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Artificial intelligence and auditing profession: applications, expectation, and challenges. An exploratory study of a sample of Statutory Auditors in Algeria

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Abstract : The study aims to identify the reality of applying artificial intelligence techniques in Algeria's audit profession. The study employed a descriptive and analytical approach. In addition, the statistical software SPSS was utilized to address research inquiries and evaluate hypotheses. The researchers conducted their field study using a questionnaire. The questionnaire was delivered to a sample of statutory auditors in Algeria, with 80 questionnaires distributed and 61 questionnaires collected.The study concluded that auditors are aware of the concept and importance of artificial intelligence, in contrast to the risks of using artificial intelligence in auditing. They do not know the latter nor of ways to overcome the risks of using artificial intelligence. As for the application of artificial intelligence techniques, the study concluded that auditors in Algeria do not apply artificial intelligence techniques in the auditing process despite the positive perceptions that auditors have about the role of artificial intelligence in the auditing process. Finally, the application of artificial intelligence in the auditing profession still faces many challenges that prevent its application.

Keywords: artificial intelligence, auditing profession,audit process.
JEL classifications codes: C45 ; M42 ; M49

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I- Introduction

At the beginning of the twenty-first century, our world welcomed the Fourth Industrial Revolution, which builds on the achievements of the Third Industrial Revolution, especially the unprecedented development of communication and information technology. Just as the First Industrial Revolution used water and steam to move machines, the Second Industrial Revolution used electricity to reach large-scale production, and the Third Industrial Revolution focused on using electronics, information, and communication technology to automate and digitize production. The Fourth Industrial Revolution revolves around blending leading production technologies and intelligent systems that integrate with organizations and individuals; (Klaus Martin Schwab) described it in his book (The Fourth Industrial Revolution) as a state of blurring the dividing lines between developments occurring in the material, digital, and biological fields. It is not like previous industrial revolutions in terms of impact on human production and quality; instead, it goes beyond that to affect various aspects of Life. The Fourth Industrial Revolution is also characterized by the emergence of several technologies and scientific engines that will change the face of the world, including robotics, nanotechnology, quantum computing, biotechnology, the Internet of Things (IoT), 3D printing, and especially artificial intelligence technologies.

Artificial intelligence is the integral between human and machine, as it simulates human consciousness and his ways of thinking. Through the computer, providing a state of human-computer cooperation.From the above, it can be said that AI refers to computer systems or devices that simulate human intelligence to perform tasks and have the capacity to learn, think, understand, adapt, conclude, and make decisions quickly and efficiently after collecting, processing, and analyzing vast amounts of data.

Artificial intelligence (AI) has emerged as a subject of significant interest in business education and practice, extending beyond conventional fields of study. AI technology is widely employed in several corporate tasks, including production and distribution, procurement, sales and

marketing, accounting and auditing, finance, research and development, and human resource management. With the rising complexity of company processes, the significance of AI technology is growing.

The auditing profession is not different from these fields and may even be considered among the fields most affected by artificial intelligence. Auditors work to serve various companies in all sectors that are witnessing major changes in their business models, which is inevitably reflected in the Auditing process.

As a result, the auditing profession adapts to this transition by using artificial intelligence technologies to keep up with the development because dealing with vast amounts of data has become difficult. Many audit tasks are structured and repetitive and, therefore, can be automated; the application of artificial intelligence effectively solves the problems of repetition and data analysis for companies and saves time and effort when engaging in complex work when implementing audit procedures.

Study problem

Despite the great technological development around the world, the topic of applying artificial intelligence techniques in Algeria is still new, especially regarding the reality of using these techniques in the field of auditing. From what was mentioned above, the main research problem can be raised in the following question:

What is the reality of applying artificial intelligence techniques in Algeria's audit profession?

From the main question, the following sub-questions are divided into:

1. Do auditors have knowledge of artificial intelligence?
2. Do auditors use artificial intelligence applications in the audit process?

3. What are auditors' perceptions regarding the impact of artificial intelligence on the audit process?
4. What are the challenges in applying artificial intelligence to the audit process?

Study hypotheses

In order to answer the above research problem, we can formulate the following hypotheses:

H1: Auditors have knowledge of artificial intelligence.

H2: Auditors do not use artificial intelligence applications in the audit process.

H3: The application of artificial intelligence has a positive impact on the audit process.

H4: There are many challenges facing the use of artificial intelligence in the audit process

Objectives of the study

The study aims primarily to identify the reality of applying artificial intelligence in the auditing profession in Algeria. To achieve this primary goal, the following sub-objectives must be achieved:

- Explaining the reality of auditors' knowledge in Algeria about artificial intelligence.
- Explaining the reality of applying artificial intelligence techniques by auditors in Algeria.
- Explaining the impact of artificial intelligence on increasing the ability to perform complex auditing work.
- Explaining auditors' perceptions about the obstacles to applying artificial intelligence in auditing.

Importance of the study

This topic gains considerable importance in that it deals with one of the most important topics of the current era, which is artificial intelligence techniques in the field of auditing. as the latter is considered one of the contemporary approaches that have been adopted by auditors while carrying out the various procedures of the audit process,starting from the planning process, through the process of collecting evidentiary evidence until preparing the report, these techniques thus enhance the success of the audit mission**.**

Research methodology

For the purpose of covering the various aspects of the subject and achieving the objectives of this study, reliance was placed on:

- The descriptive approach: We relied on the descriptive approach in the theoretical aspect of our study, for the purpose of describing the variables of the study and introducing them, by referring to previous research, studies, and literature related to the subject.

- The statistical analytical approach: We also relied on this approach to analyze the data extracted from the questionnaire, relying on statistical methods through the use of the statistical program SPSS and arriving at results.

II- Background of the study

1-Literature Review

The most important studies related to the main study element, which is artificial intelligence, have been summarized, and they will be outlined in brief:

The study(Boubaya, 2022)whiche aimed to highlights artificial intelligence techniques' present and future applications in auditing. It provides an overview of how different branches of artificial intelligence are

currently utilized in the profession. Additionally, it emphasizes the transformative impact that Artificial Intelligence Techniques will have on audits in the future, employing an analytical descriptive approach. The study findings demonstrated that various branches of Artificial Intelligence contribute to streamlining audit tasks, lowering costs, and enhancing efficiency, accuracy, and comprehensiveness.

The study (Mehadadi & Shafiei, 2023) examined the application of artificial intelligence in auditing. The researchers utilized an objective and descriptive survey. The study's sample comprised persons who were considered experts and opinion leaders in auditing. The study concludes that it is crucial to develop process-oriented AI requirements to foster context and motivation among auditors to develop AI applications in auditing.

The study (Allami, 2020) which aimed to explain the impact of artificial intelligence applications on improving the performance of external auditing and its utilization by professionals and practitioners in this field. Artificial intelligence's advantages and distinctive features have motivated individuals across various scientific domains to utilize its potential, foster growth, and attain desired objectives. This study demonstrates the influence of the external auditing profession on three key aspects:

- The nature and quality of performance;
- The support of the external auditor's opinion;
- The practice of required professional care;
- The development of documentation for the profession of external auditing.

The study (Rodrigues & al, 2023) also confirms the results of the study mentioned above, as the results of the study indicate that the participants expressed opinions that the future of the profession depends on the integration of artificial intelligence, especially in enhancing the efficiency and effectiveness of audit procedures, sampling techniques, and cost-relations. Utility, and identify significant distortions.

2-Theoretical framework

2-1 Audit profession

Several different definitions and various concepts of auditing have been provided, American Accounting Association (AAA) mention that audit is " auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about evaluating evidence regarding asertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users"(Silvoso, 1972, p. 18). In another definition, it is "an examination by an independent qualified professional to express an opinion on the regularity and reliability of the budget and schedule of results".(Germond, 1991, p. 28)

Understanding the auditing process makes it possible to understand the importance of integrating artificial intelligence in Audit processes refer to the specific actions carried out by auditors to gather evidence and make informed judgments about an organization's financial statements. The audit methods vary due to the reliance on the risk factors and the efficacy of the client's internal control system. Artificial intelligence (AI) can be applied to improve efficiency at every stage of the audit process. It can be compared to a process where the result of one phase is used as the input for the next step.

The main steps of auditing include:

- **Pre – planning (Pre – engagement)**

The objective of pre-planning is to facilitate auditors' determining the suitability of accepting new clients alongside the current ones. To determine whether the customer should be accepted, the auditors examine the company's internal procedures and policies. During this phase, the auditors assess the degree to which the policies restrict the integrity of accounting procedures. In addition, auditors evaluate the integrity of the

company's management, ensure compliance, and identify any current or potential threats.

- **Planning**

Planning is the subsequent step in the auditing process. The objective of planning is to formulate the comprehensive strategy that the auditor will implement throughout the entire process, from beginning to end. The result of the planning phase is the auditing plan, which outlines the process's comprehensive audit procedure, extent, kind, and timeliness. Effective planning is crucial as it identifies the proper audit strategy, scope, and timely management of risk factors, resulting in a comprehensive and efficient audit.

- **Contracting**

The auditor and the client must agree on the terms of the appointment, and it is necessary to record the agreed-upon terms in the audit engagement letter. After approval from the auditor, a contract is concluded between him and the company being audited, which is an agreement whereby the auditor commits to providing audit services with the submission of reports on time and t the company being audited in cooperation with the auditor and paying the legally specified Honoraria.

- **Execution**

This stage includes several procedures, the first evaluating the internal control framework, a typically complex procedure. During this process, the auditor employs diverse instruments and procedures to collect and analyze data related to the operation. Assessing internal controls enables the auditor to identify the highest-risk areas and devise appropriate tests during fieldwork.

The auditor collects the necessary evidentiary evidence based on the various examinations he carries out within the institution under audit based on the results of the evaluation of the internal control system and a work

program. This evidence allows the auditor to express and prove the validity of his opinion.

- **reporting**

Preparing the report is considered the last step in the auditor's mission. The report conveys and communicates information and the auditor's opinion about the soundness of the financial statements clearly and reliably to its beneficiaries (the board of directors, shareholders, the state, banks, etc.).

2-2 Artificial Intelligence(AI)

Artificial intelligence (AI) consists of two words: intelligence and artificial, each of which has a meaning,Intelligence refers to the possibility of using superior mental abilities in thinking and performance in any field. In contrast, the concept of artificial refers to preparing something to work according to prior directions and orders assigned to it(saka, 2024, p. 3). The two terms have been linked and formed the concept of artificial intelligence.

In the 17th century, Thomas Hobbes proposed the initial idea of Artificial Intelligence. He noted that human behavior could be comprehended through mechanical concepts, and symbols such as numbers, graphs, computations, and statistics could serve as equivalent replacements for lengthier formulations when solving difficulties (Hussein & al, 2016, p. 3). Artificial Intelligence (AI) is a term first coined by (John McCarthy), a renowned computer scientist, in 1955-56during the Logic Theorist program led by (Allen Newell, Cliff Shaw, and Herbert Simon. McCarthy) presented this concept at the Dartmouth College Artificial Intelligence Conference to demonstrate the potential of machines to imitate human problem-solving abilities(McCarthy & al, 2006, p. 13).McCarthy defined AI as "the science and engineering of making intelligent machines"(McCarthy & al, 2006, p. 13),in another

definitionartificial intelligence (AI) refers to "machines undertaking tasks which require some kind of 'intelligence', which typically refers to things such as learning, knowing, sensing, reasoning, creating, achieving goals and generating and understanding language" (Khan, 2017, p. 6).

Studies conducted by(Spyros, 2017) and (Luo & al, 2018)have confirmed that the fundamental principle underlying artificial intelligence is not focused on solving problems faster, processing larger amounts of data, or retaining the highest amount of information derived from the human mind. However, the fundamental premise underlying this field is the automated or semi-automatic processing of information, irrespective of its kind and scale, in a manner suitable and aligned with a certain objective. Artificial Intelligence has numerous applications that are utilized throughout various industries. In this discussion, we will outline the most significant applications of Artificial Intelligence in the Auditing Profession:

Table 1.Artificial intelligence applications

AI applications	Concept
Expert systems	An expert system is sophisticated computer software specifically created to solve intricate problems and emulate the decision-making capabilities of a human expert. The system retrieves data from its knowledge repository and employs logical deduction and inference principles in response to user inquiries.
Neural networks	A neural network is a machine learning system that mimics the structure of a human brain, consisting of interconnected neurons. It can modify its own structure to improve its performance on a specific task it has learned to perform.
Robotic process automation	Robotic Process Automation (RPA) is the practice of delegating manual and repetitive activities to robots instead of humans. It involves incorporating human actions into digital systems to streamline and

	simplify processes.
Machine learning	This technology employs algorithms that enable machines to autonomously learn and enhance their performance by extracting insights from data within a brief timeframe.
Deep learning	Deep Learning continuously incorporates new data and acquires knowledge through experience to expand its capacity to execute tasks, make inferences, and conduct further simulations and experiments, ultimately enhancing its performance and efficacy.
Natural languageProcessing	This technology facilitates computers' ability to analyze, comprehend, and employ human language. Natural Language Processing (NLP) systems are employed in proofreading to help machines analyze and comprehend the structure and semantics of phrases.
Genetic Algorithm	Genetic algorithms are a computational optimization technique that draws inspiration from natural selection and genetics. They employ evolutionary algorithms to iteratively enhance a population of alternative solutions, effectively addressing intricate problems.

