

The State's Role in Digital Peacebuilding and Security Governance through Academia

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Abstract

The Algerian President "Abdelmadjid Tebboune" has made the "Digital Transition" project one of the top national priorities since assuming the responsibilities of the state. This requires determination and courage to implement the plan, which has encountered many obstacles, challenges, and clear resistance at various stages. However, despite these challenges, there have been several successes in this area, thanks to the collective will and the concerted efforts of many key actors who chose to strongly engage in this inevitable path. If the Algerian university wants to advance to the level of major universities and perform its tasks in the best possible way, this will open up vast and promising prospects for the Algerian university. This will allow it to contribute to the construction of a modern, balanced economy, overcome the corruption and stagnation it has experienced for several years, and reach a stage of transparency, accountability, and equality of opportunities in education and employment. This, in turn, will lead to achieving the conditions for an effective renaissance and advancing the Algerian university to the level of major universities internationally through embracing digital transformation.

Keywords: Digitization, University Transformation, University Governance, Digital Peacebuilding, Higher Education

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Introduction

There is a genuine political will from the Algerian government and the state in general to move towards more reforms and changes in order to meet the challenges imposed by the economy and the production of wealth and knowledge. Therefore, through the guiding plan of October 2022, presented by the Ministry of Higher Education and Scientific Research in Algeria, the government revealed its digital roadmap in the field of developing the use of digitization in the sector. This plan, in its first phase, focuses on digitizing various learning modes and governance in higher education institutions. It addresses seven key areas, revolving around digitization to support the training of professors, digitization in the service of training offers, digitization to support student success, digitization in research activities, digitization in supporting permanent basic structures, digitization in supporting modern management, and the role of digitization in national and international academic exchange. This is accompanied by an executive process for the operations to implement this plan, through mechanisms. What are these mechanisms? What are the key digital tools and means used to implement this plan? Were the methods for achieving the set goals and procedures successful? What are the main indicators and challenges observed that can be assessed in this field, in terms of success or failure, progress or setbacks?

The hypotheses of this study are based on several interconnected points. The first is that virtual education is considered the most important option for the Ministry of Higher Education and Scientific Research, alongside the equally important adoption of a "paperless" policy for administrative transactions and digital communication. These are seen as the foundation for interaction between various higher education bodies and institutions, within the framework of striving towards creating wealth in its new concept and supporting emerging digital institutions as a strategic choice that aligns with global digital transformations. The study also hypothesizes that, despite its multiple advantages, the digital space is not without its flaws, the most significant of which are digital authoritarianism and the risks of security breaches, which have contributed to the creation of a fragile digital environment. In this environment, threats are exacerbated due to the lack of a clear strategic vision. Additionally, it is assumed that the digital gap between developed and developing countries continues to widen, with Algeria serving as a model of this reality, especially with the rise of artificial intelligence outputs. This makes it necessary to move towards the concept of "digital peacebuilding" by involving the private sector in the process of digital governance and encouraging innovation and competitiveness. This approach would enhance the effectiveness of the Algerian university and increase its visibility at both the regional and international levels.

1-Virtual Education and University Economy

Conceptual Transformations: Given that knowledge today has become a fundamental component of the elements of production, alongside capital, labor, and land, virtual education is one of the main pillars adopted by all countries, especially in the post-health crisis world of "COVID-19." It is now contributing to the networking and complexity of international relations, where the stars of multinational corporations, such as Google, Facebook, Apple, and Amazon, have risen. These companies are part of the digital quartet, collectively worth over half a trillion dollars. Their success lies in their ability to leverage their technical expertise to provide diverse services to as many consumers as possible, from all backgrounds. Therefore, if we attempt to apply this reality to the university as an institution that produces knowledge, is it, particularly the Algerian university, capable of keeping pace with this massive transformation in mentality, productivity, and the shift in the nature of the commodity? Can it provide niche goods, aimed at a specific group—the educated class of students, the seekers of knowledge? And can it also open up to institutions, administrations, factories, and companies beyond the university walls, providing them with products they need and adapting to market demands?

