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The Sociological Dimension of Digital Transformation in Algeria: The Tertiary Sector (Services) as a Model

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Abstract:

Through this research paper, we seek to provide a sociological reading of the reality of digitization in Algeria as a contemporary issue, focusing specifically on the tertiary sector (services) as a model. This is undertaken by analyzing the sociological dimension of the concept of digitization in parallel with certain sociological and technological factors that characterize societies in general and Algerian society in particular.

The study also presents some sociological contexts and backgrounds related to the digitization of the service sector and discusses the challenges that the Algerian state seeks to address in order to generalize digitization across various sectors, particularly the service sector. Furthermore, it offers an analysis of the obstacles and constraints generated by this pattern of digital transformation, while proposing several approaches and mechanisms aimed at resolving the equation of transition from paper-based administration to digitization within the service domain.

Keywords: Digitization; Digital Transformation; Sociological Dimension.

JEL Classification Codes: O33, L86, Z13, O38.

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1. INTRODUCTION

The contemporary world in general, and Algeria in particular, is witnessing technological transformations that have imposed numerous mechanisms and instruments as an urgent necessity in order to keep pace with them at all levels. In this context, the Algerian state, through its systems, institutions, and administrative structures, has sought to meet the demands of the modern era and adapt to its developments. These transformations have affected all societal systems, including educational, economic, professional, and political spheres. Consequently, ministerial revisions, new legislative measures, and newly established regulatory frameworks within institutional sectors, both public and private, are introduced periodically. This constitutes clear evidence of the Algerian state's commitment, represented by its institutions, executives, and officials, to fulfilling one of the most significant requirements imposed by global technological change, namely the pursuit of digital transformation. This transformation is increasingly evident today and influences the Algerian individual in every aspect of professional, familial, and economic life.

At the same time, however, the Algerian individual, whether an ordinary citizen, an employee, or a sectoral official, encounters a number of obstacles that complicate the management of personal, professional, and social affairs. These challenges emerge within the context of specific sociological characteristics that distinguish Algerian society from other societies. Such obstacles have hindered the realization of the intended digital transformation, as observed in certain developed countries. Accordingly, the Algerian state continues to strive to establish appropriate mechanisms and pathways to achieve this objective, which has become a necessity for all societies, particularly Algerian society, whose distinctive sociological characteristics differentiate it from others.

Through this research paper, we seek to present a sociological perspective on the reality of digitalization in Algeria by addressing the following questions:

– What are the principal mechanisms adopted by the Algerian state with the aim of digitalizing all sectors, and what examples from certain sectors illustrate this process in practice?

– What are the most significant obstacles that impede the achievement of digitalization in light of the specific characteristics of Algerian society?

– What proposals and strategies could facilitate the achievement of comprehensive digital transformation, shifting from paper-based administration to full digitalization?

2. Concepts: Digitalization, Digital Transformation, the Sociological Dimension, and the Third Sector (Services)

2.1 Definition of Digitalization

Digitalization in information institutions refers to the process of converting information resources from their traditional formats into digital formats. Information institutions adopt this procedure in order to provide the largest possible volume of information resources suitable for users. In doing so, they contribute to preserving information resources for longer periods and to disseminating them to the widest possible audience worldwide through efforts to convert their collections into digital form (Al-Khatmi, 2011).

Taylor (2007) defines digitalization as representing the realm of bits, that is, everything that has no physical size or color and is capable of traveling at the speed of light. From a scientific perspective, digitalization therefore constitutes an electronic system that enables certain devices to capture images of printed materials and make them available in encoded language, after which

they can be stored, transmitted, retrieved, copied, and even modified (Yass, 2012, p. 16).

2.2 Digital Transformation:

It is the process of converting information from paper form into digital form. In other words, it constitutes an electronic system that facilitates the work of its users, saves time and effort, and assists them in storing information and retrieving it easily through the use of various electronic tools such as computers, scanners, and the internet.

