THE FUTURE OF ARTIFICIAL INTELLIGENCE IN ENHACING PUBLIC SERVICE

DR. KHADIDJA GUEMMAR*
*Djilali Bounaama University, Algeria

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Abstract:
*As with other countries, Algeria is making efforts to catch up with technological advancements by introducing artificial intelligence into all sectors, including management. AI is considered to be the language of the future that everyone must learn, which is why building a smart management, rather than simply a digital one, and eliminating paper-based management are key objectives. Achieving this goal requires conducting numerous studies to identify the necessary conditions for incorporating AI into the Algerian management and addressing the many obstacles that stand in the way of transitioning to a smart management. Artificial intelligence can be considered as the "**future of smart management**," and hence, we have employed a descriptive and analytical methodology to describe and analyze the actual situation of AI in management. Our aim is to identify and extract the critical models and challenges that impede the integration of artificial intelligence into public administration. We have concluded that artificial intelligence has the potential to advance all sustainable development goals and promote sustainable and economic development. However, its use also entails significant social, economic, and ethical implications. It is therefore considered imperative that artificial intelligence be considered as a "**language of the future**" that requires universal proficiency.*
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JEL Classification Codes: *E31, E37, O14.*

1. INTRODUCTION

Despite the fact that "**Artificial Intelligence**" was once just a dream presented by filmmakers in science fiction films until the mid-twentieth century, it has now become a tangible reality that we often turn to, even without realizing it. In reality, identifying whether the machine we use is imbued with artificial intelligence is a difficult and relative issue. Among the most prominent examples of smart machines are those which, while performing their tasks, study the matter and make decisions based on what the study process concludes, effectively imitating human thought processes. (Al-Fira, 2021).

In the 21st century, artificial intelligence research has become highly specialized and has thus divided into independent subfields. Most of these subfields agree that smart machines should be able to learn, infer, and react to unprogrammed circumstances, which is currently the central focus of research. The goal is to create machines capable of solving many problems based on huge quantities of data and decision-making processes provided during programming. This is known as artificial intelligence.

The emergence of the computer has brought about a true information revolution, and the concept of an information society has taken hold, with the belief that we are on the verge of a completely new civilization dominated by the information society as an alternative to the industrial society. This society rests on the conversion of intangible data and information, and after the convergence of computer and communication technologies, it became possible to connect multiple computer devices through the internet network, which has turned the world into one global village where all barriers and traditional restrictions have collapsed. New patterns of contracts and diverse ways of exchanging the will of contracting parties have emerged, and the internet has become a common tool for contract conclusion, both in public and private ones. This is due to the speed of contracting

and the ability to attract the highest number of business partners, particularly through electronic advertising for contracts.

Oftentimes, the term artificial intelligence is not restricted to machines, but also includes computer programs that are installed on these devices, and which exhibit certain behaviors and characteristics that enable them to stimulate human cognitive skills and work patterns. This makes sense, given that a machine or device itself bears some resemblance to the human body, while the human mind undertakes all functions related to thinking, decision-making, and problem-solving.

Importance of the Research: Many of us are convinced that human mental pursuits, such as comprehending nature or solving mathematical problems, necessitate "**intelligence**." As our mental abilities are crucial to our everyday existence, the human race has bestowed upon itself the scientific name of "**rational being**." **Artificial intelligence** aims to understand the intelligence components by inventing intelligent beings and comprehending and expanding them. Additionally, examining the field of artificial intelligence is imperative because manufactured beings are significant in and of themselves if artificial intelligence is capable of producing several unique and remarkable products. It is evident that computers are approaching or exceeding human intelligence, and this could drastically change the course of future civilization. Artificial Intelligence encompasses multiple subfields with various applications, such as logical thinking, particularly in **automating administrative tasks**. Thus, artificial intelligence workers can employ their methods and technologies in any aspect of management, rendering artificial intelligence "**the future of smart management**".

- **Therefore, the problematic that arises is:** What are the prerequisites and challenges involved in creating a smart public administration based on the applications of artificial intelligence?

This, in turn, leads to several legal issues:

- How can modern technologies like automated agents and neural networks assist in enhancing administrative performance?
- What are the primary challenges to introducing artificial intelligence into paper-based management?
- What are the difficulties involved in implementing artificial intelligence in public administration?

-Methodology Adopted: It is here that numerous and diverse attempts to introduce technological devices and communication networks to the Algerian administration began. For this reason, we have employed the inductive, deductive, and analytical methodology to analyze the state of artificial intelligence within the administration and to extract the key models and challenges that complicate the process of implementing artificial intelligence into the public administration.

- **Study Plan:** For these reasons, and for the purposes thereof, the following study plan was adopted:
- **Theme One - A Conceptual Introduction to Artificial Intelligence**
- **Theme Two - Automated, Intelligent Electronic Agents**
- **Theme Three - Artificial Neural Networks**
- **Theme Four - The Challenges of Artificial Intelligence**

2- A Conceptual Introduction to Artificial Intelligence

Artificial Intelligence is a scientific discipline that was officially launched in 1956 at Dartmouth College in Hanover, USA, during a summer school conducted by four American researchers: John McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude Shannon. Subsequently, the term "Artificial Intelligence" has achieved widespread use – which was likely initially invented to capture the public's attention – but has become so common that it is now universally recognized. This field of informatics has been gaining more and more popularity over time, and since the technologies it has spawned have played a significant role in transforming the world over the past sixty years, it is important to bear in mind that the success of the artificial intelligence term may sometimes hinge on misconceptions, particularly when it is used to refer to a highly intelligent artificial entity that can rival human beings.

Providing a detailed explanation of concepts surrounding artificial intelligence as a means of comprehending its nature. This involves exploring key terminologies such as artificial neural networks, programming languages, algorithms, and machine learning. This is one of the pressing contemporary challenges that has permeated most sciences due to its significant impact in the field of modern computing, especially since it did not leave any field without entering it. The focus has shifted towards the field of technological development to such an extent that the administrative field has not been left untouched by its impact. With numerous technologies emerging for monitoring employee performance, it is now imperative to understand the various applications of artificial intelligence in the administrative field, such as auditing, accounting, and facilitating data control. (Nasseri & Khashaimiya, 2021).

Although there is no precise definition for intelligence, the essence of artificial intelligence can be summarized as a subfield of science that focuses on machines that are capable of solving the types of problems that typically rely on human intelligence for resolution. This definition was formulated by Marvin Minsky, one of the foremost experts in cognitive and cognitive-related sciences within the field of artificial intelligence, in his book "The Road to Building Artificial Intelligence." However, it is important to bear in mind that machines that carry out specific tasks cannot all be regarded as artificial intelligence under this definition. (Al-Fara, 2021).

Artificial intelligence is a flourishing technology that is being used in numerous smart applications in various fields. It is all around us, in our homes, on our phones, in many products and services that we use in our daily lives. Its usage in solving problems in different fields is constantly increasing, and its role in various economic and administrative fields is becoming more prominent.

Public administration has benefited from the capabilities of artificial intelligence, whether it is in the areas of accounting or auditing, organizational relations, statistics, or data-mining. Expert systems, artificial neural networks, machine learning, and virtual agents have made administration more effective and efficient by reducing the cost of time and money, increasing accuracy, detecting errors, creating legal and financial advisory systems, and enabling predictive modeling. (Nasseri & Khashaimiya, 2021).

We are currently witnessing an integration of artificial intelligence systems with other information systems, including administrative information systems, has resulted in new applications for information systems and the continuous development of advanced and innovative computer systems. This integration has had a clear and essential impact on administration, and on the organisation's functions, as well as the level of complexity of other systems used to manufacture products, services, and information. The development of administrative fields depends on knowledge systems that embrace artificial intelligence technologies like expert systems, neural networks, document management systems, and smart search technologies, such as intelligent agents, data mining, and relational databases. (Nasseri & Khashaimiya, 2021).

3. Automated Electronic Agent - smart -

The application of artificial intelligence capabilities can significantly affect the functions of public administration, leading to the transition into the era of electronic management from traditional to intelligent modes. This transition allows for the development of artificial intelligence applications within various activities, while ensuring that laws and regulations are studied, identified, and controlled while avoiding diving into the technical aspects. The legal system and legal liability associated with the application of artificial intelligence were examined, with a particular focus on the use of artificial intelligence in maintaining public order, or electronic administrative control, with emphasis on the electronic vigilance and foresight systems. The study also explored the ways in which artificial intelligence can be used to serve collective needs, public services, and electronic public services.

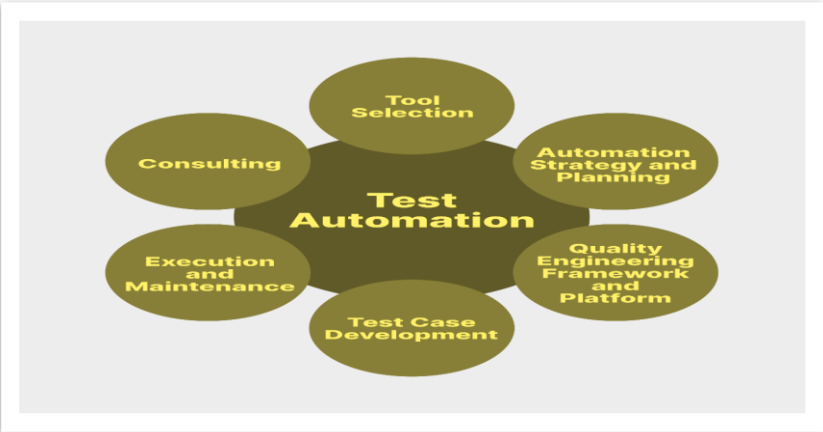
One of the primary implications of incorporating artificial intelligence in the field of public administration is the emergence of the automated electronic medium, electronic public procurement, and the use of electronic portal for public procurement. The remarkable progress in the field of communication and information technology has given rise to automated electronic medium in electronic transactions, which enable the conclusion of electronic contracts between

humans and machines or between machines themselves. As a result, some Arab and foreign legislations around the world, particularly those that regulate electronic transactions and exchanges, have included provisions in the law that controls electronic commerce contracts, defining the nature of the electronic agent, its characteristics, the limitations of its transactions as well the extent of such transactions attributed to the natural person who programmed the computer device.

It responds using operators or engines; the simple reflex agent is one of the simplest types of agents and relies on simple reflexes. It makes decisions and takes actions based on inputs and pre-programmed commands, without taking any account of the perception history. The model-based agent employs a model that provides a perception of the environment based on the perception history and operates in a partially observable environment, updating the model regularly. The goal-based agent combines the strengths of the model-based and goal-based agents. The utility-based agent is used in situations where the information available is limited and insufficient to make a decision. This agent is used to make a preference among different methods of accomplishing the goal and select the method that provides the greatest benefit. A learned agent has the ability to learn and adjust to the environment based on basic inputs and past experiences to solve a particular problem.

3.1 Software Agent: Typically, a software that utilizes artificial intelligence techniques to solve specific problems. This software is typically installed on a machine, and both the machine and the software are referred to as a software agent. The term "agent" is used in artificial intelligence to describe software abstraction, an idea, or a concept, similar to OOP terms such as methods, functions, and objects. The software agent concept provides an effective and powerful way to describe complex softwares, as it is an entity capable of operating with a certain degree of autonomy to complete tasks on behalf of the user. Unlike objects which are defined by their methods and attributes, an agent is known by its behaviour, and many writers have proposed different definitions for agents, typically including concepts such as: (article – software agent –).

- Continuity (A symbol that remains active and autonomously decides when certain actions should be executed, even if a request was not explicitly made.)
- Autonomy (Agents that possess the capabilities to prioritize and select tasks, behave in a manner that aligns with objectives, and make decisions independent of human intervention.)
- Social Ability (Agents that can establish communication and coordination with other components, and can collaborate on tasks.)
- Interaction (Agents have the ability to perceive the context of their environment and respond appropriately.)



Source: (test-automation, undated).

The electronic medium has made a significant impact in the field of science and law, prompting numerous questions as soon as it appeared. Many researchers focused on defining its attributes and benefits, and understand its use, particularly in the fields of commerce and services. Multiple

definitions have arisen about the smart agent, most likely due to the subject's novelty and how it evolves continuously and significantly, causing every researcher in this domain to view it from a different perspective. Moreover, the smart agent takes on various forms, and its uses span across various fields, such as education, medicine, and services.

It is important to note that the electronic intermediary or automated agent was recognized in the commercial sector before being utilized in administrative transactions. Hence, various definitions have been outlined for it in electronic commercial legislation, unlike administrative legislation which remains reserved towards defining and regulating it, despite its practical application in public administrations. Therefore, we can present several definitions for the electronic agent in comparative law, some of which we shall mention.

The electronic medium works automatically, meaning a range of tools that operate via programmed software, without requiring the device owner to also be the software developer. The administration simply needs to demonstrate that the program is installed on the computer to enable it to function automatically. The smart agent in this case has the right of initiative to determine when to make decisions and carry out tasks so that it can act when the right conditions arise.

An automated electronic medium operates with complete autonomy. It's a software application that enables an electronic device to act or respond in an independent and automated manner. All computer programs are developed by software experts, and the creation and operation of each program is regulated. The program works on specific inputs and produces particular outputs. The smart agent operates without direct interference from humans or administrative staff, and its independence enables it to make informed decisions based on the available information.

3.2 Artificial Format for Administrative Contracting:

The use of computers for contracts conclusion is no longer just a possibility, but a reality. The reason being that technology is continuously evolving, leading to the emergence of automated agents that make it easier for individuals to organize their commercial transactions without direct human involvement. The programmer has deployed this agent in cyberspace, equipped with a set of guidelines to cater to users requests. All of this is aimed at achieving the objective, which is to create a balance between protecting users rights and ensuring their contract's freedom within business practices. (Lagrab & Aimour, 2022).

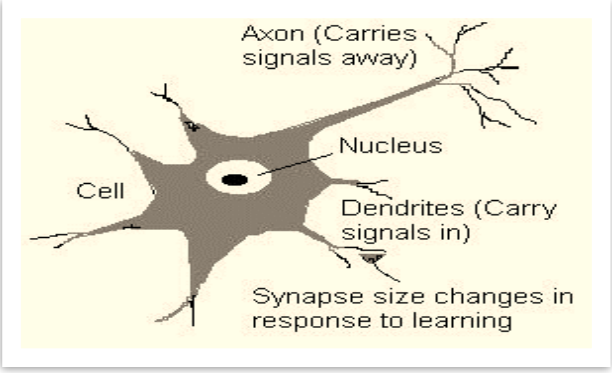
Artificial intelligence has allowed the use of modern electronic methods to express intent in contracts. One of the most important of these methods is the electronic agent (smart agent). Most national and international legislations have dealt with it in their legal texts, giving it the eligibility to represent the contracting parties due to its ability to deal quickly and accurately according to pre-programming compared to other technologies. The topic of the automated electronic agent raises several legal and cognitive questions like identifying the real nature of the electronic agent by clarifying all related definitions and characteristics and defining its legal nature to determine its liability in case of an error.

This artificial model poses a problematic on the validity of the electronic agent to express intention through data messages using what is called electronic offer and acceptance. The study aims to identify the characteristics that distinguish these modern means of expression from the classical offer and acceptance and examine the validity of silence as means of expressing intent. Additionally, this research focuses on the issue of the electronic agent's range in expressing intention, pointing towards the exclusive right of classical expression of intention for some actions, as well as some exceptions that are essential for certain types of transactions (Qalwaz, 2020).

4. Artificial Neural Networks:

Artificial Neural Networks (ANNs) are a critical aspect of Artificial Intelligence that have a strong relationship and effective role in many diverse AI applications. ANNs process information by simulating the human brain, benefitting from the vast advancements in computer technology and the progress of neuroscience to understand the mechanics of the brain in logical deduction, information processing, and all aspects of intelligent behavior that differentiate humans. The aim is to build intelligent computer systems, and the development of this technology began in the early 1940s and 1950s. There have been numerous contributions from scholars and researchers in this

field, and research in this field made significant developments in the 1990s. It is now classified as one of the most important sciences of the future. The White House in the United States proclaimed the 1990-2000 period as the **contract of neural networks** and computational science during the American Physical Society's meeting held in late 1990, underscoring its importance. (Omar Al-Banna, n.d.).



Graphic showing the ANN neural network and its elements (Artificial Neural Networks, undated)

Artificial neural networks are computational techniques that aim to replicate the way in which the human brain performs specific tasks. This is done through massive parallel processing, using simple processing units known as neurons or nodes, which have neural properties enabling them to store experiential knowledge and information for user access, through tune weights. ANNs are similar to the human brain in that they acquire knowledge through training and store it using connectionist forces within the neurons, known as synaptic weights. There is also some biological similarity that allows biologists to use ANNs to understand the development of biological phenomena. ANNs are regulated by various bodies and connected using different methods, including:

- **Networks Neural Forward Feed :** These are networks with a structural arrangement that lacks enclosed loops of interconnections between its constituent units. Neural networks of this type are extensively utilized due to their design that consists of at least two layers, often featuring hidden layers in between the input and output layers. The computational processes propagate forward, unidirectionally, from the input to output layer via hidden layers.
- **Networks Neural Back Feed:** These are networks designed to use feedback loops to improve the quality of their outputs and optimize their inputs.
- **Networks Neural Associative Auto:** These networks utilize all of their elements in a typical role, receiving inputs and broadcasting outputs at the same time.

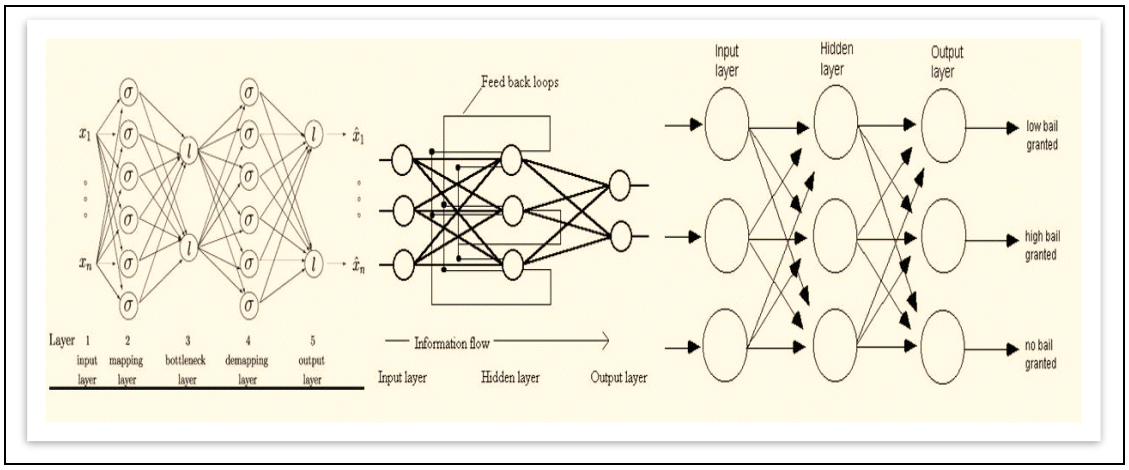


Figure shows the three mentioned types (Artificial Neural Networks, undated).

4.1 Importance of neural networks in data processing: Neural networks are a method in artificial intelligence that instruct computers on how to process data in a way that is similar to the human brain. It is a type of automatic learning called deep learning, which utilizes interconnected nodes or neurons in a structure of layers that resemble the human brain. An adaptive system is built that helps computers learn from their mistakes and continuously improve. This enables artificial neural networks to tackle complex problems, such as document summarization and facial recognition, with greater precision.

Artificial neural networks have emerged as a prominent technique for prediction and have found widespread application in the field of analytical review in auditing. This is evidenced by numerous studies, which have examined the usefulness of artificial neural networks in forecasting to uncover essential errors. (Kardoudi and Ben Kadour, 2016).

4.2 Tasks of Neural Networks: Neural networks are capable of aiding computers in the intelligent decision-making process with limited human intervention. This is due to their capacity to learn nonlinear and complex relationships between input and output data and model them. For instance, they can perform the following tasks and have numerous applications in various fields such as: (What is meant by neural networks?

- Targeted marketing through filtering social networks and analyzing behavioral data.
- Financial forecasting through processing historical data of financial instruments.
- Estimating electricity and energy demand.
- Processing and controlling quality.
- Identifying chemical compound.

The neural network algorithms are considered to be one of the most significant data mining algorithms, thanks to the precise results achieved with the use of these algorithms. Additionally, their versatility allows them to solve a wide variety of problems despite their complexity when compared to other algorithms. These algorithms are similar in structure to the human brain, with the ability to transfer, process, analyze information, reach conclusions, identify patterns, and make predictions. Through them, some of what is applied by natural intelligence can be implemented. Even today, scientists are continually discovering more about them, with several aspects of their functionality yet to be fully understood. (Neural Networks - Definition and Utilization in Prediction).

For years, scientists have been interested in the field of neural networks, which is considered to be a science in its own right. The aim is to achieve a method that is similar to human beings in pattern recognition, using programming methods and various algorithms that function in simple processing elements called neurons. The signals move between the neurons through connection lines, and each connection line is attached to a specific weight. Then, a non-linear function is usually applied to each neuron's "weighted sum of incoming signals" in order to determine the resulting output signals (Youssef, 2010).

5. Artificial Intelligence Challenges:

Artificial intelligence has accomplished several scientific milestones and innovations across different fields. However, along with the hopes and promises associated with it, there are a number of challenges and deficiencies that impede this technology, starting from false and inflated concepts about its abilities, and continuing with the technical limitations in its development and use, from which we will try to provide an overview of the most prominent current challenges that research and development centers in the field of artificial intelligence and machine learning must face (Mouadh, 2021).

5.1 Technological and Informational Challenges:

The multi-faceted technologies of artificial intelligence have become integrated into various aspects of our daily lives, from the smartphones we use, to self-driving cars, robots, weapons, and other intelligent technologies. Although there is no dispute as to the importance of this modern science and its many benefits, differences may arise regarding the negative uses of certain artificial intelligence technologies, and the various threats that these technologies may pose to human existence and its future (Assad, 2022).

- **Basic Confidence in Models and their Transparency:** Deep learning models often arrive at conclusions in ways that are not readily apparent, and the models themselves can be obscure and lack transparency. Depending on the intended use, some researchers still prefer interpretable artificial intelligence models that are simpler over the more accurate but less transparent models, despite their desire for AI to make precise predictions. Some individuals may want to "trust" machines with complex systems and difficult decisions, while others may favor retaining a certain amount of human involvement.
- **Bias:** While artificial intelligence can be used for incredibly worthwhile purposes, it can also give rise to unintended negative or inappropriate outcomes. Increasingly, there is concern over issues of racial, disability, and gender bias in algorithms of artificial intelligence and machine learning, and their broader impacts on society. The accuracy of AI's learning model is contingent on the quality and quantity of the data on which the AI model is trained. In real-life scenarios, data is frequently mislabeled, and data sets need to be unified. Data is also frequently biased. Training courses are necessary for ethical applications of AI, and these should not be limited to computer engineering students.
- **Data Accessibility and Ownership:** Accessing data is an extremely difficult task, and determining the best practices under which data can be made accessible and to whom, while ensuring respect for ownership and explicit confidentiality promises for specific types of data.
- **Limited Awareness:** Artificial Intelligence has the potential to address several challenges, but only a limited group of experts are familiar with ethical AI implementation. Several researchers emphasize the necessity of involving social scientists and policy-makers in discussions, instead of assuming that the AI developed by a small group of "technicians," computer engineers, and data scientists will be used ethically. Education is a crucial mechanism to acquire tool about the responsible use of AI.
- **Equitable Uses of Artificial Intelligence:** Artificial intelligence research is an extensive computational process. Unequal access to computing power and data intensifies the division between a small number of elite companies and universities, which have resources, and the rest of the world that does not possess those resources.

5.2 Ethical Challenges: Many stakeholders are pushing for a universally binding standard to be adopted. For example, the European Parliament is extensively addressing the issue of opportunities and risks resulting from artificial intelligence. In 2018, a group of experts established by the European Commission presented a draft of ethical guidelines that could differentiate trustworthy artificial intelligence. However, there is no globally agreed-upon strategy yet to determine common principles. Generally, there are already several data and guidance principles available, yet a methodical analysis of 84 relevant documents conducted by the Ethics and Health Policy Laboratory at the Swiss Federal Institute of Technology in Zurich showed that they lacked any shared ethical principle.

Due to the significant differences in fundamental ethical values that apply in different countries, it is not entirely clear if a uniform regulation of artificial intelligence can be internationally achieved. Nevertheless, more than five fundamental values have been mentioned in over half of the data, including transparency, fairness and impartiality, harm prevention, responsibility, and data protection and privacy.

This debate seems to be also heated among tech giants such as Google, who recently dismissed two of their ethics experts after a disagreement. This decision prompts questions about whether respecting the ethical rules surrounding artificial intelligence is truly a key priority for major technology firms or not. (Raaflaub, 2021).

5.3 Security Challenges: Artificial intelligence may jeopardize data privacy and security. It is possible that security breaches resulting from cyberattacks may have terrible consequences. Technologies such as federated learning can reduce risks by enabling AI models to be trained through devices that keep data internally without exchanging it, while privacy-preserving technologies help ensure the protection of personal data.

The emergence of artificial intelligence, the Internet of Things, computing, and big data have led to the emergence of new indicators in international relations. The balance of power has changed globally, and states' strength depends on technology with control over its applications in a secure environment. This situation has created a conflict between states called "cyberwarfare," led by countries and armies who aim to attack computer systems or information networks in other countries and inflict damage. It is also possible to control the defense systems of targeted countries, disrupt them, and disable their advanced weapon systems. This has caused countries to review their strategies, which now focus mainly on cyber power and prepare extensively for any possible future cyber warfare, affecting the concept of international security. (Al-Aoufi, 2021).

CONCLUSION:

The use of artificial intelligence technologies for the benefit of human beings is the goal pursued by researchers and developers of such technologies. As communication systems are the primary engine of the information revolution, the practical aspects of communication have cultivated various uses of these technologies. Among the most notable of these applications are the system for error control in data transmission, modern digital electronic switches, signal processing, encryption systems, data integration, and other applications.

The use of artificial intelligence has the potential to advance the achievement of all sustainable development goals and promote economic and sustainable development. However, its use also results in extensive social, economic, and ethical effects. As a result, several governments and organizations are preparing to adopt and implement existing technologies on a large scale. Additionally, advancements in AI are closely associated with data policies, which include privacy legislation and data protection measures.

First outcome: With the rapid pace of the information revolution in the digital age, numerous new legal terms have arisen that were never before recognized or familiar, these replacing other terms. Of particular note is the legal term "automated electronic agent," which has been introduced due to the new contractual modality that disrupts the traditional concept of a contract being a mutual agreement of wills. The question of legal nature of this electronic agent is therefore under investigation, as is the validity of contracts conclusion.

Second outcome: Despite the numerous positive outcomes that artificial neural networks produce in administrative work, such as their efficient use of memory space by being measured in the number of interconnects of the network’s nodes, and providing logical and accurate responses while easily detecting errors due to parallel processing, the public administration requires time to train on these types of sophisticated artificial intelligence technologies.

Third outcome: Artificial intelligence has surpassed the limitations of smartphones and reached into smart cities, with its various domains and capabilities positioning it as the language of the future, which must be learned by all. As a result, developed and developing countries alike are launching strategies to eradicate illiteracy in this field, by introducing artificial intelligence into all sectors, both in the short and long term.

Fourth outcome: We have provisionally accepted the idea of an automated electronic medium, but we recognize that it remains only a tool in the hands of It cannot qualify as a true agent in the legal sense as it lacks any legal personality and is simply a communication tool. The automated electronic medium may be construed as programming that is specific to a computing device; it handles the task of automatically concluding electronic contracts once connected to another computing device programmed for the same purpose, without the need for human intervention. The act of expressing one's will is carried out through a data message, which is electronic information that includes an unambiguous expression that may amount to an offer or its acceptance, as well as the ability to modify or cancel the content of another message. As per the legislation, individuals who use modern communication means for electronic transactions are free to agree to not utilize these tools, and some transactions are excluded from electronic contracting due to their privacy concerns.

Fifth outcome: The localization of artificial intelligence as "**Commonsense**" and "**Common good**" by strengthening artificial intelligence in the national competitiveness and promoting AI, which has given rise to a new liberalism, or neoliberalism. This ideology is confidently aligned with the future, and is being discussed at an opportune time where neoliberal capitalism is being redefined in the 21st century through Artificial Intelligence. This is likely to result in a future cyber war.

Sixth outcome: Nevertheless, artificial intelligence is not immune to criticism. Stephen Hawking, the famous astrophysicist, once opined, "Artificial intelligence could either be the best or worst thing to happen to humanity." For instance, critics of so-called "killer robots" fear that artificial intelligence and robots could potentially endanger not only jobs but also the lives of people. Therefore, the use of artificial intelligence in the workplace might lead to job reduction sooner than later. And according to studies, machine systems can currently accomplish more than half of the works humans perform, but faster and more efficiently.

Based on that, we propose the following recommendations:

- ✓ Work on advancing the administrative sector in line with the fast-paced developments happening in all fields, and provide training courses for public sector administrative staff to learn how to effectively manage artificial intelligence technologies.
- ✓ The creation of a technological maintenance services across all administrative sectors is imperative, in order to guarantee continuous maintenance and processing of artificial intelligence technologies. Any technological tool is subject to malfunction, at any given time and pose a genuine threat to the continuity of administrative work. As such, the establishment of a technological maintenance service serves as the vital backbone in mitigating any future risk to this science.
- ✓ Including a budget estimate in the financial budget specifically for utilizing artificial intelligence applications.
- ✓ An urgent necessity lies in effectively monitoring both previous and future legislation in terms of their implementation, in order to minimize the gap between legislation and technology. It is commendable that the Algerian administration has taken the initiative of opening an Artificial Intelligence School, but further efforts are required to involve legal experts. Even if a legal branch is opened within the school, it would still be necessary to supplement it with legal expertise.
- ✓ Activation of the administrative jurisdiction's role and jurisprudence to keep pace with the technological advances in order to accomplish wide-ranging goals and establish new legal rules.

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