Virtual reality has become the domain, the market, and the stage for scientific and cognitive interactions between various components of social actors, governed by a series of economic factors and pressing necessities. These forces today compel those responsible for university institutions, particularly official institutions such as the Ministry of Higher Education, to work towards keeping pace with and meeting these needs in order to expand and strengthen their influence internally, attract international talent, and become a sought-after destination for those seeking distinguished and effective academic training. Therefore, we observe that the Algerian Ministry of Higher Education and Scientific Research is striving to expand its scope and bring education closer to various segments of society across all regions. It aims to move beyond just providing books and a few digital works—those counted on one hand—to providing hundreds and thousands.

In other words, the Algerian university is trying to penetrate all fields through publishing, its institutions, and transitioning from merely producing ideas to creating active, wealth-generating institutions. The competition between universities, both locally and internationally, depends on visibility and the production of both scientific and material goods through innovation and encouragement. The decisive factor in this is the role of the IT industry, which is the cornerstone of modern technology. If the business sector today has witnessed the rise of a new class of extremely wealthy individuals deriving their fortunes from communications, information technology²(Israa, I., 2012, p. 92), and the dissemination of ideas and flashy symbols, the same applies to the Algerian

² The lists of the world's wealthiest men are filled with names associated with the technological and digital fields, most notably **Mark Zuckerberg**, the founder of Facebook, whose star rose among the top business figures in modern societies. The business world has, at times, come to resemble cinematic films—with its heroes, dramatic plotlines, influence on the minds of the public, and an unusual allure and brilliance.

university, which needs to cultivate intellectual, cognitive, and material wealth for all its components and for society as a whole.

There is a new type of wealth and affluence being pursued, signaling a vast transformation that is constantly expanding, a characteristic feature of contemporary economics. Despite this, some experts and intellectuals have expressed disapproval, arguing that it will lead to the erosion of the economy and the end of creative industries. However, despite the criticisms, this approach continues and persists. The integration of information technology and virtual reality has led to a vital shift in the world of economy and business, tipping the scale in favor of a technology-driven economy over one based on heavy industry. This is now reflected in the policies of countries and their respective ministries, as we see from the current efforts of the Algerian university and decision-makers to develop leadership methods for entrepreneurs in the information age. This has resulted in the emergence of new wealth creators and their widespread fame, far from traditional businessmen who were once unknown. Creating wealth, according to these new entrepreneurs, is achieved through their boldness in entering new markets with new content.

The university today, especially the Algerian one, is not immune to this transformation. There has been a recent digital development that has led to adjustments in the market, supply, and demand. Manufacturing is no longer based solely on economies of scale, but on customization and adaptation to consumer demands. This compels the Algerian university to rise to the challenge of "customization and adaptation." As a result, a more intimate relationship has formed between the consumer and the product, where the product is now adaptable to consumer requirements. While previously there was a kind of "secrecy surrounding products" and those knowledgeable about them were few, today universities are compelled to provide information online in exchange for licensing fees. This challenge has yet to be fully implemented, and perhaps research centers and global websites are now publishing and selling academic products for a fee. However, the Algerian university has not yet managed to organize this area as a non-profit public institution. Perhaps it needs to think today about achieving this challenge—selling knowledge products for a small fee, but not before achieving global visibility and raising its profile, after which it can move to a profit-making stage, similar to how satellite channels operate. After gaining popularity and reputation, they transition to the profitable process of selling their products for a fee.³(Israa, I., 2012, p. 94)

- Cyberspace: Some define cyberspace as "the virtual environment in which electronic information operates, connected through computer networks." Others define it as the domain characterized by the use of electronics and the electromagnetic field to store, modify, or alter data

³ This falls under the responsibilities of executive directors at the Ministry of Higher Education and Scientific Research. They are tasked with proposing new products based on the frameworks, inventions, and creativity of professors and students across the national territory. These products are then commercialized through patent registration, intellectual property protection, book sales, and consultation with the scientific community by promptly and effectively responding to their proposals through Algerian universities. For more information

through interconnected systems linked to natural infrastructure. Therefore, the integration process includes the merging of the internet, mobile devices, communication devices, and satellites. In any case, what is meant by cyberspace is that "natural and physical domain."

