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The Profession of Accounting and Auditing in the Context of Artificial Intelligence Technologies: A Field Study on a Sample of Accountants and Financial Auditors

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Abstract

This study aims to assess the contribution of artificial intelligence (AI) technologies to the accounting and auditing profession. The research is divided into two sections: a theoretical part, which clarifies and defines the key terms related to the study, outlines the main benefits of AI technology for accounting, and highlights the primary challenges that may arise when implementing AI techniques in various organizations; and an empirical part, which involved conducting a survey with a group of professionals (including certified accountants, auditors, financial experts, and corporate accountants). The study reached several key conclusions, the most important of which are: the adoption of AI technology in Algerian institutions is still in its early stages, and the application of AI techniques in accounting faces several challenges overall. Despite the significant benefits that AI can offer, provided the right conditions are in place, AI does not eliminate the roles of accountants or auditors but rather enhances and supports them in improving their accounting and auditing tasks. The study also recommends the need to train and prepare accountants in the use of smart technologies to keep pace with advancements in the accounting field, to foster collaboration between researchers in information technology and accountants, and to encourage educational institutions to integrate AI theories into their curricula to help develop the necessary skills for working in an advanced technological environment.

Keywords: Artificial intelligence, AI techniques, accounting profession, auditing profession.

Introduction

In today's world, the financial and business environment has witnessed significant advancements in information and communication technologies, as well as the exchange of knowledge and information. This development has prompted companies worldwide to keep pace with these technological innovations to ensure the highest quality of services. Many companies have adopted artificial intelligence (AI) technologies across various administrative, financial, and accounting sectors. This adoption has led to major changes in the methods and practices of these fields, particularly in the accounting sector, which has benefited the most from AI technologies. This raises several critical questions, including:

Main Research Question:

- What is the impact of AI technologies on the accounting and auditing profession?

Sub-questions:

- What is artificial intelligence?
- What is the accounting profession?
- What are the benefits of applying AI technologies to accounting and auditing?
- What challenges and risks may the accounting profession face due to the widespread adoption of AI applications?
- Will the role of the accountant become obsolete with the reliance on smart accounting software?
- What solutions are required to address the risks and drawbacks of AI?

1. Theoretical Framework of the Study

1.1 Definition of Artificial Intelligence:

Artificial intelligence refers to the ability of machines to replicate human cognitive functions such as problem-solving, learning, and recognizing patterns, which enable them to make predictions to facilitate decision-making (Stancu & Duțescu,

2021, p. 751). AI systems are programmed to think and perform activities typically expected of the human brain, including knowledge acquisition and application, as well as controlling and understanding relationships and producing original ideas (KWARBAI & OMOJOYE, 2021, p. 80). Furthermore, AI refers to computer systems' ability to simulate biological neural processes, utilizing deep learning and self-learning from information and experiences to make knowledge-based decisions, infer conclusions, and improve performance to achieve goals (Jin, et al., 2022, p. 570). AI is an emerging and interdisciplinary field encompassing management, informatics, logic, mathematics, and more.

1.2 Importance of Artificial Intelligence:

AI holds great significance in various aspects of life, including:

- AI simulates human intelligence and skills, making it one of the most important achievements of humanity to aid in multiple fields.
- AI has vast applications across various sectors, such as navigation (digital maps), medicine, education, law, accounting, and auditing.
- AI applications have become indispensable in daily life, accessible to everyone, like smart phones, smart TVs, smart calculators, virtual reality glasses, and gaming applications.
- AI is seen as the language of the future, and acquiring its knowledge is essential to avoid being classified as outdated or illiterate.

1.3 Types of Artificial Intelligence:

AI is classified into three types based on the level of intelligence machines have achieved (Al-Asad, 2023, p. 168):

1. **Narrow or Weak AI**: The simplest form of AI, designed to perform a specific task in a controlled environment. It reacts to a specific situation and operates within the constraints of its environment. An example is the IBM robot "Deep Blue," which defeated world chess champion Garry Kasparov in 1996.
2. **General or Strong AI**: Refers to machines that reach a level of intelligence comparable to human intelligence. Examples include self-driving cars and real-time chatbots.
3. **Super AI**: Refers to the stage where machine intelligence surpasses human intelligence. These models are still experimental but are expected to emerge in the future (Lahmar, 2021, p. 97).

1.4 Definition of the Accounting Profession:

Accounting is the tool used to gain a clear understanding of a company’s financial position, including profit or loss, cash flow, the current value of its assets and liabilities, and which parts of the company generate actual profits (Rayan Smith, 2022). Accounting is a critical and complex function that involves recording, classifying, and analyzing various financial data for a specific company. It provides reliable and credible information about the company's financial situation to stakeholders such as investors, government agencies, and financial institutions (Belaid & Ben Hawas, 2024, p. 1040).

1-5 Definition of Artificial Intelligence in Accounting

The United States was the first to apply AI technology in the field of accounting, enhancing its value in accounting and financial management since then. With the application of AI technology in accounting and taxation, the development of AI applications in the financial sector has been significantly enhanced, providing reliable technical support for the efficient advancement of accounting tasks (Jin, et al., 2022, p. 570).

In general, AI in accounting can be defined as the ability of computers and software to perform many accounting tasks and automate repetitive manual functions while reducing human error. This enhances the accuracy and speed of report and financial data analysis compared to traditional accounting methods (Al-Dosouqi, 2023). A study by (Shtiwi, 2023, p. 04) confirmed the positive impact of AI in accounting and emphasized that accountants should adopt AI, as it is likely to become a fundamental element in all business operations in the near future. The study also described AI in accounting as aiming to improve traditional accounting methods and processes using smart technology and software.

1-6 Applications of Artificial Intelligence and Their Use in Accounting

According to a study by Hasan (2022, p. 451), AI can be applied in various accounting fields as follows:

1-6-1 Expert Systems (ES)

These are computer programs that simulate human thinking processes in different situations. They store human knowledge and expertise and apply it to solve problems in specific areas. In accounting, expert systems are categorized into:

- **Auditing**: Expert systems enhance audit quality, assess risks, and evaluate internal controls. They are used to verify transaction values and detect fraud. There are two main types of expert systems in auditing: one supports the audit process itself, and the other supports company estimates. These tools aim to ensure high audit quality, though human oversight remains essential for accuracy and considering non-technical factors like work ethics and legal context.

- **Financial Accounting**: Expert systems assist in financial management, including preparing financial statements, processing invoices, managing revenues and expenditures, and reducing financial risks.
- **Management Accounting**: Expert systems are used to enhance financial analysis, management control diagnostics, and decision-making processes. They offer guidance on stock control, cost analysis, risk forecasting, and project management.

1-6-2 Decision Support Systems (DSS)

DSS are interactive, adaptive systems designed to assist in decision-making processes by creating alternatives for intelligent decision-making. In accounting, DSS offers benefits such as analyzing financial data, forecasting future outcomes, managing costs, and improving financial decision-making.

1-6-3 Machine Learning (ML) and Deep Learning (DL)

Machine learning allows computers to learn and make decisions with minimal human intervention, while deep learning mimics the structure of the human brain. In accounting, ML is useful for analyzing financial data and detecting anomalies, reducing risks, and automating repetitive tasks like contract reviews and report preparation.

1-6-4 Fuzzy Logic

Fuzzy logic mimics human decision-making, processing uncertain or partial truths. It is useful in accounting for handling complex problems and uncertainties, helping decision-makers make optimal choices.

1-6-5 Artificial Neural Networks (ANNs)

These systems emulate human neural networks and learn directly from examples. In accounting, ANNs help develop patterns from data, enabling better problem-solving and analysis in tasks like financial forecasting.

1-6-6 Hybrid Systems

Hybrid systems combine different AI techniques to address complex issues such as natural language processing and machine learning. In accounting, these systems improve accuracy, efficiency, and collaboration while maintaining the expertise of human accountants.

1-6-7 Genetic Algorithms

Genetic algorithms are used to solve complex problems efficiently, offering faster and better decision-making capabilities. They are known for their ability to retain learning processes, making them valuable in managing business operations.

1-6-8 Intelligent Agents

Intelligent agents act as intermediaries between users and systems, programmed with a set of rules to adapt and learn. In accounting, they help automate processes and improve efficiency.

1-6-9 Robotics (RPA)

Robots are mechanical devices programmed to perform specific tasks, including repetitive tasks in accounting and auditing. Robotic Process Automation (RPA) is considered an effective and flexible tool for automating manual processes in accounting.

1-7 Key Smart Technologies Influencing Accounting

According to (Bobjah, 2022, p. 92) and (Mrah & Touilib, 2022, p. 30), the most significant smart technologies that have impacted the field of accounting are those that enhance accuracy, efficiency, and decision-making processes while maintaining the importance of human expertise in strategic guidance.

Key Innovations and Smart Technologies Affecting Accounting Over the Years

Year	Major Innovations and Smart Technologies Impacting Accounting
1943 - 1950	- Establishment of neural network science - Coining of the term "Robotics" by Isaac Asimov
1950 - 1965	- The term "Artificial Intelligence" and the programming language LISP were coined by John McCarthy - First use of a computer in accounting / First small computer (8PDP)
1965 - 1980	- Creation of the internet / Development of VisiCalc, the first spreadsheet software - Launch of the first cellular network (1G)
1980 - 1995	- First personal computer by IBM / Launch of the first tablet by Grid Pad - Creation of Microsoft Office suite / Launch of the World Wide Web (WWW) by CERN - Significant advancements in artificial intelligence: Machine Learning, Case-Based Reasoning, Algorithms, Data Mining, Web Crawlers, Virtual Reality, etc.
1995 - 2000	- Launch of Wi-Fi technology / Establishment of Google

Year	Major Innovations and Smart Technologies Impacting Accounting
2000 - 2015	- Launch of social networks / Gmail email service - Application of artificial intelligence in business / Launch of LG smartphones - Launch of Apple's Siri and Google's Google Now for answering questions, offering recommendations, and executing tasks - Emergence of cryptocurrencies and digital currency (Bitcoin) / Blockchain technology / Big data - Launch of cloud computing services by IBM / Machine Learning (ML) - Blue Brain initiative to simulate the human brain in detail - Cybersecurity
2015 to Present	- Virtual reality (VR) becomes widely accessible / Facial recognition technology - Integration of blockchain with the Internet of Things / Robotic Process Automation (RPA) - Announcement of Google Duplex service - Launch of 5G technology

Source: Prepared by the researcher based on Nour Al Huda Marah and Mohamed Touilib, "The Future of the Accounting Profession in the Age of Digital Transformation Technologies – Blockchain as a Model," *Journal of Economic Fields*, Vol. 05, No. 01, 2022, p. 30, and Soad Bobja, "Artificial Intelligence: Applications and Implications," *Journal of Finance and Business Economics*, Vol. 06, No. 04, 2022, p. 92.

1-8 Key AI-Enabled Accounting Software:

Many companies and institutions have adopted AI technology in their financial and accounting sectors due to the benefits and impact these technologies have on improving the quality of their financial and accounting activities. The most notable AI-supported accounting software includes:

- **XERO**: A software that performs various accounting tasks, including bookkeeping. Xero uses AI to analyze financial data and provide useful recommendations for managing accounts and finances, with over 3 million subscribers worldwide.
- **SAP CONCUR**: A leading expense management platform, part of the SAP family, that automates daily operations and simplifies expense management. Around 700 organizations use this software to improve management systems.
- **WAVELET**: A software capable of accelerating decision-making processes and integrating different systems, allowing for effective business management with 51,000 users.
- **FINANCIO**: Designed for smart businesses, it automates and simplifies accounting tasks. It's particularly popular among small businesses in Malaysia with approximately 25,700 users.
- **BECON SYSTEMS**: A streamlined accounting software built using AI and automation with 35,000 users.
- **ZOHO**: An Indian-based platform offering a suite of applications that can automate corporate accounting processes, with over 50 million users globally.
- **ESKER**: Known for its AI-powered software designed to automate corporate accounting processes, including procurement, accounts payable, and accounts receivable, with more than 600,000 users in over 50 countries.
- **QuickBooks**: Uses AI to analyze accounting data and provide users with recommendations for making informed financial decisions.
- **E FLOW AND Medius**: Cloud-based software that automates invoice and purchase order processing, capturing data automatically and integrating it smoothly with enterprise resource planning (ERP) systems.
- **E-Invoice**: An electronic invoicing program provided by OZEDI for businesses and software developers in Australia and New Zealand to support and promote e-invoicing between senders and receivers.
- **Kofax RPA**: A system for creating robots that automate data capture, coding, invoice verification, and related processes, ultimately directing the data to ERP systems to validate payments, aiming to reduce costs, delays, and errors.

1-9 Contribution of AI Technologies in Enhancing the Accounting and Auditing Profession

AI technologies have brought numerous advantages to the accounting profession, enabling smart systems to handle various accounting tasks, including:

- **Automating Routine Accounting Tasks**: AI automation of routine accounting tasks has significantly improved efficiency, accuracy, and speed while reducing human intervention, allowing accountants to focus on more strategic tasks. For example, Optical Character Recognition (OCR) technology can scan and process invoices faster and with fewer errors.
- **Providing Predictive Analytical Insights**: AI's ability to process large amounts of data has allowed accountants to gain deeper insights into financial information. Advanced AI algorithms can detect patterns in financial data, offering predictive insights on cash flow trends, budget deviations, and potential financial risks.
- **Automating and Analyzing Tax Processes**: AI analyzes financial statements to identify tax credits and deductions, saving time and helping companies reduce tax liabilities. It also detects errors and fraud in tax returns to ensure compliance with regulations and maximize tax savings.
- **Detecting Fraudulent Transactions**: AI-powered fraud detection systems analyze vast records and financial data to identify irregular patterns and anomalies, signaling potential fraud or other financial irregularities, thus enabling accountants to monitor financial transactions more effectively and improve the accuracy and efficiency of their services.

1-10 Risks and Challenges Facing Accountants with the Dominance of AI Technology

Despite the widespread adoption of artificial intelligence (AI) technology, which has drawn the attention of all sectors and become an integral part of daily life, the evolution of smart software used in accounting has led to a significant transformation in operational systems, largely phasing out traditional accounting systems. However, this shift is not without its threats, as the application of smart technologies in accounting practices presents several challenges:

- **Job Displacement**: One of the main debates is whether technology will enhance human intelligence and streamline access to accounting information, improving management and accounting operations. Yet, technological advancement has begun to eliminate some traditional accounting roles while creating new ones.
- **Threat to Human Capital**: The adoption of AI in accounting has led to growing concerns about the potential replacement of human accountants by advanced technology, especially in tasks that require quick and accurate data processing.
- **High Costs**: Implementing AI technologies in accounting involves significant costs, including purchasing, maintaining, and updating AI-supported accounting systems. Additionally, there is the risk of losing the foundational knowledge of junior accountants and the possibility that competitors may exploit such technologies.
- **Limited Human Skills**: Although AI is efficient and reliable in accounting practices, it lacks certain human skills such as creativity, emotional intelligence, and interpersonal communication, which are essential in specific aspects of the profession.
- **Workforce Reduction**: AI adoption in accounting threatens to reduce the demand for human accountants, potentially leading to widespread unemployment in the profession. A 2015 study by Oxford University suggested a 95% likelihood that machines will replace accountants.
- **Frequent Updates**: Continuous changes in accounting and tax laws require constant updates to AI-driven accounting systems to ensure compliance with government regulations.
- **Skill Gaps**: There is a shortage of skilled labor capable of working with AI technologies, and training new specialists requires significant investment.
- **Data Breach and Job Insecurity**: AI poses a high risk for data breaches and job losses, especially for low-level accountants, while raising the bar for financial practitioners.

2- Practical Framework of the Study

After entering the data into the IBM SPSS V23 statistical software, various descriptive and inferential statistical tools were used for analysis:

2-1 Descriptive Statistical Tools:

- **Absolute and Relative Frequencies**: This method was used to classify and present data clearly and simply, showing how frequently each category of the respondents' personal variables appeared.
- **Pearson Correlation Coefficient**: Used to measure the degree of correlation between two variables and to test the internal consistency of the study’s questionnaire statements.
- **Central Tendency Measures**: The mean of each survey item was calculated to assess respondents’ agreement with each statement.

- **Dispersion Measures**: The standard deviation was calculated to determine the dispersion of responses around the mean, with lower values indicating a higher concentration of responses around the average.
- **Cronbach's Alpha**: This test was used to measure the reliability of the questionnaire items.

2-2 Inferential Statistical Tools:

- **Normality Test (Kolmogorov-Smirnov)**: Used to assess the distribution of the data.
- **T-Test for a Single Sample**: Used to determine if the average level of agreement reached the neutral value (3) or was significantly higher or lower.
- **Independent Samples T-Test**: Used to identify differences in responses where there were two answer choices.
- **ANOVA (Analysis of Variance)**: Employed to test whether there were statistically significant differences in respondents' attitudes.
- **Regression Model**: Used to test the impact of independent variables on the dependent variable by generating a linear equation.

2-3 Validity and Reliability of the Questionnaire

To ensure the validity and reliability of the questionnaire, both external (face) and internal validity were measured:

- **External Validity**: The questionnaire was reviewed by a panel of academic and professional experts in accounting and auditing, and their feedback was incorporated into the final version.
- **Internal Validity**: Pearson's correlation coefficient was used to measure the degree to which each questionnaire item correlated with the dimension it belonged to.

Table 1: Internal Consistency Validity for the First Dimension

Item Number	Pearson Correlation	Sig (Two-Tailed)	Statistical Significance
1	0.736	0.000	Statistically Significant
2	0.707	0.000	Statistically Significant
3	0.759	0.000	Statistically Significant
4	0.742	0.000	Statistically Significant
5	0.646	0.000	Statistically Significant
6	0.599	0.000	Statistically Significant

Source: Prepared by the researcher using SPSS V23 results.

It can be observed from the values in the above table that the Pearson correlation coefficients for the statements in the first dimension are positive and statistically significant at a 0.05 significance level. The p-values for these statements are 0.000, which is less than 0.05, confirming a positive relationship between the statements of this dimension and that they accurately measure what they were intended to.

- **Internal Consistency Validity for the Second Dimension**: Accountants are aware of the impact of AI technologies on the accounting profession. The Pearson correlation coefficient was calculated to illustrate the relationship between each statement in the second dimension and the overall mean for the dimension to which the statements belong. The following table shows the results:

Table 02: Internal Consistency Validity for the Second Dimension

Statement Number	Pearson Correlation	Sig (Two-Tailed)	Statistical Significance
1	0.769	0.000	Statistically Significant
2	0.696	0.000	Statistically Significant
3	0.612	0.000	Statistically Significant
4	0.648	0.000	Statistically Significant
5	0.726	0.000	Statistically Significant
6	0.725	0.000	Statistically Significant
7	0.728	0.000	Statistically Significant
8	0.744	0.000	Statistically Significant
9	0.602	0.000	Statistically Significant
10	0.571	0.000	Statistically Significant

Statement Number	Pearson Correlation	Sig (Two-Tailed)	Statistical Significance
11	0.830	0.000	Statistically Significant
12	0.849	0.000	Statistically Significant

Source: Prepared by the researcher using SPSS V23 results.

From the table above, it is clear that the Pearson correlation coefficients for the statements in the second dimension are positive and statistically significant at the 0.05 significance level. The p-values for these statements are 0.000, confirming a positive relationship between the statements of this dimension and that they accurately measure what they were intended to.

2-3-2 Validity and Reliability of the Study Sample: To ensure the validity and reliability of the questionnaire, Cronbach's Alpha was used as it is one of the most commonly used methods to measure reliability and validity. This coefficient is considered acceptable if it is 0.6 or higher. The following table shows the reliability and validity coefficients for the study dimensions:

Table 03: Validity and Reliability of the Study Sample

Dimensions	Number of Statements	Validity Coefficient	Reliability Coefficient
First Dimension	6	0.720	0.774
Second Dimension	12	0.720	0.910

Source: Prepared by the researcher using SPSS V23 results.

From the values in the table above, we can see that the reliability and validity coefficients for the study dimensions are above the statistically acceptable threshold of 0.6. The overall reliability and validity of the questionnaire were 0.922 and 0.820, respectively, which are close to 1. This indicates a high level of reliability and validity for the questionnaire, meaning that if it were redistributed multiple times, it would yield consistent results. This confirms the questionnaire's reliability and validity, making it suitable for study and analysis, allowing for the testing of hypotheses with full confidence.

2-4 Presentation and Analysis of Study Sample Responses: This section analyzes the study variables based on the responses of the study sample, including the personal and institutional variables of internal and external accountants, presenting their responses, identifying the study variables' direction, and analyzing these responses using appropriate descriptive statistical tools.

2-4-1 Presentation and Analysis of Personal and Professional Variables:

- **Educational Qualification**: The table below shows the distribution of the study sample according to educational qualification:

Table 04: Distribution of the Study Sample According to Educational Qualification

Educational Qualification	Frequency	Percentage (%)
Bachelor's Degree	19	39.3%
Master's Degree	14	35.2%
Magister	8	14.8%
Doctorate	13	24.1%
Total	**54**	**100%**

Source: Prepared by the researcher using SPSS V23 results.

For the educational qualification variable, it is clear from the table above that the majority of the sample holds a Bachelor's degree, with 19 individuals (39.3%), followed by 14 individuals with a Master's degree (35.2%), 13 individuals with a Doctorate (24.1%), and finally, 8 individuals with a Magister (14.8%).

- **Job Position**: The table below shows the distribution of the study sample according to job position:

Table 05: Distribution of the Study Sample According to Job Position

Job Position	Frequency	Percentage (%)
Accounting Expert	5	9.3%
Auditor	17	31.5%
Certified Accountant	14	25.9%
Company Accountant	18	33.3%

Job Position	Frequency	Percentage (%)
Total	**54**	**100%**

Source: Prepared by the researcher using SPSS V23 results.

From the table above, it can be observed that the majority of the respondents hold the position of company accountant, representing 33.3%, followed by auditors at 31.5%, certified accountants at 25.9%, and finally, accounting experts at 9.3%.

- **Years of Experience**: The following table shows the distribution of the study sample according to years of experience.

Table 06: Distribution of Study Sample According to Years of Experience

Years of Experience	Frequency	Percentage (%)
Less than 5 years	5	9.3%
6 to 10 years	20	37.0%
11 to 20 years	23	42.6%
More than 20 years	6	11.1%
Total	**54**	**100%**

Source: Prepared by the researcher using SPSS V23 results.

For the variable of years of experience, it is clear from the table above that most respondents in the sample have between 11 and 20 years of professional experience, with 23 individuals (42.6%), which suggests a higher level of expertise regarding the profession, thus increasing the reliability of their responses. The second largest group comprises those with 6 to 10 years of experience, representing 20 individuals (37%), followed by 6 individuals with more than 20 years of experience (11.1%). Finally, the smallest group includes those with less than 5 years of experience, with 5 individuals (9.3%).

Accountants' Awareness of AI Technology: The following table shows the distribution of the study sample according to their awareness of artificial intelligence technology:

Table 07: Distribution of Study Sample According to AI Technology Awareness

AI Awareness Level	Frequency	Percentage (%)
Weak	17	31.5%
Moderate	21	38.9%
Good	14	25.9%
Excellent	2	3.7%
Total	**54**	**100%**

Source: Prepared by the researcher using SPSS V23 results.

It is evident from the table above that the majority of the study sample has a moderate level of awareness of artificial intelligence technology, with 21 individuals (38.9%). The second largest group has a weak level of awareness, with 17 individuals (31.5%). Those with a good level of awareness represent 14 individuals (25.9%), while the smallest group, with an excellent level of awareness, includes only 2 individuals (3.7%).

2-4-2 Presentation and Analysis of Sample Responses to Study Dimensions

To analyze the data, the T-test for a single sample was used. Before analyzing the responses of the study sample regarding the study variables, we first identify the distribution of the data and the method of measurement.

Parametric tests require the data to follow a normal distribution. This test is necessary to determine the type of tests to be used in the study (parametric or non-parametric). The Kolmogorov-Smirnov test was chosen as it is the most commonly used to determine whether the data follow a normal distribution. The following table presents the results:

Table 08: Normal Distribution Test

Dimension	Z Value	P-Value (sig)
First	0.083	0.200*
Second	0.086	0.200*
All Dimensions	0.099	0.200*

Source: Prepared by the researcher using SPSS V23 results.

The table tests the following hypotheses:

- **H0**: The data do not follow a normal distribution.
- **H1**: The data follow a normal distribution.

It is evident from the table above that the p-values for the study dimensions are greater than the significance level of 0.05, indicating that the data follow a normal distribution based on the Kolmogorov-Smirnov test. Therefore, parametric tests can be used to analyze the data.

Additionally, the five-point Likert scale was used to determine the method of measuring the data. This scale is commonly used for ordinal measurements to determine the level of agreement with the questionnaire statements, as it provides meaningful average values. The scale ranges from 1 to 5, allowing respondents to choose one level of agreement.

When calculating the study averages, these averages may sometimes include decimal points. Therefore, the hypothetical average was calculated based on the five-point Likert scale by first calculating the range of weights between the levels. This was done by calculating the difference between the highest and lowest categories, as follows: 5-1 = 4. Then, the length of the category was calculated as follows: Category Length=45=0.80\text{Category Length} = \frac{4}{5} = 0.80Category Length=54=0.80

Based on this, the hypothetical average was calculated by adding the category length in increments to the number of weight categories, starting from the first category to the last. Accordingly, the direction of agreement is determined, as shown in the following table:

Table 09: Distribution of the Five-Point Likert Scale

Measurement Level	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Weight	1	2	3	4	5
Hypothetical Average	[1-1.80]	[1.80-2.60]	[2.60-3.40]	[3.40-4.20]	[4.20-5]
Agreement Direction	Very Low	Low	Moderate	High	Very High

Source: Prepared by the researcher based on the five-point Likert scale.

Presentation and Analysis of Sample Responses to the First Dimension: The responses of the sample were analyzed using the T-test for a single sample, as shown in the following table, to determine the level of agreement and its direction for these statements:

Table 10: Presentation and Analysis of Sample Responses

First Dimension: Accountants Have Adequate Knowledge of AI Technology Characteristics and Uses

Statement Number	Statement	Mean	Standard Deviation	Agreement Direction	Agreement Level
1	You have sufficient knowledge of AI technologies	2.76	1.008	Neutral	Moderate
2	AI technologies can be applied in practical fields	2.87	0.972	Neutral	Moderate
3	I realize that AI technologies are the future of accounting systems	3.26	0.915	Neutral	Moderate
4	I have positive expectations regarding the application of AI technologies	3.19	0.933	Neutral	Moderate
5	I am willing to use AI technologies	3.46	0.966	Agree	Good
6	I have sufficient academic qualifications to use AI technologies	3.15	0.856	Neutral	Moderate
General Trend		**3.11**	**0.658**	**Neutral**	**Moderate**

Source: Prepared by the researcher using SPSS V23 results.

From the table above, we can observe that most of the mean values fall within the neutral category, with a low standard deviation, indicating that there is not much dispersion in the sample's responses. This shows that the sample tends to express neutral opinions on most of the statements in this first dimension. The mean responses range between 2.76 and 3.46, with most answers being neutral on some statements and agreeing with others. The highest mean values were for statement 5 (3.46) and statement 3 (3.26), while the lowest was for statement 1, with a value of 2.76. The overall mean for the dimension

is 3.11, indicating a moderate awareness of AI technologies.

