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

Kholladi Abdelghani

dr.kholladi84@gmail.com

University of El Oued

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Abstract

This study aims to assess the impact of artificial intelligence (AI) technologies on the accounting and auditing profession. The study is divided into two sections: a theoretical section that defines and clarifies key terms related to the study, highlights the primary benefits of AI technologies in accounting, and identifies the major challenges that may arise in implementing AI techniques across various organizations; and an empirical section involving a survey conducted with a group of experts (including certified accountants, auditors, accounting experts, and corporate accountants). The study has yielded several key findings, most notably: the adoption of AI technology in Algerian institutions is still in its early stages. Despite the significant potential benefits of implementing AI techniques in accounting, several challenges persist. However, the findings also indicate that AI does not replace the roles of accountants or auditors; instead, it enhances their capabilities and supports them in improving the performance of accounting and auditing tasks. The study further recommends the need for training and upskilling accountants in the use of AI technologies to keep pace with developments in the field of accounting, as well as the importance of collaboration between IT researchers and accountants. It also highlights the need for educational and training institutions to integrate AI theories across all curriculum units to equip students with the necessary skills for working in an advanced technological environment.

Keywords: Artificial Intelligence, AI Technologies, Accounting Profession, Auditing Profession.

JEL Classification: M41; M48; E62.

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Introduction

The contemporary business environment has witnessed significant advancements in information and communication technologies, leading to increased knowledge exchange and information sharing. This evolution has prompted companies worldwide to embrace technological progress in order to enhance the quality of their services. As a result, many have adopted artificial intelligence (AI) tools and technologies across their managerial, financial, and accounting functions. This shift has brought considerable changes to the methods and processes employed in these areas, especially

in the accounting sector, which has been one of the primary beneficiaries of AI technologies. These changes have sparked several questions, including the following:

Main Research Problem

To what extent do AI technologies contribute to the accounting and auditing profession?

Sub-Questions

- What is artificial intelligence?
- What is the accounting profession?
- What are the benefits of applying AI technologies in accounting and auditing?
- What are the challenges and risks faced by the accounting profession amidst the widespread adoption of AI applications?
- Will the role of accountants disappear with the reliance on smart accounting software?
- What solutions are necessary to address the disadvantages and risks of AI?

1. Theoretical Framework of the Study

1.1 Definition of Artificial Intelligence

Artificial intelligence (AI) is defined as the ability of machines to replicate human cognitive functions, such as problem-solving, learning, and pattern recognition, to make predictions and facilitate decision-making (Stancu & Duţescu, 2021, p. 751). AI comprises systems programmed to think and perform activities typically expected of human intelligence, including the acquisition of knowledge and the generation of original ideas (Kwarbai & Omojoye, 2021, p. 80). Additionally, AI refers to the capacity of computer systems to simulate biological neural networks through deep learning and self-learning from data and experiences, enabling decision-making and inference based on accumulated knowledge (Jin et al., 2022, p. 570). Thus, AI is a combination of software and hardware that serves as an alternative to human intelligence, solving complex business problems using expert systems instead of human experts, and applying artificial intelligence to enhance decision-making by providing more accurate and reliable information (Askary, Abu-Ghazaleh, & Tahat, 2019, p. 3).

1.2 Importance of Artificial Intelligence

The significance of AI in our lives can be highlighted as follows:

- AI simulates human intelligence and skills, representing one of the most important human achievements in aiding various aspects of life.
- The widespread application of AI across various sectors, such as navigation (digital maps), healthcare, education, law, accounting, and auditing, has demonstrated its diverse benefits.
- AI applications have become indispensable in daily life, available to everyone through devices like smartphones, smart TVs, advanced calculators, virtual reality glasses, and gaming applications.

- AI technology is considered the language of the future, and those who fail to acquire AI skills may be deemed outdated or digitally illiterate.

