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Developing Digital Skills under Artificial Intelligence Systems and the Imperatives of Digital Transformation

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Abstract:

With the advent of the era of big data, companies and institutions have increasingly relied on transforming massive datasets into useful information to support decision-making, leading to digital analysis and the automated implementation of organizational structures. This development has marked a fundamental turning point in the age of the Internet, where big data and artificial intelligence have become indispensable to the rapid evolution of large-scale technologies and the exponential growth of information volumes. These dynamics have reshaped traditional modes of work across societies, altering the relationships between the state, individuals, and institutions within the business environment. On the positive side, they have fostered capacity-building, skill development, and the achievement of digital transformation across all sectors. On the negative side, however, the sheer scale of information and data has also posed significant challenges to national information security.

***Keywords**: Artificial Intelligence; digitization; electronic empowerment information systems; technology.*

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Introduction

In environments where information technology is widely available and electronic applications proliferate; most systems are built upon strategic information frameworks designed primarily to create competitive advantages that operate with speed and efficiency. These frameworks have become a standard expectation across practices related to computing, the Internet, and modern technologies, which now constitute new instruments of electronic and digital systems. They also serve as objectives of virtual reality, where information systems contribute to creating opportunities and providing the appropriate climate to enhance intelligence for individuals, institutions, and companies. This entails leveraging forms of artificial intelligence linked to competition and marketing, as well as business intelligence grounded in objective technical indicators derived from information, knowledge, and diverse technological domains. At the same time, it requires recognizing the obstacles and risks associated with artificial intelligence systems and the vast scale of information.

Importance of the Study

The importance of this study lies in the fact that the development of digital skills under artificial intelligence systems has acquired great significance in the modern era, due to the profound transformations the world is witnessing as a result of the digital revolution. Artificial intelligence has become an essential element in various fields, including education, the judiciary, administration, and the economy. This imposes the necessity for individuals and institutions to possess advanced digital skills that enable them to adapt to these transformations, thereby contributing to the enhancement of professional competence, the improvement of service quality, and the support of innovation, in addition to achieving sustainable development.

The importance of the subject also stems from its contribution to the reformulation of traditional concepts of skills within a developed digital environment. Digital skills today have become a composite concept that includes the ability to deal with artificial intelligence, analyze data, and understand algorithmic systems, and are no longer limited to the mere use of

simple technical tools. This, in turn, imposes a set of increasing challenges at the level of strengthening cybersecurity and ensuring the effectiveness of information management and protection.

Objectives of the Study

This study aims to:

- Determine the interactive relationship between artificial intelligence and the development of digital skills, by clarifying how these systems impose new patterns of competencies, such as data analysis skills, critical thinking, dealing with algorithms, in addition to cybersecurity skills.
- Identify the enabling requirements of artificial intelligence technologies and big data systems, while indicating their role in enhancing digital education and ensuring information security within the digital environment.
- Highlight the nature of the obstacles and risks arising from the use of these modern technologies, and the extent of their impact on the stability of information systems and the integrity of data, which imposes increasing challenges at the levels of strengthening cybersecurity and managing information.

Problem Statement

Given the rapid expansion of modern technologies and their swift responsiveness to services, data systems, and mechanisms of digital transformation, culminating in artificial intelligence technologies that have become a fundamental pillar of information systems and are increasingly leveraged by users to achieve diverse interests across all fields, several pressing questions arise. In particular, artificial intelligence has emerged as a challenge that imposes itself and compels us to explore its intricacies in order to adapt to global developments concerning its foundational uses. This leads to the following central problem:

To what extent can individuals and societies acquire the skills and mastery of technological and digital transformation, ultimately

enabling the use of artificial intelligence techniques and the achievement of cybersecurity?

From this main problem, the following subsidiary questions emerge:

- What do we mean by artificial intelligence, and what is its interdependent relationship with big data?
- What are the key productive factors that artificial intelligence generates to enable control over the technological revolution, and what are the principal challenges and obstacles imposed by artificial intelligence systems and big data?