Source: Prepared by the researcher based on (Boubaya, 2022) (Hasan, 2022).

2-3 The applications of artificial intelligence in the audit profession

AI affects auditors in two different ways. On the one hand, auditors are affected by all the changes in their clients' environment. The tendency of clients to adopt new technologies would change all stages of the audit, starting from the planning stage of the audit process, through fieldwork, and ending with the report. On the other hand, auditors are directly affected by the need to adopt artificial intelligence technologies to perform their

work in line with customer expectations, keep pace with developments, and improve the quality and accuracy of their services.

Audit clients now have increasing expectations of auditors due to the need for more support as their businesses grow and new risks arise. However, there are other factors influencing the auditing profession's adoption of artificial intelligence technology. Regardless of the necessity of responding to the requirements of owners' interests and clients, the auditing profession will not be able to continue without adapting to the surrounding changes, the most important of which are those related to technical changes.

Artificial intelligence (AI) integration in the audit process involves multiple phases. The phases of automated audit processes have evolved with the integration of AI technology, resulting in differentiation. These technologies include:

Table 2.Traditional Audit Approach VS Audit Approach supported by AI Systems

Phase	Assisted approach to AI systems	Traditional Audit Approach
Planning	Analysis of large amounts of data related to the company's organizational structure and its accounting and financial system.	The auditor collects and analyzes information related to The company's organizational structure and its accounting and financial system.
Contract	Following the previous phase, the level of risk is estimated, as well as the estimate of hours needed to work.	A commitment letter is prepared by the auditor, based on the estimated audit risk.
Control risk Assessment	Monitoring of controls continuously	Review of customer's CI policies and procedures.Test the controls.
Substantive Tests	Conducting detailed tests continuously and on 100% of the population, performed on the company's financial	Details tests are carried out by sampling, where theirnature, extent and timing depend on the IC tests. Theyare run only

	position (balance sheet). Several economic years can be analyzed. Continuous	over one economic year.Analytical procedures are performed.
Evidence Assessment	This phase is integrated into the previous phase.	The auditor assesses the sufficiency and clarity of the evidence gathered with a view to obtaining reasonable of the entity's financial position.
Audit report	The audit report can be continuous rather than categorized (clean, qualified, adverse).	Based on the information collected in the previousphase, a clean, qualified or adverse opinion is issued.

Source:(Rodrigues & al, 2023, p. 4)

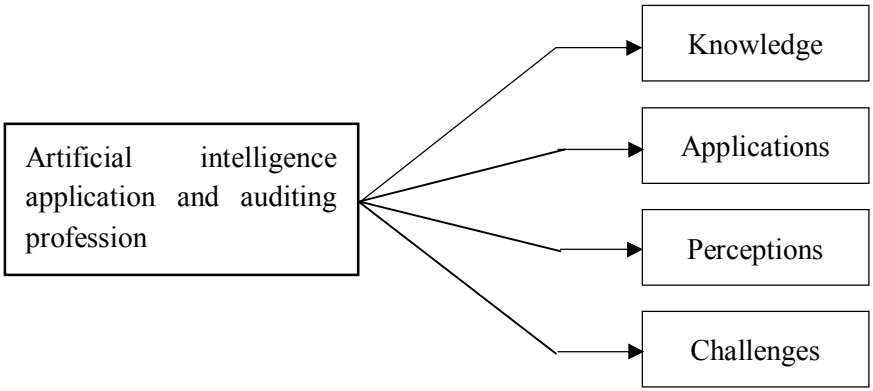
Utilizing AI technologies in auditing would affect the tasks and responsibilities of auditors and the audit process. AI tools can potentially revolutionize the audit profession by employing intelligent simulation to replicate human expertise in machines. AI is utilized in the audit process in several significant ways (Gopal, 2023)(Ivakhnenkov, 2023, p. 57):