It is therefore a system that enables information to circulate in digital form produced through technological development using scanning technologies. Consequently, it represents a method of storing information rapidly and instantly without requiring significant effort.

2.3 The Sociological Dimension:

In this research paper, this refers to focusing on understanding digital transformation in Algeria, with the service sector taken as a model, and examining its relationship with certain societal characteristics and contextual variables. This is explored through the processes of mutual influence and interaction between certain social structures within Algerian society and the issue of digitalization, with the aim of understanding digitalization within its social and cultural context.

2.4 The Tertiary Sector (Services):

This refers to the sector concerned with providing services to both citizens and institutions, such as education, healthcare, tourism, and insurance. It is also referred to as the non-profit sector. The development and growth of this sector constitute important indicators of the progress of any society. In this research paper, it has been selected as a model for analyzing the reality of digitalization and digital transformation in Algeria due to its significance as a vital sector in the life of individuals and society. Several domains within it have been selected, including education and higher education, tourism, commerce, and insurance.

3. Steps of Digitalization, Its Objectives and Importance

3.1 Steps of Digitalization:

– **Field Planning:** The data collected during this stage represents a highly significant step because it assists in making decisive decisions that affect the fundamental foundations of the project. The difficulties, available resources, and all fields related to the project must be carefully examined to ensure the success of this digital process. It is also necessary to establish a unit responsible for filtering and organizing various forms of information, in addition to appointing the administrative and organizational framework of the project, outlining the plan, and determining the model of the digitalization strategy (Hafzawi & Al-Hamzawi, 2016).

– **Selection of Digitalization Materials:** Digitalization is a complex process that requires substantial effort, consumes considerable time, and demands financial resources as well as a high level of expertise and competence. For this reason, the institution must clarify the human and material resources it possesses, their structure, their level of importance, and the objectives it seeks to achieve. The success of the selection process is directly linked to the clarity and precision of the objectives that the institution aims to accomplish (Hafzawi & Al-Hamzawi, 2016). The selection of digitalization materials refers to identifying the financial, human, and temporal resources available within the institution in order to achieve its objectives within the framework of implementing a digitalization project.

– **Initiating the Digitalization Process:** The implementation of this process may take several forms, most notably relying on external suppliers due to the lack of expertise and the high cost of digital equipment. Alternatively, the institution may rely solely on its internal capabilities or adopt a joint arrangement between itself and the supplier. In such cases, a work plan is agreed upon that defines all activities and tasks. Digitalization also relies on several techniques, including scanning technologies (Hafzawi & Al-Hamzawi, 2016). When initiating the digitalization process, attention must be given to the cost of electronic equipment, the institution's capacity to provide such equipment, and the level of expertise possessed by the users of these devices within the institution.

– **Encoding and the Selection of a Metadata Plan:** The purpose of this step is to structure information or documents within their electronic environment so that these documents become sets of symbols that computers can process and exchange with other computers. The metadata plan is used to describe electronic resources. It consists of information associated with images, text, audio, video, or digital graphics in the form of keywords or free text. Metadata represents data intended to describe information in order to facilitate its retrieval and to clearly identify its source. It is divided into several types, including:

- **Descriptive metadata:** Used to describe or identify a resource in order to facilitate searching, retrieval, and management. It consists of elements such as title, origin, format, creation date, coverage, subject, language, and physical description.
- **Structural metadata:** Information used to present and navigate digital resources. It includes details related to the internal organization of the digital resource, such as page, section, chapter, book, and table of contents.
- **Administrative metadata:** Parameters intended to facilitate both short- and long-term management and processing of digital collections. It includes information such as scanner type, resolution, color mode, file format and compression, and the software used in their production, in addition to ownership and copyright information (Hafzawi & Al-Hamzawi, 2016).

Metadata constitutes a framework intended to organize information within an electronic environment. It consists of coded elements used to describe information, enable navigation, and facilitate retrieval. Descriptive, structural, and administrative metadata collectively support and simplify user interaction with information resources.