Methodology of the Study

This study relied on the descriptive method, through the review of the fundamental concepts related to artificial intelligence and the development of digital skills in light of the requirements of digital transformation, while identifying the interactive relationship between them.

The study also relied on the analytical method, which was employed to understand the extent of the impact of artificial intelligence systems and big data on the development of digital skills among individuals, as well as to interpret the implications of these transformations for individuals and institutions. This is based on the fact that modern digital technologies are characterized by complexity, which necessitates precise analysis of their components, as they represent composite concepts in which technical, cognitive, and organizational dimensions intersect. Such analysis allows for a deeper understanding of the nature of the changes brought about by these technologies in the contemporary digital environment, as well as the challenges and risks they face.

Division of the Study

For the purposes of this study, we divided the research plan into two sections. In the first section, entitled Artificial Intelligence and Data and Information Systems – A Study in the Concept, we address the concept of artificial intelligence and big data and their role in supporting and developing knowledge systems. This is undertaken through reliance on storage and processing structures and systems characterized by

comprehensiveness and complexity, which in turn require continuous development of digital skills. Such development enables individuals and institutions to enhance their capacities for effective engagement with data and information systems, which constitute the cognitive foundation linked to the mechanisms of human reasoning within the framework of what is known as artificial intelligence.

The second section, entitled Managing the Technological Transformation of Artificial Intelligence: The Path to Digitization and Its Effects on Electronic and Information Security, examines the enabling indicators of artificial intelligence technologies and big data systems, through analyzing their role in supporting and developing the digital education system, and their contribution to strengthening and safeguarding electronic identity. This is achieved by means of advanced technologies for data management and security. Furthermore, this section addresses the obstacles, challenges, and risks associated with the use of big data and artificial intelligence systems, analyzing their repercussions on electronic and information security, thereby reflecting the escalation of risks in light of the increasing reliance on the digital environment and the rapid development of data processing technologies.

1. Artificial Intelligence, Data and Information Systems – A Conceptual Study

Information technology is employed to strengthen knowledge systems through the use of storage structures and frameworks characterized by comprehensiveness and complexity. These systems require the development and enhancement of digital skills, supporting individuals and institutions via data and information systems, which form the foundation of knowledge linked to the human mind, commonly referred to as the realization of artificial intelligence. In this context, data constitutes the essential basis of information and its acquisition by individuals, facilitated through computers and modern communication devices. These tools integrate human and machine interaction, thereby advancing the governance of the information age.

1.1 The Concept of Artificial Intelligence and Big Data Systems

Data constitutes the fundamental basis of information and serves as its independent variable. Information varies according to the diversity of data, and due to its importance, increasing attention has been devoted to it, making it a knowledge field of a new, multidisciplinary science. Information emerges as the inevitable result of processing data through analysis, synthesis, and comparison. Thus, information represents the aggregate of data that has undergone processing(Alean, 2012, p. 23). Artificial intelligence, in turn, lies in the use of datasets to form a virtual societal system encompassing communication tools that transmit and exchange information. Modern technological innovations have imposed themselves across all technical domains by providing new forms of digital industry through the use of electronic media.

1.1.1 Definition of Artificial Intelligence

Artificial intelligence is defined as "a field of science and technology that relies on computer science, biology, psychology, linguistics, mathematics, and engineering(Khalil, 2014, p. 94)."

It is also described as "a set of interrelated technologies that attempt to simulate and reproduce the interpretive behavior of humanity—thinking, speaking, feeling, and reasoning(Rashad Al Saleh, 2013, p. 315)."