- **Increased efficiency**:One of the primary advantages of employing artificial intelligence in auditing is the capacity to enhance efficiency. This enables the auditor to achieve the utmost levels of confidence while minimizing time and effort expenditure. Instead of dedicating extensive hours to contract review, the machine efficiently completes the task in a significantly shorter time.
- **Continuous Auditing:** Artificial intelligence streamlines continuous auditing by automating the ongoing data gathering, verification, and analysis process. The utilization of this real-time method improves the quality of audits and allows auditors to identify and address errors rapidly.
- **Better accuracy:**Utilizing artificial intelligence (AI) to collect, analyze, and compare data with company data could result in more streamlined

audits and decrease the possibility of misrepresentation in annual reports.

- **Fraud Detection:** Audit artificial intelligence systems can evaluate transactional data to detect fraudulent activity or abnormalities. AI assists auditors in identifying suspicious trends, enabling them to concentrate on high-risk areas, resulting in enhanced fraud detection.
- **Improvedaudit reports**:Artificial intelligence (AI) tools assist auditors in optimizing the process of generating audit reports. AI enables auditors to rapidly produce graphs, spreadsheets, and graphics, streamlining the reporting procedure.

Figure 1: The theoretical model of the study



Source: Prepared by researchers

III- Field study and analysis of results:

1. Methodological framework

The methodological framework explains the sample and study tools, how to manage data, and the statistical techniques used to analyze the data.

1.1 Study population and sample

Due to the difficulty of applying a comprehensive inventory (survey) method to all target community members, we relied on the statistical sample method. This study's target population is Algerian professionals (statutory auditors and accounting experts).

1.2 Data management

After we chose the questionnaire form as a tool for collecting data related to the subject of the study, given what was dictated by the nature of the research and its objectives, A questionnaire was distributed about artificial intelligence techniques and the auditing profession: applications, expectations, and challenges - an exploratory study of a sample of accountants in Algeria. The degree of agreement was determined based on the five-point Likert scale as a measure of answering the questionnaire items (strongly disagree, disagree, neutral, agree, and agree severely). The study's questionnaire consists of two main parts:

- The first part relates to general information about the respondent, which is demographic data about the respondent (gender, age, educational qualification, job, and professional experience).

- The second part concerns the axes of the questionnaire form, which consists of 24 paragraphs distributed over four axes (knowledge, application, perceptions, and challenges), each comprising six paragraphs. Table N° (4) below is a summary of the structure of the final questionnaire.

Table 3. Summary of the structure of the questionnaire

Parts	Axes	Axis title	Number of paragraphs
first	General information		/
Second	First Axis	knowledge	06
	Second axis	Applications	06
	Third Axis	Perceptions	06
	Fourth Axis	Challenges	06

Total	24

Source: Prepared by researchers.

As for distributing and collecting data, we converted the questionnaire form into an electronic version (electronic questionnaire) and sent it to a list of e-mail addresses of accounting professionals (statutory auditors and accounting experts). In Algeria, to answer it. So, 346 questionnaire forms were sent; in contrast, the number of questionnaires returned (answered) was 61. In addition, the number of unreturned questionnaires reached 285. The response rate, which expresses the total number of questionnaire forms retrieved out of the total questionnaires sent, was approximately 17.63%, and this percentage is considered acceptable. As for the number of forms that can be analyzed and statistically processed, it reached 61 forms, meaning that all the forms retrieved are valid and contain sufficient information, meaning that there are no missing values, and therefore, no notes were deleted. From this standpoint, we will rely on a sample size of 61 observations.

1.3 Statistical techniques used in data analysis

After the data collection process, we used the Statistical Package for Social Sciences (SPSS), version 25, to analyze this sample and process it using the appropriate statistical method based on its nature. This study used statistical methods and techniques to test the study hypotheses. These methods are as follows: arithmetic means, standard deviation, and Pearson correlation coefficient to measure the degree of correlation. This test is used to study the validity of the tool or scale (internal consistency, conceptual or construct validity); Cronbach's Alpha test to determine the reliability of the axes of the questionnaire, as well as the degree of overall reliability. In addition, the Kolmogorov-Smirnov and Shapiro-Wilk tests will test whether the data follows a normal distribution. The One-Sample T-test will test the differences between the study sample mean and the population means.