Cyberspace represents a new strategic environment for the growth and emergence of new forms of conflict and cooperation, as well as the appearance of new actors on the international stage. Thus, it can be said that the international system is now facing a phenomenon that is multifaceted in its dimensions, scope of influence, and characteristics, which has added more complexity to the phenomenon of electronic interaction. This interaction involves numerous difficulties and challenges related to the extent to which the use of flexible force within cyberspace can be incorporated into the legal framework that deals with the use of "hard" force in international relations. Therefore, cyberspace is of significant importance in the functioning of the global information infrastructure, as it plays a crucial role in vital facilities and the performance of e-governments, in addition to the new digital economy and its importance for global economic growth. There is a strategic importance of cyberspace in the international system through: 1) Information, 2) Cyberspace, and 3) Digital nature. Cyberspace is considered a public domain and an open market, signifying the existence of a network of communication and relationships among its users, who interact with it.

With the shift of all areas of life—media, health, education, governance, citizenship, economy, and politics—into cyberspace, it serves both as a medium and a means for launching attacks and conducting hostilities between adversaries, just like other domains such as air, space, or sea. The number of global cyberspace users has expanded from one billion to 4 billion people, with the inclusion of mobile phone users—around 3 billion—due to the advanced generations of services and the integration of civilian and military communication and media services (Adel, A.S., 2010, pp. 187–189).

- **Digital Tyranny:** This refers to the oppressive use of the internet and digital technologies by governments and central authorities against the working class and decentralized entities affiliated with each ministry. It is used as a tool to rally support for top-down projects and the absence of feedback, or even for spying on active actors. The strategy of digital tyranny includes restricting the ability to speak the truth and access facts when using information and communication technologies, monitoring content and activities of members of scientific bodies online, hacking the social media accounts of professors and students, shutting down the internet to prevent communication, intimidating responses to specific content from faculty members online, and sharing such content, among other actions.

- **Digital Risks:** There may be offensive cyber capabilities possessed by one party, which then works to escalate tensions and change the dynamics of work by targeting networks and information systems in specific contexts, without accurately attributing cyberattacks to their perpetrators. This is likely due to reliance on agents to attack the digital infrastructure of universities. It is expected that cyberattacks will occur more frequently in the future, especially in fragile environments, and to this day, there is no clear strategy that can provide full protection against cyberattacks.

The risks of manipulating data integrity or algorithms that affect knowledge production are increasing through the collection of new data by reproducing the characteristics of a specific type of information, or by corrupting the integrity and content of the information, or by manipulating the predictive values of algorithms ⁴.(Raghda, A.-B., 2022, p. 37)

Internet Governance: Between Domination and Pluralism, and the Position of the Algerian University in This Context:

It must not be forgotten that the internet was originally an entirely American invention, unknown to any other nations, until the United States decided to release it from its military, defense, and security systems, where it had been confined throughout the 1970s and 1980s. The U.S. then made it available for public use and circulation, turning it into a global or universal facility starting from the new millennium. During this period, American administration continued, even after the internet became a public service, and even after the U.S. Department of Defense relinquished control over its management. The American agreement with the "ICANN" organization, which set out its responsibilities in collaboration with the U.S. Department of Commerce, has remained the most prominent legal framework for internet governance internationally. The U.S. government retained its dominant role in managing the internet, while ICANN acted as the executive body. The agreement includes a clause stipulating a review every two years, as circumstances require. However, what actually happened was that throughout these years, the agreement was reviewed, and then the U.S. Department of Commerce—or rather the U.S. government—would decide to renew the agreement, essentially maintaining the status quo with only minor changes, allowing the U.S. to continue its dominant role in network governance.

This is what Algerian universities and academic institutions in developing countries in general must consider in order to fill the gap present in existing internet infrastructures. These institutions lack a platform to discuss public policy issues related to the internet. Therefore, it was suggested to create a global internet forum linked to the United Nations, with a status that includes

⁴ In 2019, engineers demonstrated that they only needed 13 hours and a few dollars to train algorithms to produce speeches that appeared realistic for the United Nations on a variety of sensitive topics, from nuclear disarmament to refugees. This highlights the direct impact on the United Nations' peacekeeping efforts.

developing countries in dialogue about policies, supported by regional and national initiatives, and complemented by open mechanisms for internet connectivity. This would thus facilitate the transition from domination to pluralism. However, this is rejected by the United States, which does not want the forum to engage with the American ICANN institution, which remains the main authority in internet governance.

The system of digital addresses remains under full American control via the "IANA" organization, and there is no indication that the Americans will accept pluralism in its management. This is the most dangerous issue in internet governance, because it means that the U.S. government, through "IANA," can block the operation of any specific country's digital code on the internet. Essentially, the U.S. could prevent any country from using its own digital addresses or from functioning within its borders, rendering the websites and internet services in that country inaccessible, unable to communicate with the world beyond its borders.

The domain name system, overseen by the ICANN organization, is officially based on pluralism in its management and the languages used, but it has taken a long time to implement and establish true sustainability.

The root computing system has also seen a significant breakthrough since its creation in terms of distributing the tasks of owning, managing, and operating the root computers within it. This is evident in the distribution of these computers and their reserves across many countries worldwide.

The Internet Protocol System in its sixth version has seen nearly complete openness, with many people around the world participating in its development and implementation, unlike the fourth version, which was entirely American. (Baher, I., 2010, pp. 62–69)

The most common uses of the internet by university actors, between benefits and risks:

- **Email:** Email refers to the sending of electronic text messages between groups in a manner similar to sending messages and memos before the advent of the internet. It is important to distinguish between internet email and internal email. Internet email may be transmitted and stored in an unencrypted form on networks and devices outside the control of both the sender and the recipient. During this "transition period," the content of the email can be read and tampered with by an external party. On the other hand, internal email systems do not allow data to leave the company or institution's networks, making them more secure.

- **Remote Access:** The internet allows computer users to connect to other computers and information servers easily, regardless of their location in the world. This process is known as remote access. This can be done without the use of security or encryption technologies, which encourages new types of telecommuting and information sharing in many industries. It is the easiest method in the world in terms of type. It is widely used in organizing scientific events at

Algerian universities, despite the potential risks that may arise from its use, both scientifically and in terms of security, as well as other negative impacts. (Marwa, E.-S., 2012, pp. 70-71)

The Digital Divide and Its Cognitive Effects:

There is a significant gap between the developed world and the developing world, which takes on political, economic, scientific, and cognitive dimensions within a broader world of differences between the Global North and the Global South, in the era of globalization and societal interconnection. In this context, the use of communication and information technologies, digital interaction, the global information network, and smart mobile phones prevails. This implies a state of inequality between countries and societies in terms of communication capabilities, access to and acquisition of knowledge, and, most importantly, the production of that knowledge itself. The historical factor of colonization and the plundering of resources that countries in the Global South, especially in Africa, have endured continues to affect their overall developmental capacity.

The Three Dimensions of the Digital Divide:

- Telecommunication infrastructure, including wired and wireless networks, computer devices, service providers, and the ability to build this infrastructure according to self-resources.
- Community skills and capabilities in using these technologies, and their spread among individuals, businesses, and institutions. This includes digital literacy, which refers to the lack of knowledge in using modern communication technologies and the inability to access the internet. It also involves the extent of learning multiple languages to fully benefit from the knowledge available on the network. Additionally, it is related to the spread of what is known as computer culture, which means understanding computer terminology and the ability to operate it, alongside information culture, which refers to utilizing information to find solutions to various problems and crises, while opening the space for information dissemination to everyone, especially the new generations who are expected to bridge the gap with the technologically and communicatively advanced world.
- The ability to use the network to develop available local resources, such as utilizing modern communications in business development, service provision, remote work, accessing entertainment and arts, and gaining access to various cultures and knowledge (Hassan, A.T., 2010a, pp. 73–75).
- Artificial Intelligence and the Risks of Targeting Digital Scientific Infrastructure: Artificial intelligence has become crucial in the knowledge production process in a way that changes the rules of the game. Consequently, demographic data and digital infrastructures have become potential targets, alongside military forces on the battlefield. This increases the importance of searching for a new classification of security threats that takes into account data manipulation, for example, due to its ability to influence citizens in fragile states, particularly, thus posing a threat

to countries, governments, and the international community and an unexpected burden on civilian populations.

The increasing use of artificial intelligence to identify people's characteristics, classify their behaviors and emotions, and subsequently predict and engineer human behavior, also tailored for purposes of social and political control, has negative consequences on human rights. Among these consequences is the violation of privacy and the imposition of new forms of surveillance in both the physical and virtual spaces.

In fragile contexts, data predation and commodification take various forms, surpassing mere surveillance to target specific groups, especially in countries lacking privacy policies and data protection mechanisms. This is done by extracting personal data from population databases to target certain groups, spreading rumors, hate speech, and misinformation to fuel conflicts. Various media (texts, images, videos, or audio samples) can also be forged to emotionally manipulate or spread technological racism by ruling elites, political parties, or illegal organizations. This has led to the emergence of the need to transition from traditional peacekeeping to cyber peacekeeping. How is this achieved?

The Necessity of Transitioning from Peacekeeping to Cyber Peacekeeping:

Some studies have focused on the tasks associated with peacekeeping and how these tasks can extend to cyber peacekeeping. In this context, while peacekeeping operations aim to maintain peace and security in physical spaces, cyber peacekeeping seeks to achieve the same goal but in cyberspace, especially in the pre-conflict world, preventing cyber conflicts and mitigating their consequences if they occur, and rebuilding infrastructure. Cyber conflicts and cyber wars are like the beating of drums for an inevitable day. Today, the majority of countries have started to arm themselves with cyber weapons in preparation for this type of conflict and war. Countries are no longer limited to cyber espionage, reconnaissance, or surveillance activities; they are also developing offensive cyber capabilities, arming themselves with cyber warfare weapons, developing national cyber strategies, and launching cyberattacks of various impacts. This is coupled with the creation of measures to mitigate the consequences, whether in the form of legal frameworks, international institutions, international treaties, or others. This is what Algeria has recently worked on by enacting several laws that regulate the operation of cyberspace, outlining duties, rights, and penalties for those who violate the rules in this context.(Raghda, A.-B., 2022, p. 37)

2- Necessities and Requirements for the Success of the Digitalization Project:

The need to provide advanced communication infrastructure, according to experts, including: extremely high internet bandwidth.

The need to establish official institutions tasked with supporting the efforts of the information and communication technology sector ⁵.(B, A., 2023, p. 5)

In this context, "Youssef Boushrim," an expert in information and communication technology, calls for the establishment of a governmental or presidential institution responsible for supporting the efforts of the information and communication technology sector, with the aim of improving high-speed internet access. This is a complex project that requires the intervention of many stakeholders, including equipment providers responsible for supplying the necessary equipment and services. These stakeholders, in turn, need to be provided with the means to invest and innovate without obstacles or difficulties, by avoiding barriers and simplifying administrative procedures, through the simplification of licensing and connection processes.(B, A., 2023, p. 5)

There is also a need to follow up on the actual implementation of digitalization and the recommendations of senior authorities and related decisions, and to monitor the actual compliance with the reports submitted by local and regional authorities on an annual basis ⁶.(Kemmouche, I., 2023, p. 3)

Urgent Implementation of Digitalization to Protect Public Employees and Combat Corruption and Forgery:

There is an urgent need to implement digitalization to protect public employees and to combat corruption and forgery in administrative documents, certificates, public and official records, customary and commercial papers, and banking documents. It is also essential to fight forgery used to obtain public subsidies, aid, and exemptions, as well as the counterfeiting of money, the imitation of state seals, stamps, and marks, perjury and false oaths, impersonation of jobs, titles, or names, and their misuse. Members of the Legal Affairs Committee of the People's National Assembly have called for the establishment of a unified national platform dedicated to official documents as part of the digitalization process. This would help prevent forgery and the use of forged documents, and they emphasized the need to protect public employees in this field—particularly notaries (Behlouli, A., 2023, p. 03).

Regarding digital platforms, engineers from the higher education sector have achieved notable progress, with 29 out of 46 digital platforms already activated. According to the Minister of

⁵ According to Younes Qarar, an expert in new technologies, Algeria—having embarked on a policy to digitize its public and private sectors—must establish a high-quality telecommunications infrastructure to ensure adequate coverage and data flow speed for all citizens, especially in rural areas. He also recommended additional measures, such as accelerating the rollout of fiber optic networks to homes, forming partnerships with private service providers for fiber optic installation and maintenance, and prioritizing strategic sectors like education. Qarar further called for the development of mobile internet, fourth-generation fixed internet, and satellite internet in areas not covered by fiber optics. He also emphasized the need to establish a data center to protect visit-related data and to secure telecommunications infrastructure against cyberattacks.

⁶ As is the case with the Finance and Budget Committee affiliated with the People's National Assembly, which, at the end of the 2023 fiscal year, is currently conducting its second series of field media and information visits. These visits target tax centers, customs offices, and state property administrations across several provinces to assess the extent of their compliance with the digitalization goals recently announced by these bodies. The visits also aim to evaluate the degree to which these institutions have improved the quality of public services compared to the previous year.

Higher Education and Scientific Research, Kamel Baddari, this is a sign of success and will open up new service opportunities for university stakeholders, including professors, students, workers, and employees. From the registration of newly admitted baccalaureate students to graduation with a bachelor's degree and the issuance of certificates, these platforms play a vital role. Special importance is given to interactive platforms like "Ask Me," which allows students to learn about universities, ask questions, and receive answers from a specialized team on the platform.⁷(Boutalji, Ilham 2023)

Key Achievements in the Higher Education Sector:

According to the general policy statement on accomplishments in the higher education sector, the ministry has undertaken the digitalization of nine operations, including the adoption of student ID cards, the registration of international students, and access to university dining facilities, among others.

This digital transformation and progress have contributed—and continue to contribute—to increasing the visibility and ranking of Algerian universities. Tangible achievements have been made in this area, as Algerian universities have generally secured advanced positions in global rankings. This, in turn, contributes to building the national economy and society, proving the effectiveness of the path adopted by the state to integrate Algerian universities into the international academic landscape. It also enables them to keep pace with developments in scientific research and innovation in the era of digitalization and the knowledge economy.(Boutalji, Ilham, 2023)

According to the 2023 "Times" ranking, Algerian universities ranked first in the Maghreb region and second at the African level—an impressive leap that underscores the strength and determination of the higher education sector. It reflects a genuine will and the efforts of stakeholders and officials who have smoothly embraced this path, thus enhancing the quality of education and research that aligns with the needs of the socio-economic environment.

Both students and professors have actively participated in the digital teaching process, particularly since the COVID-19 health crisis, during which remote learning and even remote supervision and thesis discussions became common. However, some shortcomings and gaps remain, which can be overcome through effective engagement by university bodies and supervisory authorities, especially by providing financial and logistical support—an area that has not yet matched the scale of the challenges and expectations.(Khaled, M., 2023)

⁷ Among the important digital platforms available for students and newly admitted learners is the one dedicated to housing, which aims to facilitate access to university services. Additionally, there is a platform focused on the professional life of university stakeholders—particularly professors and administrative staff—which handles human resource management, including user files, promotions, transfers, and training. Another platform is designed for PhD students, supporting distance learning in disciplines such as philosophy, English, and communication technologies. A coordinator has also been appointed to monitor investment in the higher education and university services sector. Moreover, a digital library platform has been launched to facilitate students' access to books.