From another perspective, artificial intelligence represents efforts to develop computerized systems through the use of both hardware components and software applications, enabling actions and behaviors that resemble and imitate human activity, thereby addressing the human mind. Some therefore define it as "the re-representation of human intelligence through computers, expanding the scope of computer applications by granting them the capacity to evaluate and act across diverse knowledge domains.(Qandiliji & Al Janabi, 2005, p. 464)"

Others view it as "the simulation of human intelligence processes carried out by machines, encompassing learning through the acquisition of information and rules for its use(Qandiliji & Al Janabi, 2005, p. 465)."

Artificial intelligence also supports electronic management systems and enhances cybersecurity by establishing standards of interconnection

among computer systems, as well as processing, transmitting, and storing digital data utilized and hosted on the Internet(Chatillon, 2011).

1.1.2 Definition of Big Data

Artificial intelligence is built upon a fundamental foundation known as big data systems, which constitute the raw material of information. Big data takes the form of numbers, symbols, phrases, or sentences that have no meaning or purpose until processed. These elements are interconnected to form concepts that are transformed into information through the use of computers(Alean, 2012, p. 25).

The term data derives from the Latin meaning "given" or "fact," and refers to numbers or images that serve as the raw material for producing information. Data is processed through tabulation or statistical analysis to achieve deeper understanding of situations(Al Rumahi & Al Safarini, 2015, p. 11).

A database, in turn, is defined as "an algorithmic and mathematical structure that processes data, divided into files, records, and fields, with distinctive functional performance resulting from intellectual effort." It is closely linked to the information base, which processes data and reflects the intellectual imprint of human effort(Mazouni, 2008, p. 135).

According to the Computer Terminology Dictionary, data is "a base or method of organizing information in the form of a large primary file that enables comprehensive handling to meet the diverse needs of decision-makers." It is also referred to as an information bank, a collection of data on areas of activity within an institution stored using direct storage methods(Mazouni, 2008, p. 135).

The vastness of data benefits all fields, particularly administration, by providing large databases that support decision-making through data warehouses containing records and summaries of millions of transactions, enabling the production of reports or the analysis of massive archival datasets(Al Rumahi & Al Safarini, 2015, p. 330‑ 331).

Databases enjoy legal protection, especially at the European level, as highlighted in the European Directive's Article 1, which defines a database as "a collection of data, works, or other materials produced independently, systematically or methodically arranged, and accessible in an intelligent manner by electronic or other means(Mazouni, 2008, p. 130)".

The concept of big data also refers to the application of data communication systems, or electronic data transfer from one site to another. The effectiveness of an information system is measured by the efficiency of data delivery and the communication network associated with it, which enables the system to perform its communication functions(Rashad Al Saleh, 2013, p. 137)

1.2 Artificial Intelligence and Its Relationship with Big Data

The concept of strategic intelligence as a modern system rest on two key pillars: the utilization of information, technology, and knowledge in their electronic, digital, and virtual dimensions, together with artificial intelligence and databases, and the interconnections between them. Smart enterprises employ advanced methods from database technologies, data processing, and artificial intelligence to discover, encode, store, and expand the use of knowledge(Al Tai & Al Khafaji, 2009, p. 238).

Databases and categories of information also constitute the principal foundations of e-government systems. States measure their technological capacity by the sheer volume of information and data they possess and manage (Al Mubaidin, 2011, p. 18)

1.2.1 Characteristics of Artificial Intelligence

Artificial intelligence encompasses a set of defining characteristics, among which:

1.2.1.1Intelligence:

This refers to the ability to think logically, to learn, to understand, to innovate, and to acquire and apply knowledge in relationships. These attributes apply not only to individuals but also to organizations and companies. The classification of artificial intelligence technologies requires reliance on computers, which themselves demand cognitive, perceptive, and logical capacities, as well as comprehension, in order to realize these abilities(Rashad Al Saleh, 2013, p. 315).

1.2.1.2 Expert Systems:

These are considered an application of the concept of artificial intelligence, consisting of knowledge-intensive programs designed to solve problems by leveraging human expertise. They also assist in decision-making processes(Khalil, 2014, p. 94). Expert systems are a branch of artificial intelligence, as they include specialized programs and datasets that generate expert-like behaviors and derive conclusions by comparing stored computer data with established knowledge facts(Qandiliji & Al Janabi, 2005, p. 466).

