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# Applications of Artificial Intelligence and Their Implications for the Accounting and Auditing Professions
## (A Survey Study on a Sample of Accountants and Auditors in El Oued Province, Algeria)


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**Abstract**

The aim of this study is to identify the implications of using artificial intelligence applications on the accounting and auditing professions in Algeria. In the theoretical section, the concept of artificial intelligence and the accounting and auditing professions were clarified, in addition to determining the future of these professions in light of the use of smart technologies. In the applied section, a survey study was conducted on a group of specialists (certified accountants, auditors, accounting experts, and company accountants). The study reached several results, the most important of which is that applying artificial intelligence techniques in the field of accounting and auditing faces many difficulties, despite the multiple benefits that could be achieved if the Algerian state provided an appropriate environment for them. Therefore, we can say that the adoption of artificial intelligence technology in Algerian institutions is still in its early stages. The study also found that artificial intelligence techniques do not eliminate the role of the accountant and auditor, but rather allow saving time, effort, and cost of work for both professions, and automate their functions, which reduces human error rates, increases the quality and reliability of information, and improves the performance of the accountant and auditor. Finally, the study recommended the necessity of training and qualifying accountants and auditors to use artificial intelligence applications to keep pace with developments in the field of accounting and auditing, and to acquire the necessary skills to work in an advanced technological environment.


**Keywords:** Artificial intelligence applications, accounting profession, auditing profession.

## Introduction

In an era where technology is accelerating at an unprecedented pace, the use of artificial intelligence techniques and their implications has become an urgent necessity for all sectors, especially the accounting and auditing professions. The increasing reliance on smart systems

has led to fundamental changes in the nature of the work of accountants and auditors, and has become the cornerstone of the transition of the accounting and auditing professions from traditional paper-based work to a smart environment that relies on technology. This has raised many questions, the most important of which is:

**Main Problem**

What are the implications of using artificial intelligence applications on the accounting and auditing professions in Algeria?

**Sub-questions**

- What is meant by artificial intelligence in the context of accounting and auditing?
- How has the use of artificial intelligence techniques changed the nature of accounting and auditing work?
- What are the benefits of applying artificial intelligence techniques to the accounting and auditing professions?
- What challenges accompany the adoption of artificial intelligence applications in the field of accounting and auditing?
- What is the future of the accounting and auditing profession in light of the massive spread of smart applications?
- What new skills are required from accountants and auditors?
- What are the proposed solutions to address the risks of artificial intelligence on the accounting profession?

**Theoretical Framework of the Study**

**1. Definition of Artificial Intelligence:**

- Artificial intelligence is defined as the simulation of human thinking in the ability to speak, see, hear, and even move. It can also access and analyze information and then make appropriate decisions, as well as learn and develop. (Abdel Moneim & Lashin, 2020, p. 05)
- It is also defined as one of the branches of computer science concerned with simulating human behavior through machines. This field focuses on developing devices and software capable of thinking similarly to the human brain, learning as we learn, making decisions as we do, and behaving in a way that mimics our actions. For a machine to demonstrate effective artificial intelligence, it must be capable of learning from data, analyzing it, and making practical decisions that mimic human thinking. (Haj Allah, 2024, p. 72)

- On the other hand, artificial intelligence (AI) refers to the ability of computer systems to simulate biological neural cells in terms of deep learning and self-learning from acquired information and experiences, making decisions based on knowledge, drawing conclusions, and integrating accumulated knowledge to improve performance and achieve goals. AI is an emerging and comprehensive subject that covers many fields such as management, informatics, logic, mathematics, and more. (Jin et al., 2022, p. 570) Thus, artificial intelligence is a combination of software and hardware as an alternative to human intelligence capable of solving complex business problems using expert systems instead of human experts, and applying artificial intelligence instead of human intelligence. It has a major impact on decision-making by providing more accurate and reliable information. (Askary, Abu-Ghazaleh & Tahat, 29 Aug 2019, p. 03)

**2. Types of Artificial Intelligence**

Artificial intelligence is divided into three types according to the level of intelligence achieved by the machine, as follows: (Al-Asad, 2023, p. 168)

**2-1. Narrow or Weak AI:**

It is the simplest form of artificial intelligence, programmed to perform a specific task in a specific environment. Its behavior is reactive to a particular situation, and it cannot operate outside the environment for which it was designed. An example is IBM's "Deep Blue" robot, which defeated world chess champion Garry Kasparov in 1996.

**2-2. General or Strong AI:**

This refers to the level at which the machine reaches a human-like intelligence. Examples include self-driving cars and instant chat robots.

**2-3. Super AI:**

This refers to a stage where machine intelligence surpasses human intelligence. These models are still experimental but are expected to be achieved in the future. (Lahmar, 2021, p. 97)

**3. Definition of Artificial Intelligence in the Context of Accounting and Auditing**

Artificial intelligence can be defined as the use of modern technology to improve processes, increase efficiency, and enhance the quality of services provided. In accounting and auditing, this includes tools such as: (Kotb, 2025)

- Cloud software to manage accounts and transactions.
- AI techniques for data analysis and fraud detection.
- Blockchain to ensure transparency and document financial operations.
- Advanced analytics for informed financial decision-making.

The United States was the first to apply AI technology in the field of accounting, which has since strengthened the value of artificial intelligence in accounting and financial management. With AI technology applied to accounting and tax work, AI applications in the financial field have expanded, providing reliable technical support for the efficient development of accounting work. (Jin et al., 2022, p. 570)

Similarly, artificial intelligence in accounting can be defined as the ability of computers and their software to perform many accounting tasks, carry out repetitive manual functions, and reduce human error rates, thereby enhancing the accuracy and speed of analyzing accounting reports and information compared to traditional methods. (Al-Dasouqi, 2023)

The study of (Shtiwii Abd, 2023, p. 04) confirmed that the application of AI in accounting has a positive impact and that accountants must adopt AI, as it is likely to become an essential component of all businesses soon. The study clarified that AI in accounting aims to improve traditional accounting methods and processes using intelligent software technologies.

**4. Areas of Application of Artificial Intelligence in Accounting and Auditing:**

According to the study of (Hasan, 2022, p. 451), the areas in which AI is applied to the accounting profession include:

**4-1. Expert Systems (ES):**

These are computer programs that simulate human thinking in various situations, storing human knowledge and using it to solve problems in specific subjects. Expert systems in accounting were classified as follows:

- **Auditing:** Expert systems improve the quality of auditing, identify risks, and assess internal control. They are used to verify transaction values and detect fraud. There are two main types: those supporting the audit process itself and those supporting corporate estimates.
- **Financial Accounting:** Expert systems are used in financial statement design, invoice processing, journal entries, standards evaluation, financial planning, revenue and expense management, investments, risk reduction, and tax calculation.
- **Managerial Accounting:** Expert systems enhance financial analysis, internal control diagnostics, decision-making, inventory monitoring, cost analysis, data analysis, risk prediction, and project management.

**4-2. Decision Support Systems (DSS):**

An interactive, computer-based, adaptable, and versatile system designed to assist decision-making by creating intelligent alternatives. DSS in accounting provides benefits such as

financial data analysis, budget change identification, forecasting outcomes, cost management, performance measurement, risk identification, and strategic decision-making support.

**4-3. Machine Learning (ML) and Deep Learning (DL):**

ML enables computers to learn, think, and act with minimal human intervention. DL, a subset of ML, allows machines to think using brain-like structures. ML helps accountants analyze data and detect anomalies, errors, and fraud. DL automates tasks such as inventory monitoring, document processing, contract review, and report preparation.

**4-4. Fuzzy Logic:**

Fuzzy logic simulates human reasoning under uncertainty, offering a valuable tool for accountants dealing with complex and ambiguous data.

**4-5. Artificial Neural Networks (ANNs):**

These mimic the human brain and nervous system during problem-solving. Unlike ES, they learn from examples and generalize knowledge, similar to the reasoning processes of the human mind. (Mohammed Ali, Salah Abdullah & Saad Khattab, 2022, pp. 15–16)

**4-6. Hybrid Systems:**

Hybrid systems integrate multiple AI techniques to solve complex problems. They enhance efficiency, accuracy, and collaboration within accounting environments, although human expertise remains essential. (Shtiwii Abd, 2023, pp. 07–08)

**4-7. Genetic Algorithms:**

These AI methods solve complex problems, support learning retention, and improve business decision-making. (Leandro et al., 2021, p. 07)

**4-8. Intelligent Agents:**

Software entities that act on behalf of users, capable of adapting behavior and learning new rules. (Firas Mohammed Al-Nasour, 2022, pp. 26–27)

**4-9. Robotics:**

Robotics includes machines capable of performing programmed tasks guided by humans or computers. RPA technology offers flexible and effective solutions for automating repetitive accounting and auditing tasks. (Sakhraoui & Alimi, Nov 29–30, 2023, pp. 6–7)

**5. Uses of Artificial Intelligence and Its Enhancement of the Accounting and Auditing Professions**

AI has brought many advantages to accounting, making it capable of performing various tasks, such as: (Belaid & Ben Hawas, 2024, pp. 1042–1043)

**5-1. Automating Routine Accounting Tasks:**

Automation has increased efficiency, accuracy, and speed while reducing human intervention. For example, OCR technology can scan and process invoices faster and with fewer errors.