Presentation and Analysis of Sample Responses to the Second Dimension: The mean and standard deviation for the statements in the second dimension were calculated, as shown in the following table:

Table 11: Presentation and Analysis of Sample Responses

Second Dimension: Accountants Are Aware of the Impact of AI Technologies on the Accounting Profession

Statement Number	Statement	Mean	Standard Deviation	Agreement Direction	Agreement Level
1	AI technologies reduce the time spent recording financial transactions	3.52	0.906	Agree	Good
2	AI technologies digitize accounting documents, invoices, and contracts on the internet	3.59	0.942	Agree	Good
3	AI technologies reduce the number of accountants needed for more accurate financial tasks	3.30	0.944	Neutral	Moderate
4	AI technologies lead to faster, more flexible changes in accounting practices compared to traditional methods	3.44	0.883	Agree	Good
5	AI technologies prevent errors caused by human intervention in documentation	3.15	0.960	Neutral	Moderate
6	AI technologies enable real-time online financial reports	3.37	1.015	Neutral	Moderate
7	AI technologies prevent fraud and manipulation of financial data	3.33	0.991	Neutral	Moderate
8	AI technologies improve the accuracy and reliability of accounting records	3.30	0.983	Neutral	Moderate
9	AI technologies significantly reduce tax evasion	3.35	1.031	Neutral	Moderate
10	AI technologies impact accounting by transitioning from double-entry to triple-entry bookkeeping	3.33	0.932	Neutral	Moderate
11	AI technologies reduce the costs of accounting records and paper used in documentation	3.48	0.906	Agree	Good
12	AI technologies allow transparent access to accounting information for all parties (accountant, client, auditor, etc.)	3.48	0.966	Agree	Good
General Trend		**3.38**	**0.711**	**Neutral**	**Moderate**

Source: Prepared by the researcher using SPSS V23 results.

From the table above, we observe that the majority of the calculated means fall into the category of disagreement, with a low standard deviation, indicating little dispersion in the responses of the study sample. This suggests that the respondents agree with all the statements in the second dimension. Statement 2 recorded the highest mean of 3.59, indicating that reliance on AI technologies digitizes accounting documents, invoices, and contracts on the internet. The lowest value was found in statement 5, with a mean of 3.15, suggesting that the respondents believe that AI technologies help avoid errors caused by human intervention in documentation processes. The overall mean for the dimension is 3.38, which shows that the respondents have a moderate awareness of the impact of AI technologies on the accounting profession.

2-5 Hypothesis Testing

In this section, we test the study's hypotheses concerning the description of the study variables using statistical methods for inferential statistics.

2-5-1 Testing Hypotheses Related to Describing the Study Variables

Before testing the hypotheses, most tests require an understanding of data distribution, which is essential for hypothesis testing. As previously mentioned, we used the Kolmogorov-Smirnov test, which indicated that the data follow a normal distribution. This allows us to use parametric tests to test the study's hypotheses.

- **Testing the First Main Hypothesis**: We test the hypotheses related to describing the study variables using the T-test for a single sample from the accountants' perspective, as follows:

First Hypothesis:

- **H0**: Accountants do not have awareness of AI technology characteristics in the accounting profession.
- **H1**: Accountants have awareness of AI technology characteristics in the accounting profession.

The following table shows the T-test results for the first main hypothesis related to the first dimension of the accountants' questionnaire:

Table 12: T-Test Results for the First Main Hypothesis

Hypothesis	Mean	Standard Deviation	Calculated T	Tabulated T	P-value (sig)	Agreement Level	Decision
H1	3.11	0.658	1.28	3.442	0.104	Moderate	Rejected

Significance Level: $\alpha = 0.05$, **DF** = N-1 = 54

Source: Prepared by the researcher based on Minitab V18 results.

From the table above, it is clear that the calculated mean for the variable "Accountants have awareness of AI technology characteristics in the accounting profession" falls within the neutral category of the Likert scale. This reflects a neutral stance on the hypothesis from the accountants' perspective. The calculated T-value is 1.28, which is lower than the tabulated value of 3.442, and the p-value is greater than the significance level of 0.05. Therefore, the null hypothesis (H0) is accepted, and the alternative hypothesis (H1) is rejected.

Second Hypothesis:

- **H0**: AI technologies do not impact the accounting profession.
- **H1**: AI technologies impact the accounting profession.

The following table shows the T-test results for the second hypothesis related to the second dimension of the questionnaire:

Table 13: T-Test Results for the Second Hypothesis

Hypothesis	Mean	Standard Deviation	Calculated T	Tabulated T	P-value (sig)	Agreement Level	Decision
H1	3.38	0.711	4.000	2.001	0.000	Moderate	Accepted

Significance Level: $\alpha = 0.05$, **DF** = N-1 = 54

Source: Prepared by the researcher based on SPSS V23 results.

From the table above, it is clear that the calculated mean for the variable "AI technologies impact the accounting profession" falls within the agreement category of the Likert scale. The calculated T-value is 4.000, which is higher than the tabulated value of 2.001, and the p-value is less than the significance level of 0.05. Therefore, the alternative hypothesis (H1) is accepted, and the null hypothesis (H0) is rejected, meaning that "AI technologies impact the accounting profession," according to the opinions of the study sample.

Third Hypothesis:

- **H0**: There is no statistically significant relationship between the level of the sample's awareness of IT developments and their awareness of the impact of AI technologies on the accounting profession.
- **H1**: There is a statistically significant relationship between the level of the sample's awareness of IT developments and their awareness of the impact of AI technologies on the accounting profession.

The following table shows the T-test results for the third hypothesis related to the second dimension of the questionnaire:

Table 14: T-Test Results for the Third Hypothesis

Hypothesis	Correlation R	Determination Coefficient R^2	F-value Significance	Beta Direction	Beta Value β	T-value	P-value (sig)
1	0.709	0.509	0.000	2.199	0.598	7.259	0.000

Source: Prepared by the researcher based on SPSS V23 results.

From the table above, it is clear that the determination coefficient (R^2) is high at 0.509, meaning that the independent variable explains 50% of the variance in the dependent variable. The T-value and the F-significance value (0.000), which is less than 0.05, indicate the significance of the test. Therefore, the alternative hypothesis (H1) is accepted, and the null hypothesis (H0) is rejected, meaning that "there is a statistically significant relationship between the level of the sample's awareness of IT developments and their awareness of the impact of AI technologies on the accounting profession," according to the opinions of the study sample.

Conclusion: This study aimed to address a significant topic related to organizations striving to modernize their accounting systems and transition to modern accounting technologies. The study revealed the level of awareness among professionals

in the accounting field regarding modern technologies used in their profession. The study focused on the following central issue: What is the contribution of AI technologies to the accounting profession? This topic was addressed by providing theoretical foundations on AI technologies and their relationship to accounting, as well as conducting field research to determine the level of awareness among accounting professionals regarding the characteristics and uses of AI technologies, and their impact on the profession through a random sample. The study resulted in the following findings:

- AI technologies in organizations are still in the early stages, so the study sample shows limited awareness of their characteristics and uses.
- Regarding their awareness of the impact of AI technologies on the accounting profession, the respondents expressed cautious opinions, as the technology is unfamiliar to them, making it difficult to evaluate it positively or negatively without direct experience.
- AI technologies are innovative, helping to save time and costs while enhancing the efficiency and effectiveness of various transactions.
- The application of AI technologies in accounting faces several challenges, such as reliance on the internet and a lack of training.
- There is a positive relationship between the sample's awareness of IT developments and their awareness of the impact of AI technologies on the accounting profession.
- Accountants who adopt AI technologies in accounting programs and learn to use them effectively can achieve greater productivity and quality in their work, making them more competitive in the job market.
- Replacing accountants with modern technologies is unlikely, but it will affect those who do not keep pace with developments and fail to utilize the latest technologies related to accounting in their work.
- AI does not eliminate the role of accountants but rather enhances it by helping them improve the performance of their accounting tasks significantly. There is no concern that AI will replace accountants in the near future, as organizations will always need accountants who can analyze and interpret AI data and provide their advisory services.

Recommendations: In conclusion, we offer several recommendations that we believe are appropriate given the importance of modern technologies in accounting, especially AI technologies, which we consider the future direction for most organizations. To raise awareness among accountants, we present the following recommendations based on the study results:

- Training and preparing accountants on modern technologies, including AI technologies (understanding their characteristics and uses), is essential to enhance their skills and ability to adapt to the evolving demands of the profession.
- Educational and training institutions must focus on integrating AI theories into their curricula so that graduates acquire the necessary skills to work in an automated environment.
- It is crucial for practicing accountants to actively acquire AI skills to keep up with the profession's growth and evolution, as the need for human intelligence in accounting remains essential, especially when supported by intelligent technological tools.
- Introducing new courses in accounting students' curricula that focus on modern technologies is necessary, given the significant role these technologies play in advancing the profession.
- There should be stronger collaboration between IT researchers and accountants.
- More research on digitization should be encouraged, by increasing the number of scientific conferences and seminars dedicated to modern technologies related to the accounting profession.
- A collaborative approach between academics and professionals is necessary to stay up to date with the latest developments in the accounting profession through joint efforts.
- It is essential to modernize the accounting profession in Algeria to keep pace with the latest technological advancements.

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