

The role of knowledge management in achieving competitive advantage: A case study of Djezzy, an Algerian telecommunications company

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Abstract---This study aims to identify the role of knowledge management in its various processes (knowledge acquisition, storage, transfer, and application) in achieving competitive advantage in its dimensions (quality, creativity, operational efficiency) at Djazzy Telecommunications Company in Algeria. To achieve the study objectives, a questionnaire was designed and developed, then statistically processed using the Statistical Package for the Social Sciences (SPSS.26) .The study found a high level of respondents' awareness of the practice level of knowledge management functions and the dimensions of competitive advantage at Djazzy, There is a statistically significant effect of knowledge management processes on the competitive advantage at Djazzy Telecommunications Company. The study recommended the necessity of increasing attention to knowledge management processes through the effective implementation of practices that enhance the knowledge acquisition process for employees.

Keywords---knowledge, knowledge management, competitive advantage, a company.

Introduction:

Modern organizations now operate in a rapidly changing environment, characterized by the emergence of influential forces that reshape economic and managerial systems and necessitate fundamental changes in organizational strategies. These forces include increasing complexity, intensified competition, the technology and information revolution, globalization, as well as shifts in economic and political structures. Such factors affect organizations of all types, making it essential for them to be flexible, capable of rapid adaptation, and responsive, while proactively undertaking strategic actions to ensure their continuity and growth.

In response to these changes, numerous modern management concepts have emerged aimed at developing and enhancing organizational performance, among the most prominent of which is knowledge management. This concept has moved beyond being merely a theoretical framework to become a practical practice that encompasses processes of acquiring, transferring, and applying knowledge in a manner suited to the fast-paced changes in the business environment. The role of knowledge management has become even more significant as organizations recognize that building and sustaining competitive advantage fundamentally depends on intellectual assets, specifically knowledge assets, and investing in them. However, this knowledge alone is not useful unless management transforms it into practical tools capable of achieving competitive superiority.

1. Research Problem:

Based on the above, the research problem lies in determining the extent to which knowledge management processes influence the achievement of competitive advantage at Djazzy, the Algerian telecommunications company. Accordingly, the research problem can be formulated as follows:

“What is the impact of implementing knowledge management on competitive advantage at Djazzy, the Algerian telecommunications company?”

The research problem can be better understood by addressing the following questions:

- 1.1. What is the level of awareness of knowledge management practices among respondents at Djazzy?
- 1.2. What is the level of awareness of the dimensions of competitive advantage among respondents at Djazzy?
- 1.3. Is there a statistically significant effect of knowledge management practices on competitive advantage among respondents at Djazzy?

2. Study hypothesis:

There is a statistically significant effect of knowledge management processes on competitive advantage among the respondents at Djazzy Algerian Telecommunications Company at the significance level of ($\alpha \leq 0.05$).

3. Significance of the Study:

The significance of this study stems from the importance of the telecommunications sector in Algeria and the ongoing developments in the global telecommunications industry. The study is particularly important as it examines knowledge management processes at Mobilis, the Algerian telecommunications company, which is considered one of the most important modern management philosophies across various organizations.

Furthermore, the study's significance lies in its attempt to link knowledge management processes to competitive advantage, which is associated with creating value for customers, meeting their needs, earning their loyalty, and enhancing the organization's image in their minds. It also aims to achieve strategic differentiation from competitors in the products and services offered to customers, with the potential to excel in resources, competencies, and strategies within a highly competitive environment.

4. Objectives of the Study: This study aims to achieve the following objectives

1. To define knowledge management and its processes, including knowledge acquisition, storage, transfer, and application.
2. To explore the concept of competitive advantage and its key dimensions, such as quality, process efficiency, and innovation.
3. To examine the current practice of knowledge management processes at Djazzy, the Algerian telecommunications company.
4. To assess the level and status of competitive advantage at Djazzy.

5. To measure the extent of the impact of knowledge management processes on competitive advantage at Djezzy.

5. Research Methodology:

This study relies on the descriptive-analytical approach, which involves the library survey method by referring to Arabic and foreign sources. The aim is to build the theoretical framework for this study. In addition, the field survey method is used to collect data using the study instrument and to analyze them statistically in order to test the validity of the hypotheses and answer the research questions.

First: The theoretical aspect

1. Knowledge management:

1.1. Definition of knowledge management:

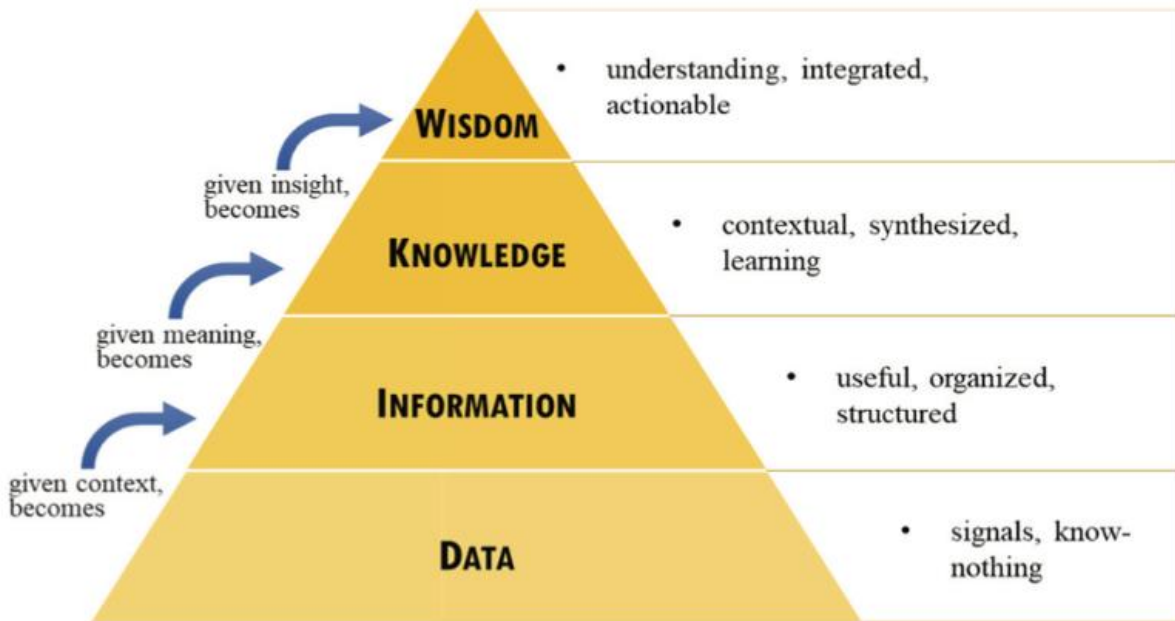
Before delving into the definition of knowledge management, it is essential to define knowledge, for which there are numerous definitions.

From an economic perspective, knowledge is "intellectual capital and added value realized upon its actual investment, that is, translating it into practical activities practiced within the institution". (Nonaka & Takeuchi, 1995, p. 73)

It can also be said that it is "the stock formed from the outcomes of scientific research, thinking, field studies, development of innovative projects, and other forms of human intellectual production over time, representing the usable knowledge stock for improving the existing or transitioning to the better". (Davenport & Prusak, 1998, p. 5)

From a comprehensive viewpoint, knowledge is "an economic asset with a social structure resulting from the interaction between technological and organizational factors, providing the institution with the capacity to perceive excellence and strive towards achieving it. Two types of knowledge can be distinguished: tacit knowledge, which exists within individuals' minds and is acquired from the accumulation of previous experiences and skills, and explicit knowledge, related to information that is stored in the institution's archives and accessible (Blackler, 1995, p. 1024)

It is necessary to differentiate between data, information, and knowledge. Data consists of raw facts without meaning until processed, potentially unorganized and independent raw materials. Information, however, is processed data through collection, categorization, organization, and classification to yield useful outcomes. Knowledge is a blend of concepts, ideas, rules, and procedures that enable performing tasks and making decisions, (TAOUMI & T, 2005) The following figure illustrates the differences between data, information, and knowledge:



of knowledge and assets related to intellectual capital, processes, capacities, and personal and organizational capabilities, in a manner that achieves the greatest possible positive impact on competitive advantage outcomes". (Abu Farda, 2004, p. 8) It can also be said that knowledge management refers to "the processes that help organizations generate and acquire knowledge, select, organize, use, disseminate, and transform the essential information and experiences they possess, which are necessary for various managerial activities such as decision-making, problem-solving, learning, and strategic planning