2. Discuss the results

2. 1. Test the validity of the tool

Testing the instrument's validity refers to the measurement's accuracy, meaning that the study instrument measures what it was designed to measure. After distributing the questionnaire form to a group of specialized arbitrators and adhering to their observations, the validity of the study tool was confirmed using the structural validity test (the concept), using the Pearson correlation coefficient between each axis of the study and the total score of the paragraphs of the questionnaire form, until the validity of the axes among them was confirmed. So, we will adopt a significance level of 5%. Table N° (5) below shows the results of testing the correlation coefficients for the structural validity of the study tool.

Table 4. Results of testing correlation coefficients for the structural validity of the study tool

N°	Axis title	Correlation coefficient	Significance Level Sig	Decision
01	knowledge	0.618**	0.000	Significant
02	Applications	0.404*	0.001	Significant
03	Perceptions	0.717**	0.000	Significant
04	Challenges	0.315**	0.013	Significant

* Correlation is statistically significant at α = 0.05, ** Correlation is statistically significant at α = 0.01.

Source: Prepared by researchers based on the outputs of SPSS version (25).

Through Table N° (5) above, which shows the results of testing the correlation coefficients for the construct validity of the study tool, we note that the correlation coefficients for all axes of the study range between (0.315 and 0.717), and as shown, the level of significance of the coefficients of these axes, which were all lower (0.05). These coefficients

are significant at a significant level (α = 0.05), indicating a correlation between each axis and the total score of the items in the questionnaire and, thus, the validity of the axes among them. Therefore, all axes of the questionnaire are considered valid in the construct (concept) of what they were designed to measure.

2. 2. Test the validity of the tool

The stability of the questionnaire means that if we redistribute this questionnaire to another sample from the same community with the same sample size, the results will be close to the results of the first sample. To verify the stability of the axes of the questionnaire, we relied on Cronbach's Alpha coefficient test, and Table N° (6) below are the results of the test measurement:

Table 5.Results of the Cronbach alpha test to measure the stability of the study tool

N°	Axis title	N° paragraphs	Cronbach's Alpha
01	knowledge	06	0.768
02	Applications	06	0.766
03	Perceptions	06	0.882
04	Challenges	06	0.955
Total coefficient		**24**	**0.741**

Source: Prepared by researchers based on the outputs of SPSS version (25).

Table N° (6) above shows that the value of Cronbach's alpha coefficient was high in all axes and enjoyed an acceptable degree of reliability, with these coefficients ranging between (0.766 and 0.955). Likewise, the alpha coefficient value for all items of the questionnaire form was equal to

(0.741). This means that the stability value is acceptable. Thus, we ensured the stability of the study tool.

2. 3. Testing hypotheses

To test the study hypotheses at a significance level of 95% (significance level α = 5%), and given the nature of the study objectives, we decided to use parametric statistical tests since the sample size exceeds 30 (61 observations > 30), and on this basis and in this case, One- Sample T-Test. To determine whether there are statistically significant differences between the sample and population averages. Table N° (7) below shows the results of hypothesis testing using One-Sample T-Test.

Table 6.Results of hypothesis testing using the One-Sample T-Test

Indicators	"t" test	Mean	S.d	Std.Err	Sig*	Decision	Test result of the hypothesis
knowledge	32,813	3,098	0,737	0,094	0.000	Significant	Supported
Applications	14,845	1,563	0,822	0,105	0.000	Significant	Supported
Perceptions	51,819	4,257	0,642	0,082	0.000	Significant	Supported
Challenges	45,366	3,970	0,683	0,088	0.000	Significant	Supported

Source: Prepared by researchers based on the outputs of SPSS version (25).

It is clear from Table No (7) above that the value of the T-test for the variable knowledge is equal to (32,813), and the level of significance is equal to (0.000), which is less than (α = 0.05). This leads to rejecting the null hypothesis and accepting the alternative hypothesis. That is, there are statistically significant differences regarding auditors' possession of knowledge of artificial intelligence. Therefore, we accept the first hypothesis: "Auditors have knowledge of artificial intelligence."

Auditors in Algeria have knowledge of the concept, foundations, principles, importance, and benefits of using artificial intelligence in the audit process, in contrast to the risks of using artificial intelligence in auditing. They do not know the latter nor of ways to overcome the risks of using artificial intelligence. AI ecosystems rely on precise, dependable, and validated data. Inaccurate or biased data models might result in erroneous conclusions and questionable audit findings. As well, AI systems are susceptible to hackers' targeting. It is crucial to safeguard the integrity of the audit and the data involved by guaranteeing these systems' security and preventing tampering.