One of the key milestones in the integration of digitalization in Algerian universities has been the organization of recruitment competitions through dedicated digital platforms, achieving a fully paperless process. However, despite this progress, certain issues still require attention—particularly the exclusion of eligible candidates such as employed PhD students from applying for assistant professor positions in various universities across the country. This situation highlights the need for an objective recruitment approach that balances academic qualifications with professional experience, values academic excellence, and considers accumulated scientific expertise rather than focusing solely on years of unemployment. University education should not be seen merely as a sector for professional integration, but rather as a space for selecting competent individuals qualified for pedagogical roles, regardless of their age or social status.⁸

Among the positive developments is the ranking of Algerian universities in terms of the quality of their educational system—4th in the Arab world and 23rd globally, and 9th in the Arab world and 89th globally in terms of the quality of scientific research institutions, according to the latest report issued by the World Economic Forum.

Achieving development aimed at bridging the digital divide is a complex endeavor, due to the vast, highly advanced technological dimensions of information systems and their broad social impact. While governments are expected to play a central role in providing the basic infrastructure for communications and to allow the private sector to contribute to the development, use, and commercial exploitation of this infrastructure, the social and developmental outcomes often remain beyond control, direction, or predictability. Although communication technologies theoretically offer opportunities for free interaction and seamless engagement with external actors and communities beyond the reach of local government control, there remains a noticeable variation in impact from one society to another. This variation is often linked to the general economic, industrial, and scientific condition of a given country or society.

A society's ability to benefit developmentally from the opportunities offered by modern communication technologies remains dependent on its economic and political conditions, its openness to these technologies, the extent of political will within the society, and the resources that can be allocated and mobilized for this purpose.

One must not overlook the role of major corporations that dominate the communications industry—including supercomputers, operating systems, communication networks, transoceanic cable lines, and communication satellites—in influencing whether a particular country can succeed

⁸ The same applies to the recruitment of higher education professors, as it would have been more appropriate to open the field to all holders of qualifications for university teaching, both the unemployed and employees, without discrimination, in order to achieve the principle of equality and to seek talents deserving of the sector. On the other hand, restricting the competition to the non-employed category limits the university's opportunities to select the best candidates, not to mention the deprivation of ambitious talents. See, Abdelhamid Othmani, Digitalization to Ensure Justice for Algerians and Build the State.

or fail in its efforts to bridge the digital divide through its own initiatives. Often, such efforts require a form of partnership with many of these key companies to invest in local communities and help provide appropriate communication infrastructure.

The variation in the extent to which modern communication technologies are utilized for comprehensive development is partly tied to the local community's own will, partly to its ability to contribute to the creation of these technologies—not merely to import and use them as they are—and partly to the scope of its international partnerships in the field of modern telecommunications.(Hassan, A.T., 2010b, pp. 72-73)

Bridging the digital divide depends on a society's ability to provide the necessary investments to build and supply networks and computers, rather than merely importing them. It also requires the development of national policies that encourage citizens to use these technologies without obstacles and ensure the delivery of such services to various communities.

In addition, it is essential to establish regulatory legislation that protects the rights of individuals and institutions and organizes the operation of the network without unnecessary restrictions. This also involves the ability to engage in strategic partnerships with more advanced players in the field.

In this context, electronic readiness is crucial—it measures the extent of widespread use of information and communication technologies across different regions and individuals. It is assessed by the availability of computers, the density of telephone usage, and the speed and quality of network access.