3.2 Objectives of digitization

Digitization pursues several objectives distributed across the following levels:

– Preservation: Digital media are less susceptible to deterioration and damage compared with paper materials, which are exposed to numerous risks.

– Storage: With regard to storage, a compact disc can store thousands of pages, and digital storage media can accommodate even greater volumes. Digitization therefore saves considerable physical space.

– Access: Through networks, particularly the Internet, digitization allows hundreds of users to consult the same document simultaneously.

– Speed of retrieval and ease of use: Digital systems are characterized by rapid retrieval capabilities. When documentary materials are converted into digital form, they can be retrieved within seconds rather than several minutes. Additional objectives include:

- Delivering information without human intervention.
- Generating financial returns through the sale of digital products, whether distributed on laser

discs or made available online. The aim of such returns is not commercial profit in the strict sense, but rather obtaining financial support that offsets part of the costs and ensures the continuity of operations (Mehri, 2016, p. 13).

- Supporting existing communities in research and education sectors and facilitating the development of new communities within these fields.
- Developing methods for creating, storing, organizing, and using electronic information resources in order to meet the growing demand for information (Ali, 2011).

Based on these objectives, digitization can be understood as an advanced process guided by clearly defined goals and implemented through sequential stages characterized by precision and speed. It involves converting paper materials into digital form, saving time, generating financial returns, and supporting communities engaged in research and education through modern technological means.

3.3 The Importance of Digitization

Digitization offers numerous benefits, including the following:

- Broad access to information.
- The ease and speed of acquiring knowledge and information from its various components.
- Reduced costs associated with obtaining information.
- The possibility of integration with other media such as light, images, and video.
- The ability to print information when needed and produce exact replicas of it (Mounir, 2010, p. 74).

The significance and sensitivity of digitization require full engagement by all stakeholders in the process of digital transformation, accompanied by sufficient effort and sustained commitment to renewing management methods and contributing with seriousness to the success of this project, which holds considerable importance within the education sector (Secretary General, 2018).

It can therefore be concluded that the process of digitization is of great value, as it has prompted many institutions to adopt it in order to engage with contemporary technological developments and to become acquainted with new approaches within this field.

4. Challenges: The Algerian State's Efforts to Digitize All Sectors

The Algerian state has sought to achieve a digital transformation consistent with the realities of globalization and advanced technological development. This objective has been pursued through numerous mechanisms, reforms, and directives that have affected most sectors of the state, particularly vital and service-oriented sectors. The following examples illustrate this effort.

4.1 Educational Institutions

The educational system constitutes one of the most important systems within society. Social balance and stability cannot be achieved without a successful, stable, and well-functioning educational system. When examining the key components of the educational system in Algerian society, two fundamental institutions emerge: the family and the school, both of which represent the primary foundations for building society. Due to the social transformations and changes occurring worldwide, these two institutions have also been affected by such changes. What is currently observed within the Algerian family and school clearly demonstrates the profound and evident impact of technological development on these two systems.

If we consider the family institution, for example, it becomes apparent that the Algerian state seeks to prioritize this system through legislation, laws, and executive decrees intended to express its commitment to modernizing the Algerian family. This is reflected in measures such as expanding opportunities and spaces for children, strengthening attention to their rights, prioritizing the role of mothers, and providing support to families with limited or no income through unemployment benefits, among other initiatives. These measures have inevitably required the head of the household or the mother who remains at home to engage beyond the domestic sphere in order to claim the rights guaranteed by the Algerian state. They must also interact with contemporary administrative procedures, including electronic registrations through internet service centers in order to obtain benefits such as unemployment allowances or support for persons with special needs. These initiatives are part of the state's efforts to facilitate access to rights and simplify the affairs of Algerian citizens.