1.2.1.3 Flexibility:

This is reflected in the rapid control of activities and the use of artificial intelligence technologies in ways that rely on broad thinking, knowledge, and the acquisition of necessary experience for investment. It also requires the active and efficient storage of information to build foundational knowledge bases for organizations or companies(Qandiliji & Al Janabi, 2005, p. 465).

1.2.1.4 Expertise and Professional Skills:

These depend on specific tasks and functions that require familiarity with modern technologies. Individuals must reach an advanced level in a profession or field of knowledge, which implies specialized skills and deep understanding in artificial intelligence, as well as comprehensive knowledge of information systems and data(Alean, 2012, p. 57).

1.2.2 The Relationship between Artificial Intelligence and Big Data

Artificial intelligence demonstrates a superior capacity for dynamic adaptation to the knowledge-based transformations of society. It enables multiple alternatives and pathways for problem-solving and goal attainment, while possessing immense capabilities for storing and retrieving vast amounts of information, as well as linking and communicating data by processing multiple files simultaneously to extract, analyze, and archive them in computer memory(Mazouni, 2008, p. 133).

Within the digital environment, the complete structure of information systems and applications emerges with the purpose of storing, processing, retrieving, and transmitting data to users(Ibrahim, 2008, p. 36). These diverse elements collectively form a digital information system, signaling the advancement of information and communication technologies. This progress supports states through the integration of e-government(Ibrahim, 2008, p. 36) within companies, where information systems consist of data, hardware, software, and telecommunications. Consequently, information systems have become synonymous with artificial intelligence systems reliant on data and computing(Al Rumahi & Al Safarini, 2015, p. 18), facilitating the execution of procedures via data systems and promoting foreign investment. The dissemination of artificial intelligence systems through electronic information and services contributes to the implementation of information security, economic security, political security, and cultural security at the national level(Al Miqdadi, 2011, p. 187-188).

The relationship between data systems and artificial intelligence is further illustrated by the application of AI technologies in computing domains that demand cognitive, perceptive, and logical capacities to understand facts and process qualitative data. While information systems focus on storing, retrieving, and managing data, artificial intelligence generates and presents knowledge and facts. The rules employed in AI derive from diverse experts across fields such as mathematics, psychology, and physics, among others. AI also encompasses interconnected technologies including robotics, expert systems, fuzzy logic systems, intelligent agents, and artificial neural networks. Although these technologies do not replicate genuine human intelligence, they surpass traditional information systems in sophistication and capability(Rashad Al Saleh, 2013, p. 316).

Smart companies have invested advanced methods from big data technologies and their processing, together with artificial intelligence technologies, for the purpose of discovering, encoding, storing, and expanding the use of knowledge. They function as intelligent systems concerned with linking the essential capacities enjoyed by machine intelligence as one aspect of information technology, and with building

knowledge systems such as intuition and creative learning, which require the integration of Internet language as a necessary condition for harnessing capacities in the sphere of electronic business and ensuring the electronic exchange of information among different decision-making centers(Al Tai & Al Khafaji, 2009, p. 238)..

2. Managing the Technological Transformation of Artificial Intelligence – The Path to Digitization and Its Impacts on Electronic and Information Security

In parallel with the changes occurring in the shift from a machine-based society to an information society, the individual or citizen finds himself compelled to learn technical skills and technological expertise, relying on a broad base of data that has become an inseparable part of artificial intelligence systems. These systems require rethinking toward the attempt to create political and legal standards that provide the necessary protection for associated privacy systems, and to confront technical and educational obstacles that form barriers to acquiring digital literacy, which takes the form of algorithms or procedures that ensure both benefit and caution at the same time in facing the challenges imposed by big data and artificial intelligence systems.

