

Digital applications and their role in Improving Services in a Public Utility: A Case Study of University Mohamed Boudiaf M'sila- Algeria

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Received: 17-03-2023

Accepted: 11-09-2023

Published: 30-09-2023

Abstract:

The emergence of information revolution, its terrible spread in the globe and the rapid and significant development that modern technologies knows in our current era, in addition to other economic, social, political, cultural and professional factors, have prompted various facilities, bodies and departments to carry out digitization projects related to their activities and administrative deals within their internal and external environment, to improve public service and modernize management ways.

This study aims to shed light on a digitization project in one of the most important public facilities of a legal nature represented in the free service provided to thousands of clients with it, which is the University Mohamed Boudiaf in M'sila. As well as to explore the motives that led to this sensitive utility to approve the digitization project, its intended goals and its reflection on the performance of management and the workers at the University of M'sila, in addition to knowing the stages of the digitization project and its future prospects.

The research ended with a summary and conclusions that attempted to shed light on the theoretical frameworks of the subject and the applied dimensions of the public utility subject of this study.

Keywords: Digitization, Improvement, Services, Utility, Public.

Jel Classification Codes: O32, O33, H1, L32, L44

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1. INTRODUCTION

The world has witnessed in the recent decades, especially in the third millennium, a huge revolution in most scientific and technological fields, which has made a difference in the daily life of Mankind, and has become a key factor in the development in every aspect of our life of economically, socially, politically, culturally, and professionally...etc.

It also offers the element of speed, accuracy and mastery in providing the service, organizing the administrative workflow, simplifying administrative procedures and improving the relationship between individual, citizen or customer and the department or facility. In this context, bringing the administration closer to the citizen and facilitating his access to its services is an effective factor for achieving sustainable development and making the administration respond to the requirements of transparency, effectiveness, integrity and responsiveness to new ideas and aspirations.

Thus, the administration, in its modern concept, has contributed to strengthening and establishing transparency by allowing the citizens to exercise their right for free access to information (such as the right to see legal texts, regulations, deliberations and various information and reports, through websites, platforms and digital applications via modern and advanced electronic networks), knowing that modern management depends on scientific methods to solve administrative problems, make decisions and motivate to speed up performance.

Along with these global developments, Algerian administration still encounters many deficiencies and incoherence in its structural, functional and even legal side which makes citizens' aspirations remain out of reach. Such a situation, the way the administration works needs to be reviewed and a clear strategy has to be adopted to get rid of the window office logic and the logic of traditional management, which has resulted in many negative practices such as bureaucracy, bribery and other manifestations of administrative corruption, whereas peoples, getting better educational and cultural levels, have become more aware of their daily problems and social needs, besides, the increasing number of organizations and associations defending their rights and interests and claiming for quality, transparency and speed of performance as crucial foundations of good governance. In the foregoing context, we aim, through this study, to identify the progress of the University of M'sila in the course of modernizing its divisions and administrative departments digitizing them, and to what extent it reflects on the effectiveness of services provided to its employees and its customers.

In the light of the aforementioned, we can ask the following questions:

- To what level the use of digitization applications is adopted at University in M'sila?
- How different performance is in administrative services provided at University M'sila?
- Does digitization help improve the services of University in M'sila?

Why is this study important?

The study seeks to clarify and highlight the impact of digital technology on a continuous reliable functioning of the public utility and the performance of its employees, as the digital administration seeks to improve the organization's potentials to adapt to innovations and keep up with developments to solve problems hindering the good functioning of public facilities, by employing contemporary theories and behavioral techniques in mobilizing collective efforts and assimilating and reformulating organizational civilization,

and relying on research, studies and experts using digital management to develop plans and follow up their implementation.

Furthermore, modern administration relies on creativity, innovation, intelligence and the ability to visualize, especially in running public facilities that needs punctuality and accuracy. This study also has a scientific significance that arises from the importance of digital management in administrative organizations in general and public facilities in particular. The modern electronic management also targets to develop the employees' skills, unleash their energies and free their knowledge. Therefore, through this study, we look forward to contribute to value the strengths and to enhance the weaknesses that the public facilities management suffers from.

In concise, the importance of the study consists on dealing with the persisting questions forming its problematic: to what level the use of digital application is adopted how does it influence the improvement of services University of M'sila?

Purposes of the study: The current study seeks to:

- a) Identify the reasons and motives that led the University of M'sila to digitize its management documents and what are expected achievements?
- b) Give a clear image of the University of M'sila digitization process.
- c) Discover the strengths and weaknesses to be improved in the information systems and applications used by the university in the digitization process.
- d) Explore to what extent international standards and specifications are respected in the digitization process, through the acquisition of equipment as well as the project implementation.
- d) Provide some suitable suggestions based on the results to be reached at the end of the study.

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Study hypotheses: To answer the problem of the study, the following hypotheses were formulated:

- **Hypothesis I:** For the digital application (Moodle), a positive relationship of moral and strong significance with the ranking of the University of M'sila.
- **Hypothesis II:** For the digital application (Moodle), a positive relationship with moral and strong significance with the training of higher education teachers at University of M'sila.

- **Hypothesis III:** For the digital application (Mooc), a positive relationship of moral and strong significance with the ranking of the University of Mohamed Boudiaf in M'sila.
- **Hypothesis IV:** For the digital application (Mooc), a positive relationship with strong and moral significance with the training of teachers of the university of M'sila.
- **Hypothesis V:** For the digital application (Visibility), a positive relationship of moral and strong significance with the ranking of the University of M'sila.
- **Hypothesis VI:** For the digital application (Visibility), a positive relationship of moral and strong significance with the training of teachers of the University of M'sila.
- **Hypothesis VII:** For digital application (E-mail services), a positive relationship with moral and strong significance with the ranking of the University of M'sila.
- **Hypothesis VIII:** For digital application (E-mail services), a positive relationship of moral and strong significance with the training of teachers of the University of M'sila.

Setting concepts of study variables:

- **We mean by Moodle application:** the open source digital education platform through which lectures and lessons are published, and in it an electronic side to open accounts for teachers according to the position, as well as students, and through which communication between teachers and students as a pedagogical side is aimed at improving the education and communication service.
- **We mean by Mooc application:** the digital visual application through which it is published the video lessons recorded by teachers of the University of M'sila. After the lessons were recorded in the university studio (montage/ video making), begins the process of publishing it on the internet through the university link to be used and exploited by any user, including the public, as this process figures under the social responsibility of the university.
- **We mean by Visibility:** It is a university visibility that contains statistics on the extent of development and increase in number of teachers' accounts to publish their research, scientific and academic works on the Research Gate and Google Scholar platforms, by endowing the university and coaching the teachers to open and follow their accounts.
- **E-mail services application:** The electronic application ran by the university in order to open professional electronic accounts for university teachers, as well as doctoral students, for use in all their research and scientific work and to use it to open accounts in other scientific digital platforms at the local and international level.
- **University Ranking:** It is based on indicators accredited by international laboratories to classify universities at the international and local levels, such as the indicators approved in this study like Web Webometrics and Scholar Webometrics, approved in the Spanish classification laboratories.
- **Dspace:** It is a digital platform belonging to the University of M'sila, in which all research, theses and researches are published and discussed, for the benefit of researchers.
- **We mean by the results of training:** training teachers of University of M'sila of all disciplines in order to master the Moodle platform, how to publish lessons in it and deliver it to students in PDF format to take advantage of it via the platform in order to gain time and effort.

Previous studies:

- **Study of BACHIOUA Salem (2009), Digitization in Algerian University Libraries:** A case study of the University Central Library "Ben Youcef Ben Khedda", article published in "Cybrarian Journal", edition 21, December 2009. This study aims to describe the technical system of digitization as a product of the human social system in general, as a trend that is increasing day by day in our libraries, as a phased step required by the data and accelerating variables. This research seeks to make these technical solutions a building block in the edifice of "cognitive construction" of our documentary and information institutions, and an appropriate opportunity to provide the beneficiaries (members of this society) with the necessary, appropriate and constructive knowledge, in order to build the adequate knowledge repository for the Algerian university executives, who will employ it in leading the development wheel, on the one hand, and in an effort to repulse the causes of "unjustified failure" while dealing with these technical solutions, on the other hand.

- **Study of Ehab Farouk Mesbah AL ADJEZ (2011), the role of organizational culture in activating the application of electronic management. An applied study on the Ministry of Education and Higher Education - governorates of Gaza,** Master's thesis, specialty of Management, Islamic University, Gaza. This study aimed to identify "the role of organizational culture in activating the application of electronic management" in the Ministry of Education and Higher Education - Gaza governorates. The researcher followed the descriptive analytical approach, and resorted to collecting primary data through the questionnaire as a main tool for research. A comprehensive inventory method was used where the questionnaire was distributed to all administrative employees dealing in the electronic management method in the Ministry of Education and Higher Education - Gaza governorates of (294) employees, (247) questionnaires were retrieved, and after examining the questionnaires, (6) questionnaires were excluded due to the failure to fulfill the conditions required to answer the questionnaire. Thus, the number of questionnaires under study is 241, with a rate of (81.9). This study concluded to results, the most important of which are:

- 1- There is a statistically significant relationship between the elements of organizational culture (organizational values, organizational beliefs, organizational norms, organizational expectations) and the activation of the application of electronic management in the Ministry of Education and Higher Education in the governorates of Gaza, and this relationship was direct.
- 2- The employee is not allowed to make decisions related to his work without referring to his direct superior within the electronic work environment.
- 3- The distinguished employees in building and publishing the electronic work in the Ministry are not awarded or motivated.
- 4 - Employees are not given the opportunity to participate in the development of systems and mechanisms for working on the electronic program they use.

- **Study of Imane Samir OUDAH (2012), The effect relationship between the quality of electronic services and the reputation of universities. Study on a sample of Jordanian private universities.** Master's thesis in Electronic Business, department of Electronic Business, faculty of Business at Middle East University. This study aimed to identify the impact relationship between the quality of electronic services for websites in private Jordanian universities and the reputation of these universities. Where the quality of the website has been adopted through the design of the website (comprehensive, aesthetic), the quality of information (the novelty of the information, its accuracy), the good quality of services (reliability, response), as well as reputation variables included (admiration, respect, and contentment). This study showed that there is an impact of the quality of university websites on the reputation of these universities.

- **Study of Dr. FARTAS Fatiha (2016), the reality of modernizing public administration in Algeria through the application of electronic management and its role in improving the service of citizens.** Article published in the New Economy Journal, No. 15, Volume 02, 2016, University of Khemis Meliana. This study aimed to select and propose a set of measures to improve public services by simplifying decentralized administrative procedures in issuing documents and generalizing the use of electronic management in public institutions and departments with a view to modernizing them. These measures are part of the new government strategy, with the aim of humanizing the administration by drawing closer to the citizen and ensuring the quality of public services.

- **Study of Dr. CHOUAOU Abdelbasset, BELIANE Messaoud (2018), The reality of digitizing the archive of the human resources department at the Directorate of Education in the province of Constantine - Algeria.** An article published in the Arab Journal of Archives, Documentation and Information, Q 22, edition 43 (June 2018). This study aimed to find out the reality of the project of digitization of the files of the human resources department at the Directorate of Education in the province of Constantine, and to explore the motives that led the Ministry of Education to approve the digitization project, its desired goals and its reflection on the performance of the Education Directorate, in addition to knowing the stages of the digitization project and its future prospects.

- **Study of Saeed ullah Jan, Assistant Professor ,HoD, Department of Library and Information Science, Sarhad University of Science and IT Peshawar (2013), Status of Library Automation and Digitization in the Public Sector Universities of Balochistan Pakistan. A case study of Pakistan.** Article published in the Library Association, Pakistan. This study aimed to know the new trends of readers, frequenters and those interested in university libraries, including students, teachers and university executives in Baluchistan, Pakistan, after automating and digitizing the library. It became clear to researchers through this study and after the survey that there is a new taste and flavor that motivates readers to search for references and sources in a short time by modern means stimulating research and exploration, and this after the reduction of many obstacles that were facing readers, and therefore efforts to carry out the process of automatic scanning of references and books helped to automate and digitize the library, removed many obstacles and challenges and helped to obtain data and information in automatic ways and less time. Nevertheless, the researchers believe that more efforts should be made to develop the library more in order to satisfy the readers and researchers more, as the researchers believe that the digitization process is more than a necessity in line with the increasing requirements of societies.

- **Study of Florence Dedzoe - Dzokotoe Plockey, PhD Student in Endogenous Development Assistant Librarian, University Library University for Development Studies, Tamale, Ghana (2014), The Role of Ghana Public Libraries in the Digitization of Indigenous Knowledge :Issues and Prospects ,The Journal of Pan African Studies, vol.6, no.10, June 2014.** This study aims to research issues, prospects and the role of public libraries in Ghana in digitizing local knowledge for future generations and making them available to the general public, using mainly a literature review and an interview with the Director of the Ghana Public Library Service. A lack of human and financial resources and infrastructure, internet connectivity, and copyrights was revealed, among other things, facing a major challenge in digitizing indigenous knowledge in Ghana, then the study calls for training of public librarians, conducting research based on an internal approach, providing infrastructure and providing a policy framework that will enhance the process of converting information into digital format.

Time and space limits: A field study at the University of M'sila, on the project of digitization applications from November 26th, 2018 to January 20th, 2020.

Structure of the study: This study deals with the definition of digitization and public utility, as well as the definition of public service and how to improve it using modern and advanced technologies, and also the relationship between digitization and improving public service. The theoretical aspect was dropped on a field study at the University of Mohamad Boudiaf in M'sila, and in the conclusion, the most important results are presented with some recommendations.

2. Definition of digitization, term definition:

"Digitization" is a modern term that concepts and standards varied around, and a difference raised about the definition of English terms "Digitalization, Digitization, Digital Transformation". In some areas, the distinction between it was clear, while confusion appeared in other areas. Perhaps it is possible to say "Digitization" with the weight of action verb Digitize; while Digitalization can be translated into "punctuation". During the last fifteen years, the average usage of the term "punctuation" has decreased, while the use of the term "digitization" has increased, and the use of the term "digital transformation" has escalated in recent years.

"Digitization" can be defined as the representation of analog data (found in documents, graphics, microfilms, photographs, electronic and sound signals, health records, locations, ID cards, government and bank data) with a digital series of "bits" and "bytes", for processing easily and effectively with computing algorithms.

"Digitization" is also the use of digital technologies to change (Sultan Ahmed, 2020) business model's operations, for providing new opportunities for wealth generation and sustainable development. "Digitization" can also be seen as converting processes into digital copies and eliminating barriers between people, information and communication technologies using artificial intelligence techniques to achieve economic and social returns with higher efficiency and productivity.

Digitization was also known as a sophisticated reproduction process of converting the document of any type and container into a digital chain. This technical work is accompanied by an intellectual and desk work for organizing the post information, in order to index it, schedule it and represent the digitized text content.

The Canadian Heritage Information Network (RCIP) (RCIP, 2020) defines the digitization process as the process by which digital images (that means computer content) are created from a paper document, or a three-dimensional entity, digitization is therefore the technology of converting the original documents available on a digital medium or microfilm to digital images, and documents can be digitized in the form of an image or text.

2.1. Targets of digitization:

Why do we digitize? (Mehri, 2006, pp 82-83). This question calls for defining the goals that we seek from behind the digitization process, which are several goals distributed on the following levels:

- **Save:** As digital media is less prone to damage and loss, compared to paper media that are exposed to several risks.
- **Storage:** As for storage, if a compact disk can store thousands of pages, not to mention the digital media that saves a lot of space and stores millions and billions of documents and information from virtual storage media on networks.
- **Fast recovery and ease of use:** Digital systems are very fast to be recovered, as when office and documentary materials are converted to digital format, we can recover it in seconds instead of several minutes.

In addition to other goals which are:

- Communicate information to the beneficiary without human intervention.
- Material profit by selling the digital product either on CD or making it available online. The profit here is not intended to trade as much as to obtain a financial return covering a margin of cost to ensure continuity of operations.

2.2. Digital (networked) organizations:

Networked organizations seek to limit the idea of an organization that relies on the rigid hierarchy of information flow, powers and initiatives, and to replace it with an organizational structure that relies on semi-independent or independent work units, that have the full powers, responsibilities or needed resources to do business, present initiatives and implement it. These units are called empowerment workforces, which are self-managing working groups. In order to do this, they are granted the powers and capabilities to make the necessary decisions to confront problems, which were only a tradition of the managers' competence.

2.3. Comparison between hierarchical organizations and networked organizations:

Table 1. Comparison between hierarchical organizations and networked organizations

Table 1. Table title (this is an example of table 1)

Criteria	Hierarchical organizations	Digital (networked) organizations
Work methodology	Accurate methodology	There is no specific methodology
	Coherent, stable structure	Flexible, variable build
Regulatory environment	Driving firmly and severely	Empowerment leadership
Leadership	Control and tuning	Sharing and subjective
Control	Direct and material	Indirect and promotional
Stimulus	Of the company costs	Of the company's assets
Human Resources	Private (for managers)	Participatory (for everyone)
Information	Hierarchical	Oblate, astral
Organization	Avoid taking risks	Risk management
Taking the risk	Individual contributions	Team and group contributions
Work teams		

Source: (Heinz, 2004, p 266)

3. Definition of improving the public service and its types.

At this point, we will look at the definition of improving public service, and types of public service.

3.1. Definition of improving the public service:

First, what is meant by improving?

- **Linguistic meaning:** improving is defined as: the name is built on activation, and likewise the costs of things, it improves anything that it does, and the thing will improve, that is considered good (Al-Ansari, 1997). We also find that the Arabs use the term "good" as the opposite of the term "ugliness". (Al Johari, 1990) We say "improved something better", that is, its decoration, and it did well to it and by it.

- **Terminological meaning:** The terminological meaning of improvement relates to the improvement of the public service. Consequently, the term public service consists of updated changes at the level of bodies and institutions based on providing this service as well as its methods of work, with a view to better managing it. This can be done by using mechanisms to improve administrative performance in general, whether in terms of setting policies, building strong institutional structures and decentralization or distributing powers and managing human resources. In addition to the use of communication and information systems, we find that the United Nations Development Program (UNDP) defines improving public service by adopting a term synonymous with the term "improvement", which is the term "reform", by saying that: "Public service reform means building an efficient and effective public sector, that is capable of serve the needs of the masses. (Brown & Ribucci, 2009)

Second: What is meant by public service?

The term public service is flexible enough to make it more than one meaning. As we start with the definition of "service", where **Philip Kotler** defined it as "an activity or achievement related to a reciprocal process provided by one party to another, and it is an intangible basis that does not result in any ownership, that its production or presentation may be related to a physical product or not". In the light of this definition, it can be said that the service is intangible activities, (Achour, 2010, p 60) that take place through a reciprocal process of benefits between the two parties, and may be associated with a physical product or vice versa, with the inability to transfer ownership as the field of services, even if it is united in the public capacity which means the singularity of the public authorities in the state as a general origin by providing these services to their applicants, but they differ in terms of their nature, shape and body in charge of providing it. The public service is an activity that serves the public interest and is guaranteed by public administrations.

Third: The overall meaning of improving public service.

They are the necessary needs to preserve a person's life and secure his welfare, which must be met in relation to the majority of the people and adhere to the method of providing it, provided that the interest of the majority of society (Bouamama & Regad, 2014, p 40) is the main driver of every policy in services affairs with the aim of raising the standard of living for citizens.

While we find the Algerian legislator has known to improve public service through the field of audiovisual, according to law 14-04 related to audiovisual dated on February 24th, 2014 through article 07 thereof in the sixth paragraph as: "It is the audiovisual communication activity of public benefit that it shall be guaranteed by every corporate person operating the audiovisual communication service, while respecting the principles of equality, objectivity, adaptation and continuity."

2.2. Types of public services.

The economic and social developments have led to a multiplication of the requirements of citizens to obtain more and more quantitatively and qualitatively services, which led to the emergence of many types of services approved by the state in order to achieve and satisfy the needs of individuals (Abdelhamid, 2001) as there are different divisions of public service, including:

- Essential services for community members.
- Services of social or cultural benefit.
- Costly capital services, the benefits of which are not limited to the current generation, but extend to future generations.

According to this division, the types of public services can be listed as follows:

First: the division of services according to the degree to which the procedures for obtaining it are complicated: (Badran, 2004)

1) Simple public service: It is the governmental service provided to the beneficiary through a single administration or institution, such as obtaining a certificate of judicial record, where these operations are presented in one place and the result is obtained from the same place.

2) Complex public service: It is a complex set of simple services, which together represent the final value of the citizen, such as the marriage registration service, which requires different simple services as follows:

A - Obtaining a proof of identity document for the husband and wife.

B - Obtaining a documentary proof from the civil status.

C- Obtaining a medical examination.

D - Issuing the marriage certificate.

Obtaining the identity document for a citizen who wants to register his marriage contract does not constitute the ultimate value for this citizen, just as obtaining the marriage certificate itself. The combined service is usually the responsibility of more than one governmental body.

Second: Division of public services by type.

1) Public services related to state sovereignty: They are services related mainly to the traditional role of the state in the areas of justice, security, national defense and public finance.

2) Public services of a social and cultural nature: They remarkably evolved since the mid-nineteenth century such as: education, health, social assistance ... etc.

3) Services of an economic nature: Which are generally called public industrial or commercial services, these services appeared in the aforementioned form in the twentieth century with the noticeable development of the state's role in economic life and in achieving the welfare of the citizen in his basic needs in the field of transportation, communications, energy ... etc. (Ali Hilali, 2002) The government activity that is continuously attributed to the provision of public services to satisfy the general needs of citizens is not intended to achieve profit in this type of project, as resources are not usually allocated in public services projects in order to provide necessary goods and services for citizens without regard to their ability to pay. However, the absence of the profit target in these projects that are carried out by government units does not mean that they are operating at a loss, but there is a lack of profit scale resulting from the comparison between expenditures and revenues.

4. Public utility and its types.

4.1. The concept of public utility:

Public utilities in general are projects established by the state and managed by the executive authority or administration with the aim of achieving the general needs of individuals such as health and education, (Abu Al-Lail, 2000) where the idea of a public utility is considered one of the most common and vague concepts in administrative law. However, despite the multiplicity and diversity of definitions, jurisprudence and the judiciary usually resort to defining the concept of public utility to use two basic criteria: (Baali, 2002) the organic criterion and the objective criterion, and then touch upon the agreed definition.

First: the organic criterion (formal): This criterion is considered for the authority or administrative body that performs the public utilitarian utility activity, and not the activity carried out by the body. Based on this formal standard of the public utility, it can be said that : defense, security, health and education utilities are public utilities in the formal sense, (Kanaan, 2006) if we look at their administrative bodies or organs, which are : the armed forces, the public security body, the health ministry and its hospitals, and educational institutions as bodies that undertake these activities, it becomes clear to us that this meaning has focused on the general organization that runs the public utility, and on the organic link that links this organization to the administrative body of the state.

Second: The objective criterion (functional, material):

This criterion considers the nature of the activity exercised by the administration, so that every administrative activity aims to satisfy general needs that achieve the public interest. Based on this objective meaning it can be said: (Hafez, 1963-1964, 9 18) The defense, security, health and education utilities are public ones if we look at the different needs and services aimed at fulfilling it in the fields

of defense, security, health and education. One of the most important definitions of the public utility that focuses on this criterion is the definition of "**Leon Dogie**" that the public utility is: "Every activity must be commissioned, organized and assumed by the rulers, because carrying out this activity is indispensable for achieving social solidarity and its development, so that it can only be fully achieved through the intervention of the ruling authority.

Third: The agreed definition: Through the previously mentioned definitions, we have noticed the difficulty of the jurists' agreement to give an inclusive definition to determine what a public utility is, and among the definitions of a public utility that combine the two criteria, **the following definitions:**

The definition of "**Roland**" which considers that the public utility: (Hafez, 1963-1964) "It is considered a beneficial project, subject to the hegemony or supreme management of rulers, it aims to satisfy the public needs of the people, due to insufficient or lack of private projects that achieve these purposes, and is subject to a minimum of special rules i.e. to a special and exceptional law system.

As for Dr. **Ammar Awabdi**, we find that he has followed the path of Professor Abd Rabbo Abd Al-Samad in merging of the two criteria, and this is evident from his definition, as he sees that: "Every project run by the state itself or under its supervision to satisfy the public needs in a way that fulfills the public interest. From among the definitions of the public utility, we conclude that for the public utility to exist, some elements are required as a distinct method for the performance of public services and benefits, namely:

- The public utility is a project established by the public authority.
- The target of the public utility is to achieve public benefit.
- The public utility is subject to the public authority.
- It is subject to a special legal system.

Once these elements are available, they disclose intentionally the very existence of the state to make the activity a public utility, even if there is no express text about that.

4.2. Public utility types:

Public utilities are divided into several types, according to the area from which these public utilities are seen depending on the multiplicity and diversity of their activities, the type of public authority that is responsible for managing and overseeing it, the mandatory or compulsory characteristic of establishing and organizing public utilities, the nature of the services (Kanaan, 2006) they provide and are they social, professional, educational, or economical ones. We will discuss these divisions and the different types of public utilities as follows:

First: The division of public utilities in terms of the nature of their activities

Public utilities are divided according to the nature (Aouabdi, 2007) of their activity into administrative public utilities, economic public utilities, professional and union public utilities, and social public utilities.

1- Administrative public utilities:

Administrative public utilities are facilities that perform a purely administrative activity (Aouabdi, 2007) that is at the heart of the administrative function. This administrative activity is radically and fundamentally different in nature from the private activity of individuals, which requires these administrative public utilities to be subject to a special and exceptional legal system which is the system of administrative law that differs in its rules from the private law rules.

2- Economic public utilities:

It is the group of public utilities that practice and perform an economic activity with the aim of achieving economic goals to satisfy general economic, industrial, commercial, financial, agricultural or cooperative needs. These public economic utilities are subject to a mixture of the rules of general administrative law and the rules of private law (commercial and labor law). (Hafez, 1963-1964) Examples of economic public utilities include land, sea and air transport facilities, rail transport

facilities, water, electricity and gas supply facilities, chemical and industrial facilities, war industries, automobile and aircraft manufacturing, bathroom facilities and public theaters, drug and pharmacy facilities. The major public shops are relatively modern facilities caused by economic development and the emergence of socialist thought, which prompted the country to engage in activities that were originally intended for individuals.

3- Professional or union facilities:

They are the public utilities that engage in a purely professional and union activity (Baghdad , 2011-2012, p 23) aimed at organizing the main professions in the state through the sons of the profession themselves. Examples of professional public utilities include professional organization facilities such as the Bar Association, the Physicians and Pharmacists Syndicate, the Engineers Syndicate and the Teachers Syndicate.

4- Social public utilities:

It is the group of utilities that perform a general social activity, and it means those that aim to achieve social services for the public, such as facilities designed to provide public benefits, social security and retirement centers, and rest centers.

However, the development of the perception of social security institutions (83-15 on July 05th, 1983, March 2nd, 2008) and the emergence of the idea of the premiums that are required to be paid by the beneficiaries of the utility's services made the administrative judiciary often hesitate to take over the disputes of this type of utility. This distinction also extended to the Algerian legal system, as we refer to law 83-15 of July 2nd, 1983 related to social security disputes (Boudiaf, 2007), where we find that the legislator has distributed jurisdiction between the ordinary judiciary and administrative courts.

Second: Other divisions of the public utility

On the one hand, it includes national public utilities and local utilities, on the other hand, optional public utilities and compulsory public utilities, and on the third hand, utilities that have a legal personality and public utilities that have not a legal personality.

1- Division of public utilities according to their regional scope:

Public utilities shall be classified according to the geographical or regional scope in which public utilities carry out their activities into national public utilities and regional or local public utilities. (Kanaan, 2006) If the public utilities carries out that activity and provides public services at the level of every state region and satisfies the general needs of all residents of the state, it is a national utility, such as defense, security, customs, telecommunications, education, health, and others.

2- Division of public utilities in terms of the administration's commitment to establish it:

The basis of this division is the extent to which the law leaves the administrative authority to establish or not the facility. (Kanaan, 2006) If the law does not oblige the administrative authority to establish a certain public facility, this facility is optional. On the contrary, if the law compels one of the administrative authorities to establish a facility, this becomes compulsory.

3- The division of public utilities in terms of recognition of its legal personality: The legislator believes that the public utilities that must be accomplished and constructed require a degree of independence and a part of the subjectivity in order to achieve its goals. On this basis the utility has the moral personality that led to a set of results, the most important of which is financial disclosure that is independent of the state's finances, (Al-Tamawi, 1979) and therefore it bears its expenses, profits or losses. Through its activities, it bears all the legal responsibilities resulting from it, the workers acquire the status of public employee, and legal suits are brought independently against them.

5. The practical part:

Study methodology and tools:

Society and study sample: A field study was conducted at the University of Mohamed Boudiaf in M'sila. In addition, some responsible on the digitization project at the same university were

interviewed, through which data, information and statistics were obtained for a period extending over 52 work weeks from November 26th, 2018 to January 20th, 2020. As well as examining documents and records, as they were arranged and encoded in Excel application files, then all the data obtained was analyzed using the appropriate statistical methods via SPSS V 26.

Results and discussion:

From these results we can get the following results:

Through figure No. 01 above, we note that the process of publishing lectures and lessons by the teachers of University Mohamed BOUDIAF in M'sila is constantly increasing and developing, during the period between November 2018 and January 2020, which is the study period. This is considered as a positive indicator that helps university students in obtaining the necessary lessons and information about the modules they are studying in a sophisticated digital way in a short time and from anywhere.

It is clear to us through figure No. 03 that the process of opening and completing electronic accounts on the Moodle platform of university of M'sila by teachers of the university has known great development in a record period since the beginning of this process, where 1500 accounts were opened out of 1500 teachers, of 100%, as of January 1st, 2020.

And Through figure No. 04, we note that the process of opening and creating electronic accounts on Moodle platform for doctoral students has taken place at 100% until January 2020.

It can be seen from above figure No. 05 that there is a noticeable and positive development in the creation of the new technology adopted by the teachers of University of M'sila by recording video lessons via video that are done in the university studio. As well as a positive development in the treatment of videos that contain visual lessons and publish it via Mooc platform for the benefit of university students, then the stage of its publishing via the internet through the university link to allow the public benefit from these visual lessons.

It is noticed from figure No. 06 that the process of opening professional electronic accounts on E-mail services application, for teachers and doctoral students, as well as administrators working at University Mohamed Boudiaf in M'sila has been 100% completed.

Through the graph No. 07 , we note that the process of opening researchers' electronic accounts on **Research Gate** and accompanying and supervising the management of University of M'sila for its teachers, in order to publish their work and their research, has known a great development in a short period, where the number of accounts in the above platform reached 1006 accounts out of 1502 professor, and the number of accounts on **Google Scholar** gate reached 1135 out of 1502, as of January 20th, 2020.

Through the graph in the above figure, it is clear that the number of teachers of University of M'sila who benefited from training on how to use the digital platform Moodle in order to publish lectures, lessons and scientific work has known development and continuity across all faculties and institutes of the university, where the number of teachers trained on this platform reached 730 trained professors as of January 20th, 2020.

Through the above figure, it is clear to us a development in the rank of University according to the rankings approved in international laboratories according to the indicators in effect in this regard. Whereas, according to the Spanish Webometrics, the University of M'sila ranked 15 at the national level in January 2019, then it jumped to 09th grade in July 2019, and in January 2020 it rose to the sixth rank at the national level. According to the Dspace platform index, University of M'sila ranked fourth in January 2019, then it took first rank at the national level in 2020.

In general, and as a conclusion of the foregoing, we can summary the role of digitization in improving the services of studied University of M'sila with the digitization dimensions combined in the aforementioned correlation matrix, and through the results of this matrix, we can answer the study hypotheses as follows:

- **Hypothesis I:** For the digital application (Moodle), a positive relationship of moral and strong significance with the ranking of the University of Mohamed Boudiaf in M'sila.

We partially accept this hypothesis. According to the results shown in the correlation matrix, the majority of indicators of Moodle dimension has moral and statistical significance and has a positive relationship with indicators of University of M'sila ranking dimension, according to the details shown below. As this relationship reflects the role of Moodle digital application in improving the teaching and communication process between students and teachers.

- The relationship between the first indicator that figures under the dimension of Moodle which is the number of lectures with the first university ranking indicator (webometrics web) is 0.735 with a statistical and moral significance of 1%, which means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, and with a strong relationship equals to 73.5%.
- The relationship between the first indicator that figures under the dimension of Moodle which is the number of lectures with the second university ranking indicator (webometrics Scholar) is 3620, with statistical and moral significance of 1%, which means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, and with a weak relationship equals to 36.2%.
- The relationship between the first indicator that figures under the dimension of Moodle, which is the number of lectures with the third university ranking indicator (Dspace) is 0.470 with statistical and moral significance of 1%, which means that the relationship is morally and statistically significant, with an error rate of 0.05%, it is very acceptable, and with a relationship close to average of a rate of 47%.
- The relationship between the second indicator that figures under the dimension of Moodle which is the teachers' accounts with all indicators that fall under the university ranking dimension, is morally insignificant.
- The relationship between the third indicator that figures under the dimension of Moodle which is students' accounts with the first university ranking indicator (webometrics web) is 0.661 with statistical and moral significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a good relationship equals to 66.1%.
- The relationship between the third indicator that figures under the dimension of Moodle which is the students' accounts with the second and the third university ranking indicators respectively (Scholar webometrics) and (Dspace) is morally insignificant.

- **Hypothesis II:** For the digital application (Moodle), a positive relationship with moral and strong significance with the training of higher education teachers at University of M'sila.

We accept this hypothesis. According to the results shown in the correlation matrix, all indicators of the Moodle dimension have a moral and statistical significance and have a positive relationship with indicators of the dimension of training of the teachers of the University of M'sila according to the detail shown below, as this relationship reflects the important role that the process of training of university teachers played on Moodle platform.

- The relationship between the first indicator that figures under the dimension of Moodle, which is the number of lectures with the training results dimension indicator, which is the trained teachers is 0,981 with a statistical and moral significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 98.1%.
- The relationship between the second indicator that figures under the dimension of Moodle which is the teachers' accounts with the indicator that figures under the training results dimension, which is the trained teachers indicator is 0,515 with a moral and statistical

significance of approximately 1%, that means that the relationship is morally and statistically significant with an error of 0,01%, it is very weak, with an above average relationship of 51%.

- The relationship between the third indicator that figures under the dimension of Moodle which is students' accounts with the dimension of training results indicator which is represented by trained teachers is 0.811, with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship of 81.1%.

- **Hypothesis III:** For the digital application (Mooc), a positive relationship of moral and strong significance with the ranking of the University of Mohamed Boudiaf in M'sila.

We accept this hypothesis. According to the results shown in the correlation matrix, all indicators of Mooc dimension have a moral and statistical significance and have a positive relationship with the indicators of the University of M'sila ranking dimension according to the detail mentioned below, which reflects the important role that the Mooc digital application played in the ranking of University of M'sila qualitatively and quantitatively through the published videos, that contain lectures and lessons for students and public.

- The relationship between the first indicator that figures under the dimension of Mooc, which is the recorded videos with the first university ranking indicator (Webometrics Web) is 0,704 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 70.4%.
- The relationship between the first indicator that figures under the dimension of Mooc, which is recorded videos with the second university ranking indicator (Scholar Webometrics) is 0,449 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with an average relationship equals to 44.9%.
- The relationship between the first indicator that figures under the dimension of Mooc, which is recorded videos with the third university ranking indicator (Dspace) is 0,780 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 78%.
- The relationship between the second indicator that figures under the dimension of Mooc, which is published videos with the first university ranking indicator (Webometrics Web) is 0,730 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 73%.
- The relationship between the first indicator that figures under the dimension of Mooc, which is published videos with the second university ranking indicator (Scholar Webometrics) is 0,299 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.05%, it is acceptable, with a weak relationship equals to 29.9%.
- The relationship between the first indicator that figures under the dimension of Mooc, which is published videos with the third university ranking indicator (Dspace) is 0,620 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 62%.

- **Hypothesis IV:** For the digital application (Mooc), a positive relationship with strong and moral significance with the training of teachers of the university of M'sila.

We accept this hypothesis. According to the results shown in the correlation matrix, the Mooc dimension indicators have a moral and statistical significance and have a positive relationship with the dimension indicators of training of the teachers of University of M'sila according to the above-mentioned detail, which reflects the great role played by the qualitative educational achievement of the teachers of the University of M'sila, which contributed to recording and publishing lessons and visual scholar work directed at students and public.

- The relationship between the first indicator that figures under the dimension of Mooc, which is recorded videos with the third university ranking indicator (trained teachers) is 0,780 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 78%.
- The relationship between the first indicator that figures under the dimension of Mooc, which is published videos with the third university ranking indicator (trained teachers) is 0,949 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 94.9%.

- **Hypothesis V:** For the digital application (Visibility), a positive relationship of moral and strong significance with the ranking of the university of M'sila.

We partially accept this hypothesis. According to the results shown in the correlation matrix, most university Visibility indicators have a moral and statistical significance, and have a positive relationship with the indicators of the University of M'sila ranking dimension according to the detail mentioned below. The University Visibility played a big and important role in the University of M'sila ranking due to the development of publishing scientific research across two platforms: Research Gate and Google Scholar.

- The relationship between the Research Gate indicator and the Webometrics web indicator is 0,707 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 70.7%.
- The relationship between the Research Gate indicator and the Scholar Webometrics indicator is 0,417 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with an acceptable relationship equals to 41.7%.
- The relationship between the Research Gate indicator and the Dspace indicator is morally insignificant.
- The relationship between the Google Scholar indicator and the Webometrics web indicator is 0,709 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 70.9%.
- The relationship between the Google Scholar indicator and Scholar Webometrics indicator is 0,780 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 78%.
- The relationship between the Google Scholar indicator and the Dspace indicator is morally insignificant

- **Hypothesis VI:** For the university Visibility, a positive relationship of moral and strong significance with the training of teachers of the University of M'sila.

We accept this hypothesis. According to the results shown in the correlation matrix, all university Visibility indicators have a moral and statistical significance and have a positive

relationship with the indicators of the training of the University of M'sila teachers dimension according to the detail mentioned below, and through which it shows the great role played by the University of M'sila Visibility in communicating teachers' research to the world.

- The relationship between the Research Gate indicator and the trained teachers' indicator is 0,986 with a moral and statistical significance of 1%, that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 96.8%.
- The relationship between the Google Scholar indicator and the trained teacher's indicator is 0,792 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 79.2%.

- **Hypothesis VII:** For digital application (E-mail services), a positive relationship with moral and strong significance with the ranking of the university of M'sila.

We partially accept this hypothesis. According to the results shown in the correlation matrix, most of the E-mail services indicators have a moral and statistical significance and have a positive relationship with the indicators of the University of M'sila dimension according to the details shown below, which reflects the great importance of digital communication between teachers and students at University of M'sila.

- The relationship between teachers' accounts indicator and Webometrics Web indicator is 0,679 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 67.9%.
- The relationship between teachers' accounts indicator and Scholar Webometrics indicator is 0,726 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 72.6%.
- The relationship between teachers' accounts indicator and Dspace indicator is morally insignificant.
- The relationship between students' accounts indicator and Scholar Webometrics indicator is 0,723 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 72.3%.
- The relationship between students' accounts indicator and the Webometrics Scholar indicator is morally insignificant.
- The relationship between students' accounts indicator and Dspace indicator is 0,472 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.05%, it is acceptable, with an average relationship equals to 47.2%.
- The relationship between administrators' accounts indicator and all university ranking indicators is morally and statistically insignificant.

- **Hypothesis VIII:** For digital application (E-mail services), a positive relationship of moral and strong significance with the training of teachers of the university of M'sila.

We partially accept this hypothesis. According to the results shown in the correlation matrix, the majority of E-mail services indicators has moral and statistical significance and has a positive relationship with the indicators of the M'sila University teachers dimension according to the details shown below. Through which the importance and the large role that professional electronic accounts play in improving academic services, communication, educational attainment and research disseminating at the local and international levels through well-known and pioneering international

platforms is evident, and this includes the significant contribution to the ranking of the M'sila University at the local and international levels.

- The relationship between teachers' accounts indicator and trained teachers indicator is 0,800 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 80%.
- The relationship between students' accounts indicator and trained teachers' indicator is 0,901 with a moral and statistical significance of 1% that means that the relationship is morally and statistically significant, with an error rate of 0.01%, it is very weak, with a strong relationship equals to 90.1%.
- The relationship between administrators' accounts indicator and trained teachers' indicator under training results dimension is morally and statistically insignificant.
- In general, it is evident from the hypothesis verification that the level of interest in the digitization project at University of M'sila, the sample of the study and its different dimensions, represented in digital applications that would improve the level of university services, is high and in a continuous increasing.

6. CONCLUSION

A summary of the study results will be presented, as well as recommendations, in addition to academic research limits and study prospects.

1) Summary of results and recommendations:

This study came to identify the role played by digitization applications in improving public utility services, with a field study in one of the most important public facilities represented in a higher education institution that provides services to a large category of society, and is worthy of study and attention, University of M'sila was taken as a sample for the field study. The study, through testing the hypotheses, reached several results, including:

The results of the study emphasized on the role of Moodle digital application in improving the teaching and communication process between students and teachers;

The results of the study appeared the important role that the process of training and apprenticeship of university teachers played on Moodle platform, which contributed to the development and improvement of the process of publishing lectures on the above platform in all faculties and institutes of the university, in order to facilitate the academic achievement of university students;

The study revealed the important role played by digital application Mooc, in the ranking of the University of M'sila by the quantity and quality of published videos that contain revised and refined lectures and visual lessons by the university teachers addressed to students and public;

The study clarified the great role played by the qualitative scientific achievement of the teachers of the University of M'sila, which contributed to recording and publishing lessons and visual scientific work directed to students and public;

The study revealed the great and important role that University Visibility played in the ranking of the University of M'sila due to the development of publishing scientific research through the two platforms: Research Gate and Google Scholar;

The study revealed the University of M'sila Visibility role in the reach teachers' research to the world;

The study explains the great importance of digital communication between teachers and students at University of M'sila;

The study showed the importance and the large role that professional electronic accounts play in improving academic services, communication, educational attainment and dissemination of research at the local and international levels through well-known and pioneering international platforms, and from

it a significant contribution to the ranking of the University of M'sila, both on local and international sides;

In light of the results of the current study, the study recommends the following:

The need for all managers in the studied institution to adopt the concepts and practices of digitization, try to spread it among the various workers and adopt it as a competitive advantage;

Clarify its efforts regarding the digitization of colleges, departments and administrations of the university, by organizing open doors for the university and forums that provide explanations about the reality of digitization in the university and come up with scientific recommendations that will provide added value for the future of the university in this field;

The need for the studied institution to adopt a culture of transparency and business ethics that would allow for a reduction in administrative bureaucratic practices that weaken performance which may improve public utility services;

The need for research teachers and innovative students to be given opportunities to improve this important public facility in scientific ways, methods and processes, which contribute to finding solutions to many problems that constitute obstacles impeding the improvement of public service contribution in the research facility;

The necessity of creating a cell in charge of research and development affiliated with the directorate of digitization at the University, to follow all the developments and modern developed technologies across the world, in order to attract and work with it in the studied university in order to maintain its position in the field of digitization at the local and international levels;

Work to secure information, protect it from theft and illegal access, and protect digitization networks and equipment from sabotage and loss of information;

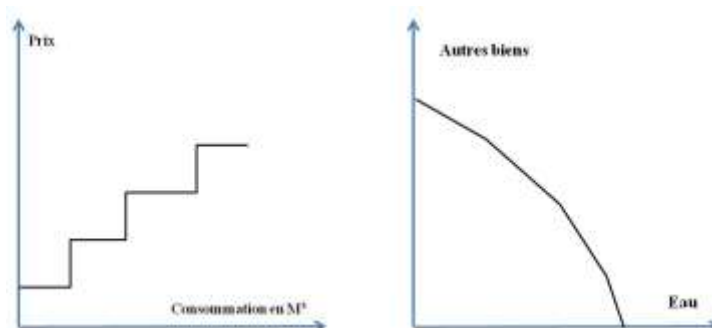
2) Academic research limits:

The academic research limits are represented in the small size of the sample where 52 notes were addressed, which allowed us to study the relationship, and gave very respectable and acceptable results, while it did not allow us to study the effect of the regression equation in a clear and reliable manner.

3) Prospects of the study:

Through our studies, we urge researchers to address this topic further study and research on a large sample in order to study the effect of structural equation modeling (LISREL); we also urge researchers to do a longitudinal study, which means continuity in observing the development of digitization at the studied university, as well as public utilities that provide public services to large segments of society.

Fig.1. Présentation d'une tarification progressive et la contrainte budgétaire



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