However, the presence of electronic readiness, whether partial or complete, does not necessarily guarantee societal progress. True advancement in the comprehensive sense is tied to other conditions, including the identity of the society, the system of values that shapes its behaviors, and its outlook on life and its role within it, in comparison to the roles of others.⁹

Acquiring technology in itself does not constitute a magical solution to a society's problems. Despite the conveniences that communication technology may bring to certain aspects of life, unless its use is part of a comprehensive developmental vision for the society itself, it will remain confined to a narrow and limited scope.

The society must have a collective will to initiate a comprehensive and deep revival, not just the official bodies, and the determination to pay the necessary social and behavioral price. It is

⁹ Perhaps this is what the Algerian Ministry of Higher Education aims to achieve through the issuance of the Digital Ethics Memorandum 2023, which calls for the development of a digital ethics charter as a necessity for all functions of the Algerian university. This includes organizing and managing access to data, facilitating research, enabling access to and utilization of data, enhancing data security, retrieval, and integrity, respecting privacy, protecting intellectual property rights, and ensuring electronic signatures by establishing a regulatory authority for electronic exchanges. Additionally, there is a call for technological vigilance, ethical design, and the use of artificial intelligence to improve operations in the university sector, along with frameworks for the ethical governance of artificial intelligence.

essential that society actively engages in innovating communication technologies and adapting them for change and development.

Innovation for organized change is the key element in achieving any desired development.¹⁰

There is not just one digital divide between the rich and the poor, nor is there a single divide within any local society. Rather, there are multiple divides of varying degrees and levels, both within universities and their actors and within Algerian society. These divides reflect the degree of social and economic development and indicate the presence of varying levels of commitment and unequal benefits. The speed of communication and the extent to which information resulting from this communication is utilized are influenced by the historical dimension of digital policy in Algeria, as well as its future outlook, and the societal dimension, where there is a middle class and a wealthy minority with opportunities, in contrast to the majority of the poor with limited resources for communication. Therefore, we have not yet reached a level that provides greater benefits for all.

Governance and management actors between the individual, society, and the state, and the policies followed through them, are essential for understanding the most important current and future paths regarding the utilization of modern communication and educational technologies.

The immediate, current, and urgent necessity requires the Algerian university to engage in the race for cyber defense purposes. This is because electronic conflict may take a competitive form, revolving around the acquisition of technological advancements, stealing economic and scientific secrets, or attempting to control the internet by seeking dominance over domain names, website addresses, and controlling information.

The cyberspace can be used as a means of conflict within the state, between parties that are in conflict based on sectarian, economic, or religious grounds. This helps uncover the dynamics of internal interaction and facilitates the process of breaches by external actors through communication networks, supported by one of the parties in the conflict.

The millions of computers scattered across the world have created a virtual world that emerged as a result of communication processes, becoming a new medium of power. Hackers can access cyberspace with the aim of trying to control devices, steal information, corrupt it, or disable it. Even official university websites on the internet are not immune to this threat.¹¹

¹⁰ By bridging the digital divide related to communications, and forming the information society as a key step in building a knowledge-based society capable of innovation and utilizing freedom for the benefit of all humanity.

¹¹ This is what the Ministry of Higher Education and Scientific Research has become aware of and attempted to overcome the major obstacles by requesting scientific bodies, professors, and students to obtain prior approval for any scientific participation in international conferences organized by external parties that may have unclear or dubious intentions behind organizing such events. As stated in the letter: "We have recently noticed the participation of some professors and students in scientific events with an international character, which are held either in person or via remote communication, both within and outside the country, without informing or obtaining the approval of the authorized bodies at their respective university and research institutions. This may lead to misunderstandings resulting from the misuse of certain opinions and viewpoints, or placing them out of context, and exploiting them for negative purposes unrelated to the field of higher education and scientific research."

Conclusion:

One of the major criticisms of digitization is that it diminishes human emotions in interactions between various actors within the educational institution. It becomes difficult to handle exceptional cases of staff members within the organization, and there is a risk of losing dialogue and the exchange of knowledge and skills between teaching staff and the different components of the university community. Additionally, there may be problems and obstacles faced by both the lecturer and the student due to the lack of training and the constant evolution of technology.

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