We also note that the value of the T-test for the Applications variable is equal to (14,845), with a significance level of (0.000), which is less than (α = 0.05). This leads to rejecting the null hypothesis and accepting the alternative hypothesis, meaning that there are statistically significant differences in the use of artificial intelligence techniques by auditors in the audit process. Therefore, we accept the second hypothesis: "Auditors do not use artificial intelligence applications in the audit process".

Auditors in Algeria do not apply artificial intelligence techniques in the auditing process despite the positive perceptions that auditors in Algeria have about the role of artificial intelligence in the auditing process. As the auditing profession is significantly impacted by the utilization of AI, as auditors must stay updated with the accounting systems employed by the entities being audited. Hence, the auditing profession must rely on something other than conventional approaches, necessitating auditors to adapt to technology advancements and consistently and effectively improve their technical, technological, and knowledge skills and capacities. Utilizing artificial intelligence (AI) in the audit procedure can enhance the efficiency and efficacy of the external audit process.

As for the Perceptions variable, we note that the value of the T-test is equal to (51,819), with a significance level of (0.000), which is a value less than (α = 0.05), which leads to rejecting the null hypothesis and accepting the alternative hypothesis, meaning that there are significant differences

that the application of artificial intelligence positively impacts the audit process. Accordingly, we accept the third hypothesis: "The application of artificial intelligence has a positive impact on the audit process".

Adopting artificial intelligence in auditing tackles the problem of sorting through extensive volumes of data and automating processes such as data entry and analysis, resulting in enhanced efficiency and accuracy. Streamlining the auditing procedure improves accuracy and speeds up operations, ultimately leading to better audit results. The AI audit software has a notable impact by offering in-depth analysis of intricate data sets, revealing valuable patterns and trends that improve the reliability of audit reports. Artificial intelligence (AI) is essential for detecting fraudulent activity, examining transactions, and informing auditors of possible abnormalities. AI audit software enables auditors to address financial irregularities more effectively by generating comprehensive reports on questionable activity, thereby promoting integrity and compliance.

Table No (7)" also shows that the value of the T-test for the Challenges variable is equal to (45,366), with a significance level of (0.000), which is a value less than ($\alpha = 0.05$), which leads to rejecting the null hypothesis and accepting the alternative hypothesis. That is, statistically significant differences indicate many challenges facing the use of artificial intelligence in the audit process. Accordingly, we accept the fourth hypothesis ".

There are many challenges facing the use of artificial intelligence in the audit process." AI is still a relatively new field, and there is still much to comprehend about its work. There are no specific auditing frameworks or regulations, and there is no regulation of the auditing process using artificial intelligence according to international auditing standards. In addition, there are Limited precedents for AI use cases. To address these challenges, it is crucial to collaborate, conduct research, and provide comprehensive standards for the responsible utilization of AI. Cooperation between auditors, AI experts, and regulatory agencies promotes the

exchange of knowledge, stimulates research progress, and enables the creation of optimal methods. By clarifying the present condition, tackling common issues in the use of general artificial intelligence, and establishing reliable procedures, the field of auditing can fully utilize AI's immense capabilities to enhance its practices.

Conclusion

Artificial intelligence (AI) enhances the efficiency of audits by saving time, decreasing errors, and mitigating the risks of fraud while also improving the capabilities of data analysis. Nevertheless, the incorporation of artificial intelligence (AI) in auditing presents inherent concerns, such as ethical considerations, data security vulnerabilities, limited transparency, and difficulties in integration. It is crucial to acknowledge that artificial intelligence (AI) is incapable of completely substituting tasks that need client interactions and the exercise of subjective judgment. Although the automation of basic operations with minimal error risks streamlines the work of auditors, human judgment remains essential for financial assessment and forming conclusions.

Results: The study reached the following conclusions:

- The study concluded that auditors are aware of the concept and importance of artificial intelligence, in contrast to the risks of using artificial intelligence in auditing. They do not know the latter nor of ways to overcome the risks of using artificial intelligence.
- Auditors in Algeria do not apply artificial intelligence techniques in the auditing process despite the positive perceptions that auditors have about the role of artificial intelligence in the auditing process.
- Artificial intelligence offers many benefits and advantages to the auditing profession
- The application of artificial intelligence in the auditing profession still faces many challenges that prevent its application.

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