**5-2. Providing Predictive Analytical Insights:**

AI detects patterns in financial data, predicts cash flow trends, budget deviations, and potential risks.

**5-3. Automating and Analyzing Tax Processes:**

AI analyzes financial statements to determine tax deductions, detect errors and fraud, and ensure compliance.

**5-4. Detecting Fraudulent Transactions:**

AI-powered fraud detection systems analyze large records to identify irregularities, improving audit efficiency and accuracy.

**6. The Most Prominent AI-Based Accounting Software:**

The influence of artificial intelligence techniques on the quality of financial and accounting activities' results has led various companies and institutions to adopt them. Below are the most prominent AI-supported accounting programs: (Sakhrāwī & 'Ilmī, 29–30 November 2023, pp. 10–11)

✓ **ESKER:** Esker is known for its AI-based software designed to automate accounting processes for companies seeking digital transformation, including procurement, accounts payable, and accounts receivable. It has more than 600,000 users in over 50 countries.

✓ **QuickBooks:** This program uses artificial intelligence to analyze accounting data and provide useful recommendations to users for making correct financial decisions.

✓ **E FLOW AND Medius:** These are cloud-based programs that automate the processing of invoices and purchase orders. They offer automatic data capture for all incoming information, manage and integrate it seamlessly thanks to strong and flexible connectivity with ERP systems, and provide customers with the possibility of full electronic data interchange.

✓ **E-Invoice:** The electronic invoicing program is a service provided by OZEDI for businesses and the software industry in Australia and New Zealand to help and promote the adoption of electronic invoices directly between senders and receivers.

✓ **XERO:** A program that performs many accounting tasks, including bookkeeping. Xero uses artificial intelligence to analyze financial data and provide useful recommendations for account and financial management. It has more than 3 million subscribers worldwide.

✓ **SAP CONCUR:** Part of the SAP family, the leading company in expense management. It is an integrated platform for managing expenses and invoices, simplifying daily expenses and

automating daily processes. Around 700 institutions use this program to improve management systems.

✓ **WAVELET:** A program capable of accelerating decision-making, integrating different systems in a short time, and enabling the management of business operations. It currently has 51,000 users.

✓ **FINANCIO:** A program designed for smart businesses that automates and simplifies accounting tasks. It is designed for small business owners in Malaysia to meet the needs of the Malaysian market. It currently has approximately 25,700 users.

✓ **BECON SYSTEMS:** An accounting program designed to be as simple as possible. It was created using automation and artificial intelligence and currently has 35,000 users.

✓ **ZOHO:** A platform headquartered in India that has a suite of programs capable of automating the accounting processes of an institution. The company has 50 million users worldwide.

**7– Advantages of Artificial Intelligence on the Accounting and Auditing Professions and Its Positive Repercussions on Institutions (kotb, 2025)**

It can be said that the use of artificial intelligence techniques has become the cornerstone of the development of the accounting profession, transforming it from traditional paperwork to an intelligent environment relying on modern technology. Accounting, through AI, shifted from being merely a record-keeping function to an analytical and strategic tool. Thanks to cloud systems, accountants can now access financial data instantly and from anywhere, enabling them to provide immediate financial consultations based on real-time and accurate data. For example, in the past, preparing quarterly financial reports was a complex and time-consuming process, whereas now—thanks to ERP systems—detailed reports can be generated with a single click, saving time and reducing errors.

Institutions also cannot ignore the benefits they gain from using AI techniques in accounting, such as:

¬ Speed in preparing financial reports, supporting immediate strategic decisions.
¬ Reducing operational costs resulting from fewer manual tasks.
¬ Improving compliance with international standards through automatic system updates.
¬ Enhancing trust and transparency in the financial data presented to shareholders and regulatory bodies.

On the other hand, the accountant's role is no longer limited to recording financial transactions but has expanded to include providing consultations based on advanced analyses. Here comes the role of AI, which contributes to forecasting financial trends and providing strategic

recommendations. Intelligent systems can analyze profit and expense performance over many years and propose solutions to improve profitability or rationalize spending, making the accountant a true partner in decision-making.

In addition, digital transformation has led to new working models in the accounting field. Instead of traditional in-house employment, remote accounting has spread, where the accountant provides services online from anywhere in the world. This model not only reduces operating costs but also expands the scope of services to include clients in multiple countries and markets. For example, there are fully virtual accounting offices that manage the accounts of dozens of small companies remotely with high efficiency.

As for the repercussions of AI on the auditing profession, it has brought several qualitative and profound changes, as it is now possible to examine millions of transactions in seconds using big data analysis techniques instead of relying on limited samples as before. Furthermore, digital auditing tools have enabled the detection of unusual patterns and the rapid identification of financial manipulation, making auditing more accurate and efficient, reducing opportunities for financial fraud, and detecting errors instantly.