1.2. Knowledge management objectives: (Hajric, 2018, p. 25)

1. Knowledge management works to develop the social, cultural, and organizational aspects within business organizations in order to enhance their effectiveness.
2. Knowledge management contributes to supporting discussions related to government policies and procedures concerned with developing the infrastructure of the knowledge society.
3. Knowledge management aims to spread awareness of its concept and applications among practitioners, and to strengthen the use of its principles while benefiting from the opportunities associated with it.

4. Knowledge management seeks to prepare databases and practical guides for activities related to the knowledge society and to make them available to beneficiaries.
5. Knowledge management enables the business community to be represented within organizations in all matters related to issues and topics of the knowledge society.
6. Developing standards and criteria for qualifying in knowledge management contributes to improving the professional and educational levels of specialists in this field. (Abdul Sattar, 2012, p. 28)

1.3. Knowledge management processes: The processes of knowledge management can be summarized as follows:

1.3.1. Acquiring and storing knowledge:

The acquisition and storage of knowledge: Knowledge is acquired from both internal and external sources. Internal sources include the sharing of experiences and practices, as well as dialogue and communication between work groups and customers, which leads to the creation of organizational knowledge (Zanjani, Rouzbehani, & Dabbagh, 2008, p. 52). External sources are brought in or accessed by knowledge management from outside the organizational boundaries, supported by technological developments, marketing intelligence activities and their analysis, and the expertise of specialists. Case studies, rules, and instructions are then stored and added to the stock of knowledge that the organization already possesses in the minds of many employees, while ensuring that the stored knowledge can be maintained, searched, and retrieved when needed. (Abdul Sattar, 2012, p. 47)

1.3.2. Knowledge transfer: Providing the right knowledge to the right person at the right time is the essence of the distribution process, and information technology is used to transfer and disseminate knowledge. It also includes passing experiential knowledge on to new employees through training and mentoring or coaching techniques. (Gao & Bernard, 2018)

1.3.3. Application of knowledge: The process of applying knowledge enriches the associated experiences and expertise and continually transfers knowledge to new and evolving horizons and fields through its implementation in real-world practice. (Aishaouch, 2018, p. 58)

2. Competitive advantage:

2.1. The concept of competitive advantage:

Before defining competitive advantage, it is necessary to define competitiveness, which is the degree to which an organization succeeds in achieving its goal of maintaining its competitive positions and building stronger competitive positions compared with similar organizations, through reducing errors and defects in

production, increasing market share and output, and emphasizing innovation and sales growth.

Competitive advantage is the continuous ability to confront various sources of competition in a changing environment, which requires achieving a level of superiority that allows the organization to preserve and sustain this competitive capability. (Porter, 1993, p. 84)

Maali Haidar defines it as the organization's ability to formulate and implement a strategy that places it in a better position than other organizations operating in the same field. (Philip , Bernard, & Delphine , 2004, p. 265)

It is also the organization's ability to implement production processes that competing organizations do not use, and that these organizations are unable to imitate because they cannot obtain the necessary resources. (Porter, *Competitive Advantage: Creating and Sustaining Superior Performance*, 1985, p. 32)

2.2. Dimensions of competitive advantage: Any organization can differentiate its products by applying one or more of the following foundations.

2.2.1. Quality: Quality starts from the customer, whether through the products purchased or the services provided to them, including after-sales services that satisfy their needs, and quality criteria differ from one customer to another, as they are determined by the price and quality of the products offered by competitors in the market. Therefore, quality is regarded as an important strategic standard to be achieved, and thus it is considered one of the core tasks of the organization. (Dale H, 2013, p. 25)

2.2.2. Creativity: Organizational creativity is viewed as the ability to generate and develop new, applicable ideas and to come up with innovations that add greater and faster value, enabling the organization to offer a product superior to that of its competitors in the market. Thus, creativity has come to be considered an important source of competitive advantage and a strategic variable, as it provides the organization with strength that continually drives it to achieve additional competitive benefits. (Amabile, 1996, p. 35)

2.2.3. Efficiency :Efficiency expresses the extent to which actual outputs match the standard or expected ones, and is embodied in the optimal use of the available resources involved in the organization's operations and activities, including human, material, financial, and information resources, in order to obtain the best possible results. Efficiency in each element is reflected in its optimal utilization, by comparing the value of the output with the value of that resource; however, achieving efficiency requires broad commitment at the organizational level and the ability to secure close cooperation among the various functions. (Richard M, 1977, p. 35)

Second: The applied aspect

A questionnaire was developed to measure the effect of knowledge management processes on the competitive advantage of Djezzy Telecommunications Company in Algeria, and the questionnaire is described as follows: it was divided into two parts.

- **The first part:** includes the characteristics of the study sample: gender, age, educational level, and number of years of experience.
- **The second part:** contains the questionnaire items, which are divided as follows: statements related to the independent variable (knowledge management processes), comprising 25 items distributed as:
 - 16 items on the variable of knowledge acquisition and storage, 6 items on the variable of knowledge transfer, and 3 items on the variable of knowledge application;
- and statements related to the dependent variable (competitive advantage), comprising 12 items distributed as follows:
 - 06 items are related to the dependent variable "service quality," 04 items are related to the dependent variable "creativity," and 02 items are related to "process efficiency."

For the purpose of analyzing the data and processing it statistically, the Statistical Package for the Social Sciences (SPSS) was used, in order to apply a set of statistical methods and measures that help in analyzing and describing the characteristics of the sample, identifying the respondents' orientations, and determining their effect on the research variables. A five-point Likert scale was used, consisting of five options scored from 01, the lowest degree "strongly disagree," up to 05, the highest degree "strongly agree." To determine the length of the cells of the five-point Likert scale (its lower and upper bounds), the range was calculated by subtracting the smallest value from the largest value in the scale and dividing by 5, giving a cell length of 0.8; this value was then added to the smallest value on the scale (1) to obtain the upper limit of the first cell, and so on for the remaining cells.

Response direction	Categorical domain
Strongly disagree	1-1.79[[
Disagree	[1.8-2.59[
Somewhat agree	[2.6-3.39[
Agree	[3.4-4.19[
Strongly agree	[4.2-5]

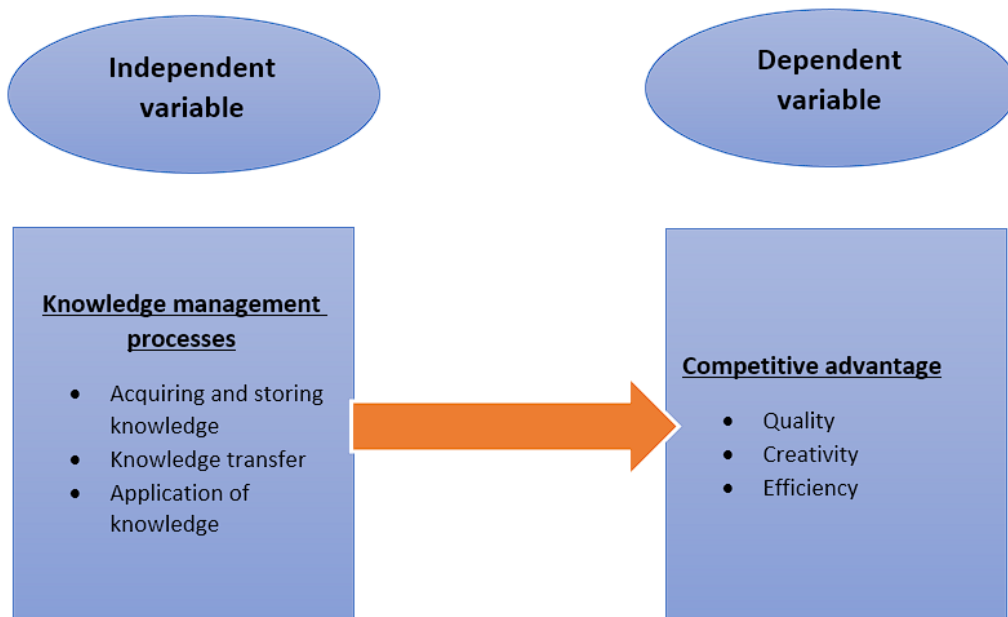
Moreover, a set of statistical tools and methods was employed, including measures of central tendency, measures of dispersion, and statistical tests, in order to process the collected data, and these methods are represented in the following.

- **Percentages:** This is used to determine the characteristics of the sample.
- **Arithmetic mean:** It is calculated according to the following formula:
- **Standard deviation:** It measures the degree of closeness of the opinions of the study sample members, and is calculated using the following formula.

$$\bar{X} \quad \delta = \sqrt{\delta^2} = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}}$$

- Simple linear regression analysis to measure the effect of the independent variable on the dependent variable.
- Multiple regression analysis to measure the effect of the independent variable on the dependent variable.

Study model



1. Presentation and analysis of the study results:

Table (01): Characteristics of the study sample

Study variables	Variables	number	Percentage
Sex	men	38	66.67%
	women	19	33.33%
Age	From 20 to 30 years old	17	29.82%
	From 30 to 40 years old	18	31.57%
	More than 40 years	22	38.60%
Educational level	Secondary level	8	14.00%
	University level	34	59.64%
	Postgraduate studies	15	26.331%
Professional experience	under 5 years	6	10.25%
	From 5 to 10 years	25	43.86%
	From 10 to 15 years	18	31.57%
	More than 15 years	8	14.00%

Source: SPSS program outputs

The results presented in Table (01) indicate that the study sample is predominantly male, as men represent 66.67% of respondents compared to 33.33% women, which reflects a clear gender imbalance in favour of males within the surveyed group. With respect to age, the distribution shows a tendency toward older age categories, where 29.82% fall within the 20-30 years bracket, 31.57% between 30-40 years, and 38.60% are above 40 years, suggesting that a considerable proportion of participants are in an advanced professional stage. In terms of educational attainment, the majority of respondents (59.64%) hold a university degree, while 14.00% possess secondary-level education and 26.33% have completed postgraduate studies, indicating that the sample is generally well educated and capable of understanding the technical aspects of the questionnaire. Concerning professional experience, only 10.25% of the sample have less than five years of experience, whereas the largest share, 43.86%, report 5-10 years, followed by 31.57% with 10-15 years and 14.00% with more than 15 years of experience, which demonstrates that most participants enjoy medium to long tenure in their professional fields.

1.1. Answer to the first question: which concerns the perceived level of practicing knowledge management processes among the employees at Djezzy Algerian Telecommunications Company. The answer to this question is presented in Table 02, as shown below.

Table (02): Arithmetic means and standard deviations related to knowledge management processes

Knowledge management processes	Arithmetic average	Standard deviation	level
Acquiring and storing knowledge	3.92	0.455	high
Knowledge transfer	3.85	0.566	high
Application of knowledge	3.77	0.622	high
General average	3.84	0.534	high

Source: Prepared by researchers using SPSS outputs

The results in Table (02) show that respondents perceive all knowledge management processes to be practiced at a high level within the organization, with a general mean of 3.84 and a standard deviation of 0.534. Acquiring and storing knowledge records the highest mean (3.92; SD = 0.455), indicating that procedures related to capturing and retaining knowledge are relatively more established and consistently applied. Knowledge transfer also attains a high level (mean = 3.85; SD = 0.566), which suggests that mechanisms for sharing knowledge among employees operate effectively, though with slightly more variability in responses. The application of knowledge, while still rated high (mean = 3.77; SD = 0.622), has the lowest mean and the greatest dispersion, implying that translating available knowledge into practice is comparatively less uniform and may represent the main area where further improvement efforts should be focused.

1.2. Answer to the second question: which concerns the perceived level of the dimensions of competitive advantage among the respondents at Djezzy Algerian Telecommunications Company. The answer to this question is presented in Table 03, as shown below.

Table (02): Arithmetic means and standard deviations of the dimensions of competitive advantage

Dimensions of competitive advantage	Arithmetic average	Standard deviation	level
Quality of service	3.88	0.555	high
Creativity	3.77	0.456	high
Efficiency	3.93	0.522	high
General average	3.86	0.484	high

Source: Prepared by researchers using SPSS outputs

The results in this table indicate that all dimensions of competitive advantage are perceived at a high level, with a general mean of 3.86 and a standard deviation of 0.484, suggesting overall strong competitive positioning with relatively consistent

responses. Efficiency shows the highest mean (3.93; SD = 0.522), implying that respondents particularly recognize the organization's ability to use its resources and processes effectively.

Quality of service also records a high level (mean = 3.88; SD = 0.555), which reflects a favorable evaluation of how well the organization meets customer needs, although the slightly higher dispersion indicates some variability in perceptions. Creativity has the lowest, yet still high, mean (3.77; SD = 0.456), suggesting that innovative practices are present but may be comparatively less developed than efficiency and service quality, and therefore represent a potential priority area for strengthening the firm's competitive advantage.

2. Testing the study hypothesis:

H1: There is a statistically significant effect ($\alpha \leq 0.05$) of knowledge management process practices on the competitive advantage of the respondents at Djazzy Algerian Telecommunications Company

Table (4): Regression analysis results of the effect of knowledge management processes on competitive advantage at Djazzy Algerian Telecommunications Company

Source	Sum of squares	Degrees of freedom	Mean squares	Calculated F value	Significance level F	Coefficient of determination R ²	Correlation coefficient R
Regression	0.664	3	0.221	5.379	0.003*	0.233	0.483
Error	2.811	53	0.041	-	-	-	-
Total	2.845	56	-	-	-	-	-

Source: Prepared by researchers using SPSS outputs

The ANOVA results in Table (4) show that the regression model explaining competitive advantage through knowledge management processes is statistically significant, as indicated by the F value of 5.379 with a significance level of 0.003,

which is lower than 0.05. This confirms the existence of a statistically significant effect of knowledge management practices on competitive advantage among employees of Djezzy Algerian Telecommunications Company.

The coefficient of determination R^2 equals 0.233, meaning that approximately 23.3% of the variance in competitive advantage can be explained by the combined effect of knowledge management processes included in the model, while the remaining variance is attributable to other factors not captured in this analysis. The correlation coefficient R of 0.483 indicates a moderate positive relationship, implying that higher levels of implementing knowledge management processes are associated with higher levels of perceived competitive advantage in the company.

There is a statistically significant relationship between knowledge management processes and competitive advantage among the respondents at Djezzy Algerian Telecommunications Company at the significance level of ($\alpha \leq 0.05$). Consequently, the research hypothesis is accepted and the null hypothesis is rejected.

Conclusion:

There is a statistically significant relationship between knowledge management processes and competitive advantage among the respondents at Djezzy Algerian Telecommunications Company at the significance level of ($\alpha \leq 0.05$). Consequently, the research hypothesis is accepted and the null hypothesis is rejected.

➤ **Main results:**

1. Knowledge management processes (acquisition and storage, transfer, and application of knowledge) are practiced at a generally high level in Djezzy Algerian Telecommunications Company.
2. All dimensions of competitive advantage (service quality, creativity, efficiency) were evaluated at a high level by respondents.
3. Efficiency recorded the highest mean among the competitive advantage dimensions, indicating strong effectiveness in using organizational resources and processes.
4. There is a statistically significant effect of knowledge management processes on competitive advantage, meaning better implementation of these processes is associated with stronger competitive positioning.

➤ **Key recommendations:**

1. Strengthen the practical application of knowledge in daily tasks and decision-making, as this dimension appears slightly weaker than acquisition and transfer.
2. Promote creativity by encouraging innovative ideas, supporting experimentation, and rewarding knowledge-based improvements in services and operations.

3. Institutionalize knowledge management through formal policies, continuous training programs, and digital systems that facilitate capturing, storing, and sharing knowledge.
4. Monitor and evaluate knowledge management indicators regularly to ensure their sustained contribution to service quality, efficiency, and long-term competitive advantage.

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