1.3 Types of Artificial Intelligence

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

1. **Narrow AI or Weak AI:** This is the simplest form of AI, programmed to perform specific tasks within a defined environment. Its behavior is reactive and limited to its programmed context. An example is IBM's "Deep Blue," which defeated world chess champion Garry Kasparov in 1996.
2. **General AI or Strong AI:** Refers to the level of intelligence where machines are capable of simulating human cognitive abilities. Examples include self-driving cars and chatbots.
3. **Super AI:** Refers to a hypothetical stage where machine intelligence surpasses human intelligence, with current models still under experimentation and expected to be realized in the future (Lehmr, 2021, p. 97).

1.4 Definition of the Accounting Profession

Accounting is the tool used to provide a clear picture of a company's financial situation, including its profits, losses, cash flow, and the present value of its assets and liabilities. The accounting profession is a vital and challenging function that involves recording, categorizing, and analyzing financial data for a specific company. It aims to provide reliable and credible financial information to interested parties, 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 implement AI in accounting, enhancing its value in financial management. The adoption of AI in accounting and tax processes has significantly contributed to the development of AI applications in the financial sector, providing reliable technical support for effective accounting practices (Jin et al., 2022, p. 570). In general, AI in accounting can be defined as the capability of computers and software to perform various accounting tasks and automate repetitive manual functions, reducing human error rates. This enhances the accuracy and speed of report analysis and financial information compared to traditional accounting methods (Desouki, 2023). A study by Shtiwie (2023, p. 4) highlighted the positive impact of AI on accounting and emphasized that accountants should adopt AI, as it is likely to become a fundamental element of all business operations soon.

1.6 Applications of AI in Accounting

According to Hasan (2022, p. 451), the main applications of AI in the accounting profession include:

1. **Expert Systems (ES):** These are computer programs designed to simulate human thinking processes in specific situations. They store human knowledge and expertise, using it to solve specialized problems. Expert systems in accounting have been categorized as follows:

- **Auditing:** Expert systems enhance audit quality, identify risks, and assess internal controls. They help verify transaction values and detect fraud. Two main types of ES in auditing are those that support the audit process itself and those that assist with corporate estimates, aiming to ensure quality audit practices.
- **Financial Accounting:** ES are used in designing financial statements, processing invoices, setting constraints, and evaluating standards. They help achieve financial goals, manage revenue and expenses, mitigate financial risks, and calculate taxes.
- **Management Accounting:** ES assist in financial analysis, management control diagnostics, and decision-making processes. They provide guidance on inventory monitoring, cost analysis, risk assessment, and project management. ES can offer specialized financial advice and recommendations to improve financial processes within organizations.

1-6-2 Decision Support Systems (DSS)

Decision Support Systems (DSS) are interactive, computer-based, adaptive, and versatile systems designed to assist in decision-making. Unlike Expert Systems (ES), which aim to automate decision-making processes and eventually replace human decision-makers, DSS are designed to generate alternatives that help in making intelligent decisions. In accounting, DSS provide several benefits, including financial data analysis, budget change identification, future outcome forecasting, cost management, performance measurement, risk identification, and strategies to enhance financial and strategic decision-making. These systems are essential for the accounting profession as they improve efficiency and provide accurate information for financial decisions.

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

Machine Learning (ML) is an advanced field that enables computers to learn, think, and act with minimal human intervention. Deep Learning (DL), a subset of ML, involves teaching computers to think using neural networks modeled after the human brain. ML is valuable in accounting, allowing accountants to analyze financial data and transactions with up to 100% accuracy, identify correlations, make predictions, and detect anomalies and outliers indicative of errors and fraud, thus assessing risk levels. Deep Learning automates tasks such as inventory monitoring, document processing, contract review, and report preparation. However, accountants must adhere to ethical standards and ensure the security and accuracy of financial data.

1-6-4 Fuzzy Logic

Fuzzy Logic mimics human reasoning in decision-making by handling the concept of partial truth or varying degrees of truth, especially in uncertain conditions. It is a valuable tool for accountants in dealing with uncertainties, providing the best method for data processing and solving complex, ambiguous problems. It helps decision-makers obtain optimal information and enhances their ability to operate effectively in dynamic environments.

1-6-5 Artificial Neural Networks (ANNs)

Artificial Neural Networks (ANNs) are intelligent systems that simulate the human brain and nervous system when performing specific tasks. Unlike Expert Systems (ES), ANNs learn directly

from examples rather than from knowledge engineered by humans. They are trained by presenting input examples matched with corresponding outputs, allowing the system to learn the relationships between inputs and outputs. This process is akin to human reasoning and cognitive processing, enabling problem-solving with numerous variables (Mohammed Ali, Salah Abdullah, & Saad Khattab, 2022, pp. 15-16).

1-6-6 Hybrid Systems

Hybrid Systems integrate various AI technologies, including smart models and algorithms, to solve complex problems such as natural language processing and machine learning. The combination of technology and human expertise in hybrid accounting systems improves efficiency, accuracy, and collaboration within organizations. Despite technological advancements, human accountants must still possess the necessary skills and expertise for analysis, interpretation, and strategic guidance (Shtiwi Abd, 2023, pp. 7-8).

1-6-7 Genetic Algorithms

Genetic Algorithms are a type of AI method used to solve complex problems. They offer an efficient and faster approach to making sound decisions compared to humans. Additionally, these algorithms have the capability to retain learning processes and support the integration of AI components, benefiting business management (Leandro, Álvaro, Renato, & Rui Alexandre, 2021, p. 7).

1-6-8 Intelligent Agents

Intelligent Agents are software entities that act on behalf of a user as an intermediary between the user and one or more systems, or between the user and another intelligent agent, autonomously. These agents are programmed according to a set of rules, and some can adapt their behavior and learn new facts and rules (Firas Mohammed Al-Nasour, 2022, pp. 26-27).

1-6-9 Robotics

Robotics, often referred to as robots, are mechanical machines programmed to perform tasks under direct human or computer control. A robot system consists of sensors, control systems, and power and motion units that work together to execute specific tasks. Robots are equipped with sensing systems that mimic human reasoning. Robotic Process Automation (RPA) is the most flexible and efficient approach for automating repetitive tasks typically performed by humans in accounting and auditing (Sakhrawi & Alami, Nov 29-30, 2023, pp. 6-7).

years	Key Innovations and Smart Technologies Impacting Accounting
1943 - 1950	Establishment of Neural Networks Science Coining of the term "Robotics" by Isaac Asimov
1950 -1965	Coining of the term "Artificial Intelligence" and creation of the LISP programming language by John McCarthy First use of computers in accounting / Introduction of the first mini-computer (PDP-8)
1965-1980	Creation of the Internet / Invention of the spreadsheet software VisiCalc / Launch of the first cellular network (1G)
1980-1995	Launch of the first personal computer by IBM / Introduction of the first tablet by Grid Pad Development of Microsoft Office Suite / Launch of the World Wide Web (WWW) by CERN Significant advances in AI fields, including Machine Learning, Case-Based Reasoning, Algorithms, Data Mining, Web Crawlers, and Virtual Reality
1995-2000	Introduction of Wi-Fi technology / Establishment of Google
2000-2015	Launch of social networks / Introduction of Gmail by Google Application of AI in business / Introduction of smartphones by LG Launch of Siri by Apple and Google Now by Google for answering questions, providing recommendations, and executing actions Emergence of cryptocurrencies and digital currency Bitcoin / Blockchain technology / Big Data advancements Launch of cloud computing for business by IBM / Machine Learning (ML) initiatives Blue Brain Project to simulate the human brain in detail Advancements in cybersecurity
From 2015 to today	Widespread adoption of Virtual Reality (VR) / Facial recognition technology

	Integration of Blockchain with the Internet of Things (IoT) / Robotic Process Automation (RPA) Announcement of Google Duplex Introduction of 5G technology

1-7 Key Smart Technologies Impacting Accounting (Bobjah, 2022, p. 92) and (Mrah & Touilb, 2022, p. 30)

Source: Compiled by the researcher based on Nour Al-Huda Mrah and Mohammed Touilb, *The Future of Accounting Profession in the Digital Transformation Era – Blockchain Technology as a Model*, *Economic Horizons Journal*, Vol. 05, Issue 01, 2022, p. 30, and Bobjah Souad, *Artificial Intelligence: Applications and Implications*, *Finance and Business Economics Journal*, Vol. 06, Issue 04, 2022, p. 92.

1-8 Leading AI-Driven Accounting Software

Many companies and organizations have adopted AI technology in their financial and accounting sectors due to its benefits and impact on the quality of their financial and accounting results. Below are some of the most prominent AI-powered accounting software solutions (Sakhrawi & Alami, Nov 29-30, 2023, pp. 10-11):

- **XERO:** This software performs various accounting tasks, including bookkeeping. It uses AI to analyze financial data and provide valuable recommendations for account and financial management. It has over 3 million subscribers worldwide.
- **SAP CONCUR:** Part of the SAP family, this leading expense management platform simplifies daily expenses and automates daily processes. Approximately 700 institutions use this software to enhance their management systems.
- **WAVELET:** This program accelerates decision-making processes, integrates different systems quickly, and enables business process management. It currently has 51,000 users.
- **FINANCIO:** Designed for smart businesses, this software automates and simplifies accounting tasks. It caters to the needs of small business owners in Malaysia, with around 25,700 users.
- **BECON SYSTEMS:** An accounting software designed to be as simple as possible, created with automation and AI. The company currently has 35,000 users.
- **ZOHO:** Headquartered in India, this platform offers a suite of applications capable of automating an organization's accounting processes. It boasts 50 million users globally.
- **ESKER:** Known for its AI-driven software, Esker automates accounting processes for companies undergoing digital transformation, including procurement, accounts payable, and accounts receivable. It has over 600,000 users across more than 50 countries.

- **QuickBooks:** This software utilizes AI to analyze accounting data and provide useful recommendations to help users make informed financial decisions.
- **E FLOW AND Medius:** Cloud-based software that automates invoice and purchase order processing. It automatically captures incoming data and integrates it seamlessly, thanks to robust ERP system connectivity, offering clients full electronic data exchange capabilities.
- **E-Invoice:** This electronic invoicing software, offered by OZEDI, serves businesses and software industries in Australia and New Zealand, promoting the direct exchange of e-invoices between senders and receivers.
- **Kofax RPA:** A robotic process automation system that automates data capture, coding, and invoice verification. It directs these data to ERP systems for payment validation, aiming to reduce costs, delays, and errors.

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

AI technology has brought numerous advantages to the accounting profession, enabling smart technologies to handle various accounting tasks, such as (Belaid & Ben Hawas, 2024, pp. 1042-1043):

1-9-1 **Automation of Routine Accounting Tasks:** Automating various routine accounting tasks is one of AI's significant impacts on the accounting profession, enhancing efficiency, accuracy, and speed while reducing the need for human intervention. For instance, Optical Character Recognition (OCR) can scan and process invoices faster and with fewer errors.

1-9-2 **Providing Predictive Analytical Insights:** AI's capability to handle large volumes of data allows accountants to gain deeper insights into financial information. Advanced AI algorithms detect patterns in financial data and offer predictive insights on cash flow trends, budget variances, and potential financial risks.

1-9-3 **Automation and Analysis of Tax Processes:** AI analyzes financial statements to identify tax deductions and credits, saving time and helping companies reduce tax liabilities. It also detects errors and fraud in tax filings to ensure compliance with regulations and maximize tax savings.

1-9-4 **Fraud Detection in Transactions:** AI-powered fraud detection systems can analyze vast amounts of financial records and data, identifying irregular patterns and anomalies that may indicate fraudulent activity or other financial irregularities. This allows accountants to monitor financial transactions efficiently and improve the accuracy and effectiveness of their services.

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

Despite the widespread adoption of AI technology, which has attracted global interest and become a part of everyday life, its development has significantly transformed accounting systems, reducing the use of traditional methods. However, the application of smart technologies in accounting practices comes with several threats, summarized as follows (Rand Osama, 2022):

- The current debate across institutions and sectors is whether technology will augment human intelligence and provide rapid access to accounting information, enhancing management, control, and diagnostics for optimal accounting practices. However, the advancement of technology poses a significant challenge, as it eliminates certain traditional accounting functions while creating new roles.

- The adoption of modern AI technologies in accounting poses significant threats to practitioners, as AI provides instantaneous and accurate processing, raising concerns about the potential replacement of human capital by advanced technologies in accounting.

- The drawbacks of implementing AI in accounting include the high costs of purchasing, maintaining, and updating AI-powered accounting systems. Additionally, there is a risk of discouraging the knowledge base of novice accountants and the potential for misuse of such systems by competitors (Omoteso, 2012, p. 8491).

- While AI technologies are efficient and reliable in accounting practices, they cannot replicate certain human skills, such as creativity, emotional intelligence, and interpersonal communication (Bizarro Pascal & Dorian Margaret, 2017).

- The adoption of AI technologies by companies can bring significant benefits to accounting practices, but it also threatens to replace or significantly reduce the human workforce in the profession (Doshi, Balasingam, & Arumugam, 2020, pp. 880-881). A 2015 study by Oxford University suggested a 95% likelihood of accountants losing their jobs as machines take over their tasks (Mohammad Suleiman et al., 2020, p. 479).

- The continuous changes in accounting and tax regulations require ongoing updates and modifications to AI-based accounting and tax software to ensure compliance with evolving government laws (Zhuowen, 2018, p. 1821).

- One of the challenges of using AI in accounting is the shortage of skilled labor with advanced knowledge and expertise to handle modern technologies, which may require significant investment in training (Mohammad Suleiman et al., 2020, p. 486).

- Although AI is considered an innovative technology, it presents new challenges for the accounting profession, including increased unemployment rates for low-level accountants, high risks of data breaches, and higher expectations for financial and accounting practitioners (Jin et al., 2022, p. 570).

2- The Empirical Framework of the Study

After entering the data into the statistical software IBM SPSS V23, the analysis was conducted using a set of statistical tools employed in descriptive and inferential statistics as follows:

2-1 Descriptive Statistics Tools

Several descriptive tools were used to analyze the responses of the study sample, including:

- **Absolute and Relative Frequencies:** This method is suitable for categorizing and presenting data clearly and simply. It was used in this study to determine the frequency of the personal variable categories of the respondents, represented in frequency tables to describe the study sample.
- **Pearson Correlation Coefficient:** This coefficient was used to measure the degree of correlation and to examine the relationship between two variables. It was also used to calculate the internal consistency of the statements within each section and their construct validity.
- **Measures of Central Tendency:** By calculating the mean of each questionnaire item, it provided insight into the responses of the study sample and their level of agreement with each statement in the questionnaire.
- **Measures of Dispersion:** Used to calculate the standard deviation and assess the degree of variability in responses around their mean. Lower values indicate a higher concentration of responses around the mean.
- **Cronbach's Alpha Test:** This test was used to determine the reliability of the questionnaire items.

2-2 Inferential Statistics Tools

- **Normality Tests:** The Kolmogorov-Smirnov test was used to determine the distribution type of the data.
- **T-Test (Single Sample T-Test):** This test was used to assess whether the mean level of agreement was equal to the neutral point (3), or if it was higher or lower. It also verified the significance of the mean for each questionnaire item.
- **Independent Samples T-Test:** Used to examine differences in responses when the questions included two answer choices.
- **One-Way ANOVA:** This test was applied to determine if there were statistically significant differences in the opinions of the sample members.
- **Regression Model:** The regression analysis was used to test the impact hypotheses between independent variables and the dependent variable by deriving a linear equation for the independent variables in relation to the dependent variable and examining their interrelationships.

2-3 Validity and Reliability of the Questionnaire

To ensure the validity and reliability of the questionnaire and to depend on its results with confidence, both validity and reliability tests were conducted.

2-3-1 Validity of the Questionnaire

The validity of the questionnaire refers to its ability to measure what it was designed to assess and to meet the objectives of the study. The validity was tested using two methods:

- **External Validity (Expert Validity):** Conducted through peer review by a panel of academic and professional experts specializing in accounting and auditing. Based on their feedback and suggestions, the final version of the questionnaire was prepared.

- **Internal Validity (Internal Consistency):** Assessed using the software by measuring the correlation of each item with its corresponding dimension, as well as the correlation of each dimension with the overall mean score of its section, using the Pearson Correlation Coefficient.

Internal Consistency Validity of Section 1:
The accountants have sufficient knowledge of AI characteristics and uses in accounting. The Pearson Correlation Coefficient was calculated for each item in Section 1, as shown in the following table:

Item Number	Pearson Correlation	Sig (Bilateral)	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 based on SPSS V23 results.

The above table shows that the Pearson Correlation Coefficients for the items in Section 1 are positive and statistically significant at a 0.05 significance level, as the p-values are all 0.000, which is less than 0.05. This confirms a positive relationship between the items, indicating their validity.

Internal Consistency Validity of Section 2:
The accountants are aware of the impact of AI technologies on the accounting profession. The Pearson Correlation Coefficient was calculated for each item in Section 2, as shown in the following table:

Item Number	Pearson Correlation	Sig (Bilateral)	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

Item Number	Pearson Correlation	Sig (Bilateral)	Statistical Significance
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
11	0.830	0.000	Statistically Significant
12	0.849	0.000	Statistically Significant

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

The table indicates that the Pearson Correlation Coefficients for the items in Section 2 are positive and statistically significant at a 0.05 significance level, confirming the validity of these items.

2-3-2 Reliability and Validity of the Study Sample

To assess the reliability and validity of the questionnaire items, the Cronbach's Alpha coefficient was used, as it is one of the most common methods for measuring reliability and validity. The coefficient is considered acceptable if it is equal to or greater than 0.6. The following table presents the reliability and validity coefficients for the study sections:

Section	Number of Items	Validity Coefficient	Reliability Coefficient
Section 1	6	0.720	0.774
Section 2	12	0.720	0.910

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

The table shows that the validity and reliability coefficients for both sections of the study are within acceptable limits, indicating the reliability and validity of the questionnaire

From the values in the above table, we observe that the reliability and validity coefficients for the study's sections exceed the statistically acceptable threshold of 0.6. The overall reliability and validity coefficients for the questionnaire were calculated as 0.922 and 0.820, respectively, which are close to one. This indicates a very high level of reliability and validity for the questionnaire items. Therefore, if the questionnaire were to be redistributed multiple times, it would yield the same results. This confirms the stability and validity of the questionnaire, making it suitable for further study and analysis, allowing us to test the hypotheses with full confidence.

2-4 Presentation and Analysis of the Responses of the Study Sample

This section analyzes the study variables based on the responses of the sample participants. It includes presenting the functional and institutional variables of internal and external accountants,

displaying their responses, identifying the trends of the study variables, and analyzing these responses using appropriate descriptive statistical tools.

2-4-1 Presentation and Analysis of the Personal and Functional Variables of the Study

- **Educational Qualification:** The table below shows the distribution of the sample based on their educational qualifications:

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 based on SPSS V23 results.

Regarding the educational qualification variable, the table above shows that the majority of the sample hold a Bachelor's degree, with 19 participants (39.3%). This is followed by 14 participants with a Master's degree (35.2%), 13 participants with a Doctorate (24.1%), and finally, 8 participants with a Magister degree (14.8%).

- **Occupation:** The table below shows the distribution of the sample based on their occupation:

Occupation	Frequency	Percentage (%)
Accounting Expert	5	9.3%
Auditor	17	31.5%
Certified Accountant	14	25.9%
Company Accountant	18	33.3%
Total	54	100%

Table 5: Distribution of the Sample Based on Occupation

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

The table indicates that the majority of respondents hold the position of Company Accountant (33.3%), followed by Auditors (31.5%), Certified Accountants (25.9%), and finally, Accounting Experts (9.3%).

- **Years of Experience:** The following table shows the distribution of the sample based on their 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 based on SPSS V23 results.

For the variable of years of experience, the table shows that most of the respondents have 11 to 20 years of experience (42.6%), which enhances the credibility of their responses. This is followed by participants with 6 to 10 years of experience (37%), more than 20 years of experience (11.1%), and less than 5 years of experience (9.3%).

- **Accountants' Awareness of AI Technology:** The following table shