researchers, including Cash et al. (2003) and Kain and Söderberg (2008), have examined the relationship between managing knowledge effectively and sustainable development. They concluded that managing knowledge effectively enhances employees' innovative behaviour, which in turn leads to sustainable development (Khodakarami Panteha, Zakaria Zukarnain, and Kakar Abdul Samad, 2018, p. 450).

In the field of education for sustainable development, we must incorporate key sustainable development issues into teaching and learning, such as climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that motivate learners and empower them to change their behaviour and take action for sustainable development. Education for sustainable development promotes competencies such as critical thinking, envisioning future scenarios, and decision-making (Sengupta, E., Blessinger, P., and Yamin, T.S., 2020, p. 05).

In 2002, the United Nations declared 2005-2014 **the Decade of Education for Sustainable Development**, highlighting the difference between environmental education and sustainable education. "Environmental education is an established field that focuses on humanity's relationship with the natural environment and on ways to conserve and manage resources properly." Education for sustainable development, on the other hand, "includes environmental education but places it within a broader socio-cultural context."

The goals of education and sustainable development include ensuring quality education, defined as "ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all." Higher education, along with the adoption and adaptation of digital technologies (sometimes referred to as the fourth industrial revolution), is considered essential for the successful implementation of all sustainable development goals (Paola Bonini, 2020, p. 40). Thus, education is a cornerstone for achieving sustainable development.

3. Study Methodology

This study employed a descriptive-analytical method to comprehensively explore the research subject. This approach entailed systematically presenting and scientifically analysing the available data, ultimately leading to conclusions and the formulation of recommendations.

3.1 Data Collection Techniques and Tools

Data was collected using a questionnaire, which served as the primary tool for measuring the study's variables. A five-point Likert scale was utilised (strongly agree, agree, neutral, disagree, strongly disagree), and the questionnaire was administered to the selected sample. The collected data was subsequently processed using the SPSS statistical software, converting the responses into numerical data for further statistical analysis.

3.2 Statistical Data Processing

The data was analysed through SPSS, employing statistical tools such as frequency tables, percentages, means, standard deviations, and correlation coefficients.

3.3 Study Population and Sample

The study targeted Algérie Télécom. A simple random sampling method was

employed to select participants from the study population, consisting of employees and management officials. Approximately 65 questionnaires were randomly distributed, and 63 were returned. After reviewing and ensuring that the returned questionnaires met the necessary criteria for statistical analysis, 61 valid questionnaires were used. Thus, the final sample size consisted of 61 individuals.

3.4 Validity and Reliability of the Tool

To assess the validity and reliability of the questionnaire items, the Alpha Cronbach coefficient was employed. The calculated Cronbach alpha value was 81.8%, which exceeds the generally accepted minimum threshold of 60% for Alpha Cronbach. This result indicates that the questionnaire items exhibit sufficient internal consistency, ensuring their validity and reliability for analysing primary data and conducting statistical analysis.

Results

4.1 Statistical Processing of the Sample's Responses
4.2 Presentation and Analysis of the Results of the Knowledge Management Section

Table (01): Responses of the Study Sample Regarding Statements Related to Knowledge Management

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
The organisation has electronic devices, such as computers and advanced software, for managing and sharing knowledge.	29	28	0	3	1	4.33	0.851
Knowledge management contributes to improving educational capabilities.	15	40	5	1	0	4.13	0.618
The organisation believes that knowledge plays an active role in its success.	34	24	2	1	0	4.49	0.649
The organisation supports teamwork spirit.	14	34	9	2	2	3.92	0.9
Knowledge and idea exchange between employees generates new knowledge.	31	22	6	1	1	4.33	0.851
The organisation's management encourages teamwork and collective learning among employees, which positively impacts the organisation.	20	23	12	2	4	3.87	1.118

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
The organisation encourages employees to share ideas during meetings.	20	29	11	1	0	4.11	0.755
The application of knowledge management provides sufficient opportunities for employees and groups to innovate new knowledge.	21	32	4	3	1	4.13	0.866
The knowledge management system implemented by the organisation helps achieve higher levels of creativity.	18	34	4	5	0	4.07	0.834

Source: Compiled by the researcher using SPSS program outputs.

Table (01) presents the means and standard deviations for the independent variable, which represents managing knowledge effectively practices. The results indicate that the majority of the means for the statements range between 3.87 and 4.49. The overall mean for the first section, which focuses on managing knowledge effectively practices, was 4.153. When this value is mapped onto the five-point Likert Scale, it corresponds to "Agree to a large extent." This suggests that the organisation places significant emphasis on managing knowledge effectively, particularly in terms of knowledge creation and storage. This is facilitated by the organisation's use of electronic devices, such as computers and advanced software, to disseminate knowledge within the organisation and its branches.

4.3 Presentation and Analysis of the Results for the Education Function Section:

Table (02): Responses of the Study Sample Regarding Statements Related to the Education Function

No.	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
Education System								
1	The organisation uses tests during the selection and recruitment process to identify qualified candidates.	19	22	9	9	2	3.77	1.146
2	Management encourages	15	28	13	3	2	3.84	0.969

No.	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
	the exchange of opinions and ideas among employees at different levels.							
3	The organisation fosters curiosity and encourages employees to acquire knowledge and skills.	15	32	12	2	0	3.98	0.764
Reward System								
1	The organisation has an information system for fair and objective determination of salaries and incentives.	25	29	4	2	1	4.23	0.844
2	The organisation grants benefits to employees with creative and innovative ideas.	14	18	12	8	9	3.33	1.363
3	Rewards are proportional to duties, responsibilities, and tasks assigned to employees.	10	29	9	6	7	3.48	1.219
Performance Evaluation System								
1	Performance evaluations are conducted scientifically, free from bias and favouritism.	8	22	22	5	4	3.41	1.039
2	IT-based performance results in high-quality outcomes and faster task completion.	20	24	11	3	3	3.9	1.076
3	Performance and promotions are based on knowledge contributions, particularly in creation and sharing.	10	17	19	9	6	3.26	1.196
Overall Mean and Standard Deviation for the Education Function Section							3.68	1.068

Source: Compiled by the researcher using SPSS program outputs

Table (02) presents the means and standard deviations for the independent variable, which represents managing knowledge effectively practices. The results show that most of the mean values for the statements range between 3.26 and

4.23. The overall mean for the first section, which focuses on managing knowledge effectively practices, was 3.68. When this value is mapped onto the five-point Likert Scale, it corresponds to "Agree to a large extent." This indicates that the organisation places significant emphasis on the education function, through its education system, reward system, and performance evaluation system.

4.4 Results of Hypothesis Testing:

4.4.1 Results of Testing the Sub-Hypotheses Related to the Main Hypothesis:

The following tables present the partial results for the main hypothesis and its related sub-hypotheses.

4.4.1.1 Results of Testing the First Sub-Hypothesis

H0: There is no statistically significant relationship between managing knowledge effectively and the education system in the organisation under study.

Table (03): Results of Testing the Relationship Between Knowledge Management and the Education System in the Organisation Under Study

Education System	Correlation Coefficient (R)	Coefficient of Determination (R^2)	Calculated T-Value	Calculated F-Value	Regression Coefficient (B)	Significance Level (Sig)
Knowledge Management	0.576	0.332	5.415	29.324	-0.06	0

Source: Compiled by the researcher using SPSS program outputs.

Based on the results shown in Table (03), it is evident that managing knowledge effectively has an impact on the education system in the organisation under study. This is reflected in the correlation coefficient, which measures the strength of the relationship between the study variables. The correlation coefficient between the two variables is 0.576, or 57.6% of the total observations, indicating a positive correlation between the independent variable (managing knowledge effectively) and the dependent variable (education system).

When examining the table results, we observe that the calculated T-value of 5.415 is greater than the critical T-value at a significance level of Sig = 0.000, which is less than the 0.05 significance threshold. This leads to the rejection of the first null sub-hypothesis (H0), derived from the main hypothesis, in favour of the following alternative hypothesis:

H1: There is a statistically significant positive impact of managing knowledge effectively on the education system in the organisation under study.

4.4.1.2 Results of Testing the Second Sub-Hypothesis

H0: There is no statistically significant relationship between managing knowledge effectively and the reward system in the organisation under study

Table (04): Results of Testing the Relationship Between Knowledge Management and the Reward System in the Organisation Under Study

Reward System	**Correlation Coefficient (R)**	**Coefficient of Determination (R^2)**	**Calculated T-Value**	**Calculated F-Value**	**Regression Coefficient (B)**	**Significance Level (Sig)**
Knowledge Management	0.316	0.1	2.559	6.548	1.141	0.013

Source: Compiled from the obtained results

Based on the results shown in Table (04), it is evident that managing knowledge effectively has an impact on the reward system in the organisation under study. This is reflected in the correlation coefficient, which measures the strength of the relationship between the study variables. The correlation coefficient between the two variables is 0.316, or 31.6% of the total observations, indicating a positive correlation between the independent variable (managing knowledge effectively) and the dependent variable (reward system).