Consequently, citizens now find themselves interacting with surrounding institutions and administrative bodies, such as municipalities and employment offices, through new mechanisms that were previously unfamiliar. These include electronic registration systems designed, for instance, to apply for housing through newly established remote registration procedures, such as applications for AADL housing, or for submitting applications for allowances and other forms of social benefits.

Even patterns of communication among members of society have undergone significant transformation. For instance, on religious occasions, the majority of individuals now exchange greetings from their homes through electronic messages sent within seconds, without leaving their residences or resorting to traditional means of communication such as the landline telephone, which has become almost absent from most Algerian households due to the widespread dominance of technology and the prevalence of mobile phones among the vast majority of Algerians.

If we consider another example from the educational system, we observe the modernization of the school sector. Several reforms, both fundamental and partial, have been introduced as the state seeks to keep pace with global transformations that affect both teachers and learners alike. New concepts have consequently emerged within the educational system, including educational technology, instructional technology, and distance learning.

In this context, Mustafa Abdel Samie argues that the concept of educational technology is broader and more comprehensive than that of instructional technology, as it encompasses all dimensions of the educational system, including theoretical frameworks, their various practical applications, and the personnel working within its multiple domains at different levels, including teaching staff, students, administrative personnel, and technical workers. It also involves the preparation of the school environment in order to make learning situations more effective, relying on both training management and educational management capable of interacting with these processes (El-Sayed Ali, 2005, pp. 26-27).

Examples of this transformation include the introduction of the Parents' Portal and the registration process for preparatory classes conducted through internet cafés, practices that were previously unfamiliar to the Algerian individual.

Teachers as well as administrative staff now rely on email or other communication platforms such as Facebook and WhatsApp to follow developments within their sector and to

obtain information relevant to their professional status, such as monthly salaries, insurance matters, grade promotions, and administrative instructions. Consequently, the various actors involved in the educational process find themselves operating within a sector that is gradually becoming digitalized.

Most educational institutions have also been provided with what is referred to as software infrastructure, which constitutes a fundamental gateway to digitalization. This refers to the essential programs that must be installed on computers to enable them to start and operate effectively. Such programs are available on most computers supplied by the ministry to educational institutions, the most common being the Windows operating system. Despite its financial cost associated with intellectual property rights, this system has been provided to ensure the proper functioning of computers (Berman, 2014), as part of the state's efforts to facilitate the digitalization of the educational sector.

Another example can be observed in the sector of higher education and scientific research. Since the period of the COVID-19 pandemic, a new form of education has emerged in Algeria that was previously unfamiliar to both students and professors, namely distance learning. In addition, the Ministry of Higher Education and Scientific Research has introduced several modern platforms, including Moodle, Progres, and PRF. The objective pursued by the Minister of Higher Education and Scientific Research is to achieve a system that operates without paper.

Digitalization in higher education has been defined in several ways. One definition refers to the recognition of organizational change driven by digital technologies and business models aimed at improving institutional performance and enhancing service delivery to clients, where, in this context, the student is considered the client (Thamri & Abdelhamid, p. 05).

Another illustrative example is the commercial sector. Today, what is known as electronic commerce has emerged, whereby the seller remains in their home and the buyer in theirs, while the commercial transaction is conducted through modern technological means, particularly Facebook, which serves as a prominent example of this type of exchange within Algerian society. This phenomenon did not previously exist and has emerged as a result of rapid and successive developments in information and communication technologies that shape contemporary societies in general and Algerian society in particular. These developments have led to faster transaction processes, noticeable reductions in costs, and significant improvements in the efficiency of commercial systems and the movement of goods involved in trade (Economic and Social Commission for Western Asia, 2005, p. 03). Although the traditional model of commerce remains present in Algeria, the digital model has become accessible to wide segments of society, enabling the use of modern methods for displaying and promoting goods as well as facilitating purchasing processes due to the advancement of electronic media.

4.2 Tourism Sector:

The internet constitutes one of the most suitable technologies for deepening electronic communication and providing digital information. It represents the largest computer network in the world for transmitting information from any location to any individual. Internet protocol, mobile viewing devices that broadcast content directly from the internet such as television and radio, local broadcasting companies, and social media platforms that remain constantly active and continuously available for interaction with family and friends all contribute to this system (Seel,

2018, pp. 30-31).

Technological transformations and developments in information and communication technologies have imposed modern forms of interaction, foremost among them electronic tourism services, which have now become an inevitable necessity that no actor in the tourism sector can ignore. Discussion of such services has become a matter of interest for professionals working in tourism as they attempt to stimulate the sector. Traditional marketing is no longer sufficient for tourism promotion and development. Instead, reliance has increasingly shifted toward electronic marketing in the tourism sector in order to increase tourism revenues (Al-Allaq, 2002, p. 19).

Consequently, individuals working in this sector find themselves within a new mode of discovering the most beautiful regions and landscapes that were previously unknown not only to Algerian citizens but also to foreign tourists. This occurs through the promotion of mountain, coastal, and desert tourism through videos, photographs, and influencers who attempt to integrate tourists into the sphere of digitalization, where they find themselves influenced by it. As a result, they travel to tourist destinations about which they previously had no knowledge. This transformation has been facilitated by technological development, particularly through social media platforms such as Facebook, which is widely accessible to many social groups and contributes to the modernization of the tourism sector.

4.3 Banks and Insurance:

Electronic banking services are diverse, among which the most prominent are:

Banking services through automated teller machines. This type represents one of the most widespread electronic services. These machines are installed in various locations and remain continuously connected to the interbank network and to the bank's information system. Through them, customers can conduct banking operations automatically. This can be observed in electronic payments and bank transfers. Postal checks have become almost absent among certain groups, thanks to the efforts of the state to modernize and digitalize this vital sector that concerns everyone. These represent examples drawn from certain sectors, while many other sectors are likewise subject to the process of digitalization, even if only partially.

5. Obstacles to Digitization in Algeria and Some of Their Implications for the Individual and Society (Within the Context of Societal Specificity)

As previously noted, the Algerian individual has found himself subject to a tangible process of development and change that had not been previously experienced. Some groups have benefited from and adapted to this transformation, finding greater ease in managing their affairs and even expressing appreciation for the digitization project. In contrast, other groups have encountered difficulties in using advanced technological tools and interacting with administrative institutions and postal services due to their particular circumstances and social characteristics. This situation can be illustrated through the following points:

– For example, elderly individuals, patients, persons with special needs, and illiterate citizens often encounter difficulties in their daily lives, particularly in matters related to administrative procedures. These difficulties include challenges in mobility, as well as in understanding and using technological tools. In Algeria, a considerable proportion of the population consists of elderly individuals such as veterans and retirees who frequently deal with post offices and banks but possess limited familiarity with modern technological procedures used in administrative transactions, such as the Edahabia card, electronic tickets, and electronic queue

systems. The specific circumstances of these groups must therefore be taken into consideration. The same applies to illiterate individuals. Algerian society still bears the legacy of illiteracy inherited from the period of French colonialism. Among those affected are children and widows of martyrs who experience difficulties when dealing with administrative institutions in order to obtain documents in electronic form.

– Another obstacle concerns the lack of material resources available to all members of Algerian society. For instance, residents of mountainous areas may encounter difficulties traveling to internet cafés located in urban centers. In addition, internet network coverage is absent or limited in certain remote, rugged, or underdeveloped regions, which complicates the management of administrative and personal affairs through modern digital systems.

– The particular character of Algerian society also constitutes a factor. Algerians are often described as comparatively quick-tempered relative to other Arab societies, a disposition shaped by the historical and political crises experienced by the country, including French colonial rule and the period known as the Black Decade. These experiences have contributed to the formation of a population that may be prone to tension and rapid frustration, which can lead some individuals, particularly those unfamiliar with modern technological tools, to distrust digitization and instead prefer the traditional system of waiting in physical queues.