2.1 Enabling Indicators of Artificial Intelligence and Big Data Systems and Their Role in Achieving Digital Education and Preserving Electronic Identity

Carrying out the processes of data collection, the implementation and design of computer networks, the management of the Internet, and the transformation of data from one system or format into another so that it becomes accessible for use by all in modern ways, as well as the creation of data warehouses capable of unifying information from different sources for purposes of retrieval and expanded utilization(Al Mubaidin, 2011, p. 78‑79), requires the availability of qualified and professional technical skills and competencies. It also demands a high capacity for handling information and data securely and in a manner that ensures the highest levels of efficiency, productivity, and effectiveness(Taher, 2010, p. 118 - 119). Indicators reveal weaknesses in users' mastery of information systems

and the difficulty of accessing them easily. Moreover, the great diversity in the nature of information and the massive volume provided by the Internet (Taher, 2010, p. 79)can weaken citizens' ability to acquire these skills, particularly if they do not use computers regularly and efficiently.

2.1.1 Enabling Elements for the Development of Electronic Services

Electronic or digital government systems are based on the standard of interconnection between computer systems and the processing, transmission, and storage of digital data used or placed on the Internet(Chatillon, 2011, p. 88). In order to master digital transformation technologies, individuals must acquire the language of control over advanced and innovative technologies linked to analytical Internet practices, as well as the strategic and human dimensions associated with new structural, legal, and normative practices through the use of the Internet(Yahiaoui & Qrabisi, 2019, p. 136).

Empowering individuals with technical and communication skills depends on the design and development of infrastructure through user interaction with information, the necessity of accessing it, and benefiting from it. Governments must communicate the objectives, stages of development, issues, and outcomes of any work carried out via computer networks. This requires substantial financial support, significant funding, and highly skilled competencies capable of conveying ideas and work effectively(Al Mubaidin, 2011, p. 79).

Digital transformation also entails the necessity of acquiring communication skills to improve economic, political, administrative, and other performance(Ibrahim, 2008, p. 67). This requires the provision of services through the integration of information and enabling individuals to access it via the web.

2.1.2 Artificial Intelligence and Big Data Systems as an Inevitable Outcome of Electronic and Digital Education

The e-learning system is crucial in ensuring and promoting the use of artificial intelligence systems, as acquiring skills in science and technology

helps societies foster creativity and strengthen relationships and connections. Lifelong learning will form part of the flexibility and adaptability of data systems(Fenech, 2018).

Generating sufficient and necessary knowledge, carrying out knowledge transformation processes, and achieving a level of education means preparing and delivering knowledge to those who need information and data to perform required tasks and achieve objectives in the best possible way(Taher, 2010, p. 46‑47). The technological revolution is characterized by massive knowledge expansion and the multiplication of intellectual production across various fields, encompassing a wide range of techniques, tools, and systems fundamentally based on education and the acquisition of technical skills.

The empowerment of citizens or individuals to acquire knowledge and e-learning is an indicator of the use of data systems and the classification of artificial intelligence mechanisms. It reflects how to employ and use distance learning methods, via the Internet, through teaching practices that enable individuals to learn the approaches and methods of data systems(Abdelraouf, 2015, p. 64).

E-learning or virtual education requires training individuals to use software and computers and to benefit from them in entering and extracting information. It focuses on the individual, considering him not only a source of information but also an art and skill in obtaining information, which increases motivation and the ability to achieve goals(Abdul Majid & Al Ani, 2015, p. 28-29)

2.2 Obstacles and Risks of Using Big Data and Artificial Intelligence Systems on Electronic and Information Security

Although digital technology represents a true revolution in transmitting information to beneficiaries through digitized data systems that yield time savings, speed, and accuracy, it has become difficult to verify the validity and credibility of the information provided. In addition, governments, especially Arab governments, often deal cautiously with the Internet and computer systems, since they are tools that allow individuals to exchange information easily, quickly, and at low cost. This is evident in the imposition of taxes in communication policy, which makes this tool entirely out of reach for individuals(Al Laban, 2011, p. 144).

Moreover, integration or access to information via the Internet has multiple consequences for society, the economy, and politics, resulting from attempts to predict developments and understand how to influence them. While the Internet reduces problems(Engelhard, 2012, p. 73‑ 83) and seeks to find solutions by spreading awareness and bringing about social and human changes without delving into beliefs, it reflects tangible life, but this reflection may be for the better or for the worse(Engelhard, 2012, p. 83).

2.2.1 Digital and Technological Divide

The information revolution has generated new ideas, capacities, and energies for innovation, linking them to a system of communication networks, databases, planning, and information control at a level of integration and cohesion. This technology has transformed human life, making it impossible to imagine any functional human activity or organized collective work without computer and communication tools(Yassin, 2020, p. 15). However, access to the Internet or computers for the use of big data systems has led to the emergence of the digital divide. Technological exports based on research and development, such as computers and electronic tools, represent an important indicator of the technological capacity of productive sectors in any society(Mohamed, 2019, p. 214), strengthening the competitive ability of states against one another in global markets. Yet many countries have lagged behind others in the use of Internet and computer technologies and in keeping pace with technological development, due to significant disparities in access to information, as is the case in Arab and Islamic countries compared to technologically advanced nations(Mohamed, 2019, p. 15).

Technological disparities, especially in Internet services, are among the factors that have affected the application of artificial intelligence systems or remote work, particularly in developing countries with limited technological resources. In these nations, only a small percentage of individuals can access the Internet(Madani, 2021, p. 585). This was highlighted in the World Bank's 2021 report, which showed the digital divide between low-income and high-income countries: the latter enjoy speeds of 210 megabytes per second, while the former do not exceed 30 megabytes, as in Somalia, Rwanda, Uganda, Sierra Leone, Mozambique,

Malawi, and the Democratic Republic of Congo. This negatively impacts their ability to keep pace with smart strategies, including artificial intelligence(Madani, 2021, p. 586).

The unequal distribution of information resources and content also leads to generations of people, even children, being unable to access the information necessary to become successful members and actors in their societies. This is due to the lack of digital education infrastructure, especially among vulnerable groups, and the shortage of quality training programs or data concerning the most disadvantaged populations (Fenech, 2018).

2.2.2 Lack or Shortage of Unified Standards for Information Systems

The shortage of standards in developing information systems lies in the absence of internationally unified measures, which hinders and obstructs the development of a coherent system. Standards for electronic data exchange, email, and communications vary and differ across the world. Therefore, if all these standards are not taken into account, they will form an obstacle to the employment of artificial intelligence systems(Al Tai & Al Khafaji, 2009, p. 71-76).

In addition, differences and disparities among countries in terms of laws, languages, cultures, and economic interests pose significant challenges. Language, in particular, represents a major and serious obstacle, as global and digital communication requires a certain degree of unification in laws and language. This may lead to problems such as the inability to transfer data properly at either the local or international level, since information must first be translated. Moreover, some local laws prohibit businesses from managing accounts and other systems in a foreign language, resulting in a difficult and costly solution, as managing such systems requires both the local language and English, which is practically the dominant language(Al Rumahi & Al Safarini, 2015, p. 426‑427).

Furthermore, states or local governments protect their economic, scientific, and security interests for their populations, especially since scientific information constitutes an important national source of income for foreign institutions. This often leads to contradictions in terms of interests.

2.2.3 Risks of Using Big Data on Cybersecurity

Digital technology has developed at an extraordinary pace, with diverse sources, patterns, and generations, placing states before unprecedented choices regarding information and data through the massive growth of the Internet and the global information network. This expansion has been accompanied by the rise of companies and organizations offering services, executing operations, and providing necessary support(Yassin, 2020, p. 43). However, this technological revolution has created numerous risks, obstacles, and challenges that continue to hinder the employment of artificial intelligence systems. Data protection laws in most parts of the world, particularly in Asia, Africa, and Latin America, are still in the drafting stage, which necessitates building the capacities required for workers in artificial intelligence to understand and analyze data-related aspects(Stewart, 2018).