When examining the table results, we observe that the calculated T-value of 2.559 is greater than the critical T-value at a significance level of Sig = 0.013, which is less than the 0.05 significance threshold. This leads to the rejection of the first null sub-hypothesis (H0), derived from the main hypothesis, in favour of the following alternative hypothesis:

H1: There is a statistically significant positive impact of managing knowledge effectively on the reward system in the organisation under study.

4.4.4.3 Results of Testing the Third Sub-Hypothesis

H0: There is no statistically significant relationship between managing knowledge effectively and the performance evaluation system in the organisation under study.

Table (05): Results of Testing the Relationship Between Knowledge Management and the Performance Evaluation System in the Organisation Under Study

Performance Evaluation System	Correlation Coefficient (R)	Coefficient of Determination (R^2)	Calculated T-Value	Calculated F-Value	Regression Coefficient (B)	Significance Level (Sig)
Knowledge Management	0.238	0.057	1.884	3.55	1.649	0.064

Source: Compiled from the obtained results.

Based on the results shown in Table (05), it is evident that managing knowledge effectively has an impact on the performance evaluation system in the organisation under study. This is reflected in the correlation coefficient, which measures the strength of the relationship between the study variables.

The correlation coefficient between the two variables is 0.238, or 23.8% of the total observations, indicating a positive correlation between the independent

variable (managing knowledge effectively) and the dependent variable (performance evaluation system).

When examining the table results, we observe that the calculated T-value of 1.884 is greater than the critical T-value, with a significance level of Sig = 0.064, which is higher than the 0.05 significance threshold. This supports the acceptance of the first null sub-hypothesis (H0), derived from the main hypothesis: H0: There is no statistically significant relationship between managing knowledge effectively and the performance evaluation system in the organisation under study.

4.4.2 Results of Testing the Main Hypothesis

H0: There is no statistically significant relationship between managing knowledge effectively practices and human competencies.

Table (06): Results of Testing the Relationship Between Knowledge Management and the Education Function

Education Function	Correlation Coefficient (R)	Coefficient of Determination (R^2)	Calculated T-Value	Calculated F-Value	Regression Coefficient (B)	Significance Level (Sig)
Knowledge Management	0.507	0.257	4.523	20.454	0.91	0

Source: Compiled from the obtained results.

Based on the results shown in Table (06), it is evident that managing knowledge effectively has an impact on the education function in the organisation under study. This is reflected in the correlation coefficient, which measures the strength of the relationship between the study variables. The correlation coefficient between the two variables is 0.507, or 50.7% of the total observations, indicating a positive correlation between the independent variable (managing knowledge effectively) and the dependent variable (education function).

When examining the table results, we observe that the calculated T-value of 4.523 is greater than the critical T-value, with a significance level of Sig = 0.000, which is less than the 0.05 significance threshold. This leads to the rejection of the main null hypothesis (H0) in favour of the following alternative hypothesis: H1: There is a statistically significant positive impact of managing knowledge effectively on the education function in the organisation under study.

Discussion

The study results demonstrated a significant relationship between managing knowledge effectively and education, indicating a statistically significant association within the organisation under study. In light of this, it is important to highlight the dimensions of sustainable development (economic, environmental, and social) through the integration of managing knowledge effectively and education.

5.1 Economic Dimension

According to Tatjana Stanovcic et al. (2015, p. 414), managing knowledge effectively practices enhance an institution's skills in project management, research and development, and increase the available knowledge pool. Knowledge management also fosters organisational learning and innovation, with innovation being a key driver of economic growth.

5.2 Environmental and Social Dimensions

The United Nations Global Compact has urged all companies, particularly those involved in manufacturing, to adopt environmentally friendly processes and leverage the latest technologies for efficient resource utilisation. Knowledge activities, communication, and research and development (R&D) are essential tools that enable organisations to develop and improve new technologies. Organisations apply these technologies to develop or improve products and processes, thereby enhancing organisational performance not only from an economic perspective but also from environmental and social perspectives (Abbas Jawad & Sağsan, Mustafa, 2019, p. 613). In conclusion, it can be stated that managing knowledge effectively is a critical factor in enhancing education to support the principles of sustainable development.

Conclusion

This research has highlighted the vital relationship between investment in knowledge through continuous education of human resources as a key aspect of profitable and sustainable investment. This approach focuses on producing a skilled workforce capable of efficiently managing other limited resources. This aligns with the goals of sustainable development, which seeks to exploit current resources while preserving the wealth and rights of future generations. This objective is a focal point for economic institutions as they strive to contribute to long-term sustainability.

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