As for the impact of AI on professional ethics and professional responsibility, this aspect also cannot be overlooked, as AI has cast its shadows on the ethics of the accounting and auditing profession. With increasing reliance on electronic data, challenges related to privacy, information protection, and preventing misuse of technical privileges have emerged. Hence, professional responsibility now includes not only accuracy and transparency but also compliance with cybersecurity standards and data confidentiality. For example, an accountant dealing with a cloud financial system is responsible for preventing data leakage or unauthorized access, requiring advanced awareness of data protection laws such as the General Data Protection Regulation (GDPR) in the European Union.

**8– Risks That Accountants and Auditors May Face with the Dominance of AI Technology**

The global pursuit of adopting artificial intelligence technology—which has prevailed over all aspects of life, from replacing human labor to gradually becoming part of daily societal life—along with the development of smart programs used in accounting and auditing, has caused a complete transformation in operational systems and the near disappearance of traditional systems. However, this comes with several threats accompanying the application of this smart technology. We summarize the most important below:

- Lack of network infrastructure: Most countries suffer from weak investment in infrastructure for artificial intelligence. The absence of strong infrastructure development necessary for AI to excel includes reliable broadband networks for

information transmission, data centers for storing massive amounts of information and data, and powerful computing systems for performing complex calculations and analyzing data in record time (Kahlan, 2023, p. 12). This is due to limited resources and the absence of qualified expertise in AI (Zerwal, 2023).

- Lack of awareness of the importance of using AI techniques in accounting and auditing by institutions keeps them far from understanding this technology. This is due to two reasons:
    1. The absence of qualified personnel in AI within these institutions.
    2. The lack of understanding and ignorance of using this technology. Many institutions in different countries, public or private, still rely on outdated technical programs, and also lack trust in AI programs, causing them to miss the opportunity to integrate and reap major benefits from intelligent machine technology, slowing the desired progress. Particularly, the challenge of big data requires continuous learning and improvement. Therefore, policies must be established for fair and privacy-respecting data collection, usage, and sharing (Kahlan, 2023, p. 12).
- The drawbacks of adopting AI techniques in accounting and auditing include the high costs of purchasing, maintaining, and updating accounting and auditing systems supported by AI technology. There is also the risk of weakening the knowledge base of beginner accountants and the risks of competitors using such systems and updates (Omoteso, 2012, p. 8491).
- Although AI techniques are efficient and reliable in performing accounting and auditing tasks, they cannot replicate certain human skills, such as creativity, emotional intelligence, expressive ability, and interpersonal communication (Bizarro Pascal & Dorian Margaret, 2017).
- The adoption of AI techniques by companies may achieve significant benefits in accounting and auditing practices, but they also pose major threats that warn of the replacement or complete elimination of most human resources practicing the profession (Doshi, Balasingam, & Arumugam, 2020, pp. 880–881). A study by Oxford University in 2015 confirmed that there is a 95% probability that accountants and auditors will lose their jobs due to machines taking over their tasks (Mohammad Suleiman et al., 2020, p. 479).

- The continuous change in accounting and tax laws requires ongoing updates to AI-based accounting and tax systems and programs to ensure compliance with changes in government laws and regulations (Zhuowen, 2018, p. 1821).
- Among the challenges facing the use of AI techniques in accounting and auditing is the shortage of skilled and specialized labor possessing advanced knowledge and skills to handle modern technologies, which may require significant financial investment to train (Mohammad Suleiman et al., 2020, p. 486).
- Despite being a new technology, AI brings problems and challenges to the accounting and auditing professions. AI may cause high unemployment rates among low-level accountants and auditors, pose high risks of data breaches, and lead to higher requirements for financial and accounting practitioners (Jin et al., 2022, p. 570).
- The adoption of modern AI techniques in accounting and auditing poses enormous threats to practitioners due to the instant and accurate processing that AI provides, increasing fears of the anticipated replacement of human capital with modern technologies (Rand Osama, 2022).

**9– The Future of the Accounting and Auditing Professions under the Spread of AI Technology (kotb, 2025)**

It is clear that the future will be full of technological developments that will continue to affect the accounting and auditing professions. It is expected that routine tasks will become fully automated, while accountants and auditors will focus on analytical and advisory roles. Software robots will examine records automatically, while the human auditor focuses on interpreting results and providing recommendations.

This requires accountants and auditors to acquire new skills aligned with major changes in the global economic environment. Traditional skills alone are no longer sufficient, and a new set of abilities is now required, such as:

¬ Mastery of accounting software such as QuickBooks and SAP.
¬ Understanding the basics of data analysis using tools like advanced Excel and Power BI.
¬ Dealing with databases and extracting data from them.
¬ Understanding cybersecurity and how to protect financial information.