– Electronic commerce has succeeded for some individuals while failing for others. This disparity has led to a degree of commercial stagnation for certain actors and has sometimes resulted in financial losses caused by electronic theft. Such circumstances have contributed to the emergence of new forms of criminal activity, including electronic fraud involving manipulation of postal checking accounts.

– Within the family system, the misuse of digital technologies by certain groups has contributed to the emergence or increase of several social phenomena. For example, juvenile delinquency may arise from the improper use of technological tools, particularly in situations where women participate in the workforce and parental supervision becomes limited. This situation may contribute to an increase in crime rates and encourage imitation behaviors among individuals through content shared by users on Facebook, such as electronic messages containing videos that display details of home theft or electronic fraud. In addition, the use of GPS technology has facilitated the spread of irregular migration.

– Other phenomena have also emerged, including cyberbullying and electronic theft.

– Digitization efforts are further hindered by insufficient technological infrastructure and software in certain sectors, especially in cases where employees lack adequate qualifications or have not received training in modern technologies, particularly those approaching retirement.

– Despite efforts toward modernization, queues remain present in many institutions and administrative offices.

– Excessive use of technological devices has also contributed to increasing family disintegration, as family visits and intra-family dialogue have declined.

– In many cases, digitization remains accompanied by continued reliance on paper documentation. In some institutions, electronic registration procedures are announced and implemented, including submission of information and initial approval of applications. However,

citizens are subsequently required to present paper files, as if the electronic process were not fully recognized or operational.

– Finally, there is sometimes an absence of a central authority responsible for coordinating digitization projects at the national level. This situation leads to weak system interoperability, as some institutions adopt digital systems while others continue to rely on traditional administrative practices.

6. Some Proposals and Approaches for Implementing Digitization (Transition from Paper-Based Administration to Comprehensive Digitization)

Keeping pace with the development currently taking place worldwide, which Algeria seeks to achieve, is both desirable and necessary and is imposed by contemporary sociological realities. However, alongside this effort, many aspects must be reconsidered in order to achieve the digitization of all sectors, a transformation that would ultimately benefit everyone, including citizens and state institutions. Achieving this objective requires the following:

– Gradual digitization is necessary and should not be generalized until the required capacities and the appropriate infrastructure are available to all, particularly internet access and communication networks.

– Reconsideration of the digitization of documents and personal records of elderly individuals and patients, given their conditions and circumstances, which may prevent them from interacting smoothly with modern technologies.

– Provision of modern software and internet access in all institutions, along with efforts to reduce or eliminate electricity outages in certain regions and institutions, which often disrupt services provided to citizens.

– Training and qualification of administrative personnel according to the latest software and technological tools in order to facilitate administrative, health, and educational procedures that concern the Algerian citizen, who remains the central focus of the Algerian state.

7. Conclusion

Through this research paper, we sought to present a sociological perspective on digitization in Algeria by examining its sociological reality, that is, by understanding it within its social and cultural context, in light of the transformations and developments experienced by the world in general and Algeria in particular. This was undertaken by presenting several observations, considerations, and details that we encounter in our daily lives as both citizens and specialists in sociology, in an attempt to diagnose the current state of digitization.

The paper also addressed the efforts undertaken by the Algerian state and its endeavor to achieve comprehensive digitization by highlighting several mechanisms adopted in this regard. Furthermore, we pointed to certain obstacles and challenges encountered by Algerian citizens as well as by some state institutions and administrative structures.

Finally, we attempted to propose a number of mechanisms aimed at achieving the objective of comprehensive digitization, understood as a complete digital transformation, while taking into account the specific characteristics of different social groups whose material, cognitive, and health capacities vary. This consideration is essential in order to attain the desired objective and to keep pace with technological development, which has become an implicit requirement that all societies must strive to achieve. Such a transformation constitutes a natural consequence of the social, cultural, economic, and technological changes experienced by Algeria and the world as a

whole.

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