Bardkas and Nissenbaum (2014) discussed how algorithms and big data often circumvent legal guarantees related to privacy, noting that sensitive data fields (such as race and gender) are frequently concealed. In their 2016 article, they further emphasized that big data could produce seemingly fair and neutral algorithmic behavior while actually generating disparate impacts, pointing to methodological flaws in transactions that appear non-discriminatory on the surface(Oshoba & Al Rajae, 2017, p. 12).

Citron and Pasquale (2014) also wrote about the "scored society" and its shortcomings, describing how modern algorithms are currently opaque, irregular, and sometimes hidden, assigning formal ratings to individual reputations that affect access to opportunities. These ratings include credit scores, criminal records, and employability, while the authors highlighted how such systems violate reasonable expectations of due process, particularly fairness and accuracy(Oshoba & Al Rajae, 2017, p. 11).

Additionally, Scott & Scott LLP and the Ponemon Institute conducted a survey in 2007 of 702 information security professionals in companies, revealing the dire state of many organizations. The study indicated that more than 85% of organizations reported experiencing a data breach, especially those that did not implement encryption technologies on computers or mobile devices(Al Rumahi & Al Safarini, 2015, p. 648).

Conclusion:

Artificial intelligence technology enjoys a new political approach around which the global international community gathers to apply it in order to confront the greatest challenges facing humanity, by improving quality of life and achieving comprehensive and secure sustainability based on equality in enjoying benefits and avoiding obstacles that stand in the way of realizing the public interest behind the application of artificial intelligence algorithms. Moreover, the intelligent use of data will provide a solid foundation for states and their role in achieving digital empowerment for individuals through supporting machine learning and ensuring the quality of access to information. While artificial intelligence systems provide a large number of digital electronic services, they must rely on training courses to teach citizens how to avoid obstacles and plan for them through the necessity of acquiring computing language, so that individuals can be formed with capacities qualifying them to use data systems and artificial intelligence, thereby integrating and accessing the smart world while avoiding its risks at the same time.

After addressing the various aspects of the topic and exploring its details, we arrived at several important results:

- Artificial intelligence, for some organizations, constitutes a knowledge base that generates solutions to specific and complex problems and accomplishes them in a short time.
- Active and efficient information storage contributes to strengthening both institutional and human intelligence, by securing organizational foundations and rules that enable humans to access machine intelligence, also known as robotics.
- The application of artificial intelligence systems and the use of big data through projects based on new information technology infrastructure have led to the emergence of challenges and problems alongside opportunities and advantages. The most prominent of these are the inability to fully control electronic and digital information, exposure to cyberattacks, violations of privacy, personal freedoms, and identity, as well as threats to information security, loss of control over programs and data, particularly those published on websites and computing platforms.

Given the great importance of artificial intelligence as it relates to the future of humanity, we propose the following:

- The application of artificial intelligence systems requires achieving the demands of change and organization within many institutions, organizations, and their members, in terms of acquiring an artificial intelligence culture, which is preceded by the idea of electronic awareness and control over digitization skills and their application.
- Investment in digital infrastructure, including high-speed communication networks, data centers, and cloud computing services.
- Reducing the digital divide between urban and rural areas and among different social groups within the same state.
- Encouraging self-learning through open digital platforms, thereby enhancing individual autonomy in the acquisition of skills.
- The move toward computing requires a level of organized culture in terms of structures, as well as costs and financial and human capacity.
- The adoption of artificial intelligence systems and the management of big data requires providing a safe environment that ensures proper access for individuals within organizations operating according to artificial intelligence systems.

Planning, education, training, and establishing regulations for data management are necessary, as they are among the most important determinants of controlling the risks of applying artificial intelligence systems.

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