Therefore, the modern accountant and auditor need continuous development and lifelong learning to keep up with the requirements of the digital age. Institutions, on the other hand, must prepare to adopt AI techniques in accounting and auditing through well-planned steps. They should analyze the readiness of current systems and identify weaknesses, then invest in

advanced intelligent systems that ensure security and compatibility. They must also train human resources on transformation tools and encourage them to acquire modern technological skills.

**Applied Framework of the Study**

**Method and Tools**

1. **Study Approach:**

In the field study, the approach represents the method followed to achieve the predetermined objectives. Our study revolves around artificial intelligence applications and their implications for the accounting and auditing profession.

2. **Study Population and Sample:**

The study population consisted of practitioners of the accounting and auditing profession in El Oued Province, from which a sample was selected to verify the validity of the hypotheses. The electronic questionnaire was used.

3. **Study Limits:**

The study limits were:

- **Human scope:** The sample size was estimated at 50 accounting and auditing specialists in El Oued Province, selected randomly.
- **Time scope:** The study was conducted from 10 April 2025 to 25 April 2025.
- **Geographical scope:** El Oued Province, Algeria.
- **Study Tools:**

The questionnaire was used as the main tool in the field study. After distributing it to the targeted sample, the necessary data were collected and processed using appropriate statistical analysis tools through the SPSS V22 software. The questionnaire was divided into two sections:

**First section:** Personal data, including academic qualification, occupation, and awareness of AI technology.

**Second section:** AI applications and their implications for the accounting and auditing profession, consisting of 3 axes:

¬ **Axis 1:** Reducing accounting profession costs — 7 items (1–7).
¬ **Axis 2:** Reducing the number of accounting profession jobs — 7 items (8–14).
¬ **Axis 3:** AI applications — 7 items (15–21).

**Scoring Method**

A five-point Likert scale was used to measure respondents' answers regarding AI applications and their implications for accounting and auditing, assigning scores from 1 to 5. The following table illustrates this:

**Table (01): Likert Scale Scores**

| Responses | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| Score | 1 | 2 | 3 | 4 | 5 |

**First: Psychometric Characteristics of the Study Tools**

**1– Expert Validity**

To ensure the validity of the designed questionnaire on AI applications and their implications for the accounting and auditing profession, it was presented in its initial form to a group of professors. After retrieving the evaluation forms, some items were revised, and others were added to some dimensions. The final questionnaire was developed accordingly.

**2– Discriminant Validity (Extreme Comparison)**

After processing the sample data and ranking the total scores in descending order, the sample was divided into upper and lower groups (27% each). The results are shown in the following table:

**Table (02): Discriminant Validity of the Questionnaire**

| Groups | Sample | Mean | Std. deviation | T-value | Significance level |
|---|---|---|---|---|---|
| Upper | 13 | 3.400 | 0.140 | 28.094 | 0.00 |
| Lower | 13 | 1.506 | 0.198 | | |

Based on the table, the T-value is 28.094 at 24 degrees of freedom, statistically significant at 0.01. Therefore, the questionnaire discriminates between the two groups and enjoys a high degree of discriminant validity.

3- **Internal validity (internal consistency validity):**

It was conducted through the program, and it refers to knowing the extent to which the questionnaire items are correlated with the dimension to which they belong, as well as the correlation of these dimensions with the overall average of the axis to which they belong, by calculating Pearson's correlation coefficient.

**3-1- Internal consistency validity of the first axis:**

Pearson's correlation coefficient was calculated to show the correlation of each item of the first axis with the overall average of the dimension to which these items belong, and the following table illustrates this:

**Table (03): Internal consistency validity of the items of the first axis**

| Item number | Pearson Correlation | Sig (Bilateral) | Statistical significance |
|---|---|---|---|
| 1 | 0.765 | 0.000 | Statistically significant |
| 2 | 0.349 | 0.000 | Statistically significant |
| 3 | 0.897 | 0.000 | Statistically significant |
| 4 | 0.456 | 0.000 | Statistically significant |
| 5 | 0.543 | 0.000 | Statistically significant |
| 6 | 0.444 | 0.000 | Statistically significant |
| 7 | 0.454 | 0.000 | Statistically significant |

Source: Prepared by the researchers based on SPSS V22 results.

It is noted from the values in the table above that Pearson's correlation coefficients for the items of the first axis are positive and statistically significant at a significance level of 0.05, because the p-values of these items equal 0.000, which is less than the 0.05 significance level, confirming the existence of a positive relationship between the items of this axis and that they are valid for what they were designed to measure.

**3-2- Internal consistency validity of the second axis:**

Pearson's correlation coefficient was calculated to show the correlation of each item of the second axis with the overall average of the dimension to which these items belong, and the following table illustrates this:

**Table (04): Internal consistency validity of the items of the second axis**

| Item number | Pearson Correlation | Sig (Bilateral) | Statistical significance |
|---|---|---|---|
| 8 | 0.542 | 0.000 | Statistically significant |
| 9 | 0.449 | 0.000 | Statistically significant |
| 10 | 0.757 | 0.000 | Statistically significant |
| 11 | 0.596 | 0.000 | Statistically significant |
| 12 | 0.777 | 0.000 | Statistically significant |
| 13 | 0.565 | 0.000 | Statistically significant |
| 14 | 0.732 | 0.000 | Statistically significant |

Source: Prepared by the researchers based on SPSS V22 results.

It is noted from the table above that the Pearson correlation coefficients of the items of the second axis are positive and statistically significant at a significance level of 0.05, because the p-values of these items equal 0.000, which is less than the 0.05 significance level, confirming

the existence of a positive relationship between the items of this axis and that they are valid for what they were designed to measure.

**3-3- Internal consistency validity of the third axis:**

Pearson's correlation coefficient was calculated to show the correlation of each item of the third axis with the overall average of the dimension to which these items belong, and the following table illustrates this:

**Table (05): Internal consistency validity of the items of the third axis**

| Item number | Pearson Correlation | Sig (Bilateral) | Statistical significance |
|---|---|---|---|
| 15 | 0.343 | 0.000 | Statistically significant |
| 16 | 0.467 | 0.000 | Statistically significant |
| 17 | 0.541 | 0.000 | Statistically significant |
| 18 | 0.399 | 0.000 | Statistically significant |
| 19 | 0.676 | 0.000 | Statistically significant |
| 20 | 0.611 | 0.000 | Statistically significant |
| 21 | 0.434 | 0.000 | Statistically significant |

Source: Prepared by the researchers based on SPSS V22 results.

It is noted from the table above that the Pearson correlation coefficients of the items of the third axis are positive and statistically significant at a significance level of 0.05, because the p-values equal 0.000, which is less than the 0.05 significance level, confirming the existence of a positive relationship between the items of this axis and that they are valid for what they were designed to measure.

**4- Questionnaire reliability using the split-half method:**

After dividing the test into two equal halves (odd/even), we calculated the correlation coefficient between the two halves. The results were as follows:

**Table (06): Reliability using the split-half method for the questionnaire**

| Sample | Correlation coefficient |
|---|---|
| Before modification | 0.918 |
| After modification | 0.957 |

Source: Prepared by the researchers based on SPSS V22 results.

From the above table, it is noted that the value of the calculated correlation coefficient before modification is 0.918, which expresses the correlation value between the two halves of the questionnaire. After applying the correction formula, we obtained the actual correlation value

after modification, which equals 0.957. It is significant at the (0.01) level; therefore, it can be concluded that the questionnaire has a high degree of reliability.

**5- Internal consistency of items (Cronbach's alpha):**

In this part, we attempt to show the reliability and validity of the questionnaire for the study by calculating Cronbach's alpha coefficient. The higher Cronbach's alpha exceeds (0.600), the more valid the questionnaire is for the study.

**Table (07): Cronbach's alpha coefficient for the study tool**

| Questionnaire axes | Cronbach's alpha |
|---|---|
| First axis | 0.865 |
| Second axis | 0.867 |
| Third axis | 0.855 |
| Questionnaire as a whole | 0.837 |

Source: Prepared by the researchers based on SPSS V22 results.

It was found that the reliability coefficient (Cronbach's alpha) equals (0.837) for the entire questionnaire, which is greater than (0.600), indicating the reliability of the study tool. This means that there is reliability in the axes, and therefore it can be said that the questionnaire is characterized by reliability.

**Secondly: Statistical methods used in the study**

The Statistical Package for the Social Sciences program (SPSS V22) was used to unload and process the data, and the following statistical methods were adopted through it:

- **Frequencies:** Frequencies mean the repeated or successive occurrence of things or events. In many contexts, frequencies may refer to a recurring pattern that occurs in a certain field. The term "frequencies" is used to describe the process in which the same process or values are repeated frequently.
- **Percentages:** They refer to the percentage that is used to represent the relationship between a part of something and the whole.
- **Arithmetic Mean:** This was used to find out the trends of the study participants toward each field and the questionnaire.
- **Standard Deviation:** To identify the extent of deviation in the responses of the study participants toward each statement or item.
- **Pearson Correlation Coefficient:** It is a measure used in statistics to estimate the relationship between two variables. This coefficient measures the degree of correlation or connection between the variables.

- **Cronbach's Alpha:** Cronbach's alpha is used to estimate the reliability of the scale as a measurement tool.
- **Independent Samples T-Test:** This type of test is used to compare the means of two independent samples.

**Presentation and analysis of data and answering the study hypotheses**

**First Section: Personal Data**

**1- Educational Qualification:**

**Table No. (08): Distribution of study sample members according to educational qualification.**

| Educational Qualification | Frequency | Percentage |
|---|---|---|
| License | 16 | 32% |
| Master | 14 | 28% |
| Magister | 7 | 14% |
| Doctorate | 13 | 26% |
| Total | 50 | 100% |

Source: Prepared by the researchers based on the results of SPSS V22.

We notice through the table and figure above, which clarify the distribution of the study sample according to educational qualification, that the study sample consists of the License category whose number is 16 with a percentage of 32%, which is the highest among the other categories. It is followed by the Master category whose number is 14 with a percentage of 28%. In third place comes the Doctorate category whose number is 13 with a percentage of 26%. Finally, the Magister category appears with 07 individuals representing 14%.

**Second: Occupation**

**Table No. (09): Distribution of study sample members according to occupation.**

| Occupation | Frequency | Percentage |
|---|---|---|
| Chartered Accountant | 4 | 8% |
| Accounts Auditor | 16 | 32% |
| Certified Accountant | 13 | 26% |
| Company Accountant | 17 | 34% |
| Total | 50 | 100% |

Source: Prepared by the researchers based on the results of SPSS V22.

**Figure 02: Distribution of study sample members according to occupation.**

We notice through the table and figure above, which clarify the distribution of the study sample according to occupation, that the study sample consists of the Company Accountant category whose number is 17 with a percentage of 33%, which is the highest among the other categories. It is followed by the Accounts Auditor category whose number is 16 with 31%. In third place comes the Certified Accountant category whose number is 13 with 26%. Finally, the Chartered Accountant category appears with 04 individuals representing 9%.

**Third: Your knowledge of Artificial Intelligence Technology**

**Table No. (10): Distribution of study sample members according to their knowledge of artificial intelligence technology.**

| Knowledge of AI Technology | Frequency | Percentage |
|---|---|---|
| Weak | 16 | 32% |
| Medium | 20 | 40% |
| Good | 13 | 26% |
| Excellent | 1 | 2% |
| Total | 50 | 100% |

Source: Prepared by the researchers based on the results of SPSS V22.

**Figure 03: Distribution of study sample members according to their knowledge of artificial intelligence technology.**

We notice through the table and figure above, which clarify the distribution of the study sample according to their knowledge of digital technology, that the study sample consists of the Medium category whose number is 20 with a percentage of 40%, which is the highest among the categories. It is followed by the Weak category whose number is 16 with 32%. In third place comes the Good category whose number is 13 with 26%. Finally, the Excellent category appears with 01 individual representing 2%.

**Second Section: Results of Testing the Study Hypotheses**

**1- Results of testing the general hypothesis**

**Text of the hypothesis:** Artificial intelligence applications affect the accounting and auditing profession in El-Oued province.

We formulate it statistically as follows:

- **Null hypothesis (H0):** Artificial intelligence applications have no effect on the accounting and auditing profession in El-Oued province.
- **Alternative hypothesis (H1):** Artificial intelligence applications have an effect on the accounting and auditing profession in El-Oued province.

To test this hypothesis, we used the simple linear regression coefficient (b) to measure the strength of the effect between two variables, their correlation, and their significance, as shown in the table below:

**Table No. (11): Summary of simple linear regression of the general hypothesis.**

| Regression Coefficient (B) | Significance Level (sig) | $R^2$ | F Value | Test Decision |
|---|---|---|---|---|
| 0.651 | 0.00 | 0.666 | 95.870 | (H1) |

Source: Prepared by the researchers based on SPSS V22 outputs.

From the table above, we find that the value of the regression coefficient reached (B = 0.651), which is significant at the (0.01) level. The coefficient of determination reached ($R^2$ = 0.666), indicating that the independent variable (AI applications) affects the dependent variable (the accounting and auditing profession) according to the responses of the study sample. The value of F reached (F = 95.870), which is significant at (0.01).

- **Based on the hypothesis test decision:** We accept the alternative hypothesis (H1) and reject the null hypothesis (H0), meaning AI applications affect the accounting and auditing profession in El-Oued province.

**2- Results of testing the first sub-hypothesis**

**Text of the hypothesis:** AI applications contribute to reducing costs in the accounting and auditing profession in El-Oued.

We formulate it statistically as follows:

- **Null hypothesis (H0):** AI applications do not contribute to reducing costs in the accounting and auditing profession in El-Oued.
- **Alternative hypothesis (H1):** AI applications contribute to reducing costs in the accounting and auditing profession in El-Oued.

We used simple linear regression to test this hypothesis, as shown in the following table:

**Table No. (12): Summary of simple linear regression of the first sub-hypothesis.**

| Regression (B) | Coefficient | Significance (sig) | Level | $R^2$ | F Value | Test Decision |
|---|---|---|---|---|---|---|
| 0.530 | | 0.00 | | 0.492 | 46.417 | Acceptance of the hypothesis |

Source: Prepared by the researchers based on SPSS V22 outputs.

From the table above, we find that the regression coefficient value is (B = 0.530), which is significant at the (0.01) level. The coefficient of determination reached ($R^2$ = 0.492), indicating

that the independent variable (AI applications) affects the dependent variable (cost reduction in the accounting profession). The F value reached (F = 46.417), significant at (0.01).

- **Based on the test decision:** We accept the alternative hypothesis (H1) and reject the null hypothesis (H0), meaning AI applications contribute to reducing costs in the accounting and auditing profession in El-Oued.

**3- Results of testing the second sub-hypothesis**

**Text of the hypothesis:** AI applications contribute to reducing the number of jobs in the accounting and auditing profession in El-Oued.

We formulate it statistically as follows:

- **Null hypothesis (H0):** AI applications do not contribute to reducing the number of jobs in the accounting and auditing profession in El-Oued.
- **Alternative hypothesis (H1):** AI applications contribute to reducing the number of jobs in the accounting and auditing profession in El-Oued.

We used simple linear regression to test this hypothesis, as follows:

**Table No. (13): Summary of simple linear regression of the second sub-hypothesis.**

| Regression Coefficient (B) | Significance Level (sig) | $R^2$ | F Value | Test Decision |
|---|---|---|---|---|
| 0.771 | 0.00 | 0.601 | 72.404 | Acceptance of the hypothesis |

Source: Prepared by the researchers based on SPSS V22 outputs.

From the table above, the regression coefficient B reached (0.771), significant at (0.01). The coefficient of determination reached (0.601), indicating that the independent variable (AI applications) affects the dependent variable (reduction of accounting jobs). The F value reached (72.404), significant at (0.01).

- **Based on the decision:** We accept the alternative hypothesis (H1) and reject the null hypothesis (H0), meaning AI applications contribute to reducing the number of accounting and auditing jobs in El-Oued.

**Conclusion**

In conclusion, it can be confirmed that the adoption of artificial intelligence technologies by Algeria in all its sectors is no longer an option but has become a necessity to keep pace with rapid changes in the contemporary business environment. The accounting and auditing profession is not an exception but may be at the heart of this technological revolution. Thus,

adapting to smart technologies and developing analytical and technical skills is the path to continued success and excellence in these professions.

This study yielded several results, which can be summarized as follows:

- Thanks to the use of AI technologies, accounting has shifted from merely a recording function to an analytical and strategic tool. It has become possible to examine millions of transactions in seconds using big data analytics and detect financial manipulation faster than humans.
- AI technologies help reduce time and cost, and enhance efficiency, performance, and the quality of various services.
- The increasing reliance on electronic data has revealed challenges related to privacy and information protection. Thus, professional responsibility now includes commitment to cybersecurity standards and data confidentiality.
- Successful adoption of AI applications requires conscious organizational leadership and serious investment in infrastructure and training.
- The application of AI technologies in the accounting profession in Algeria faces several challenges, most notably weak internet networks and lack of training.
- The adoption of AI technologies in Algerian institutions is still in its early stages; therefore, study participants have weak awareness of the characteristics and uses of these advanced technologies.
- AI does not eliminate the role of accountants or auditors but enhances their role and helps them improve performance. Businesses will always need the human element to analyze and interpret data and provide advisory services.
- Adequate knowledge of how to use AI technologies gives accountants and auditors the ability to understand cybersecurity and protect financial information.

**Recommendations**

Based on the challenges revealed by the study, especially in its practical part, the following recommendations are proposed:

- The need to qualify national cadres and benefit from foreign expertise in the field of AI.
- The need for continuous awareness and learning among accountants and auditors about technological developments to keep pace with the digital age.
- Continuous updating of software and training accountants and auditors, as human intelligence remains essential and becomes better when supported by smart technologies.

- The need to adopt a collaborative approach between academics and professionals in the fields of accounting and auditing to keep up with developments.
- Investment in AI-related infrastructure by establishing scientific centers and collecting big data, as it is the fuel for AI.
- Algeria must introduce legislation, laws, and regulatory frameworks for the governance of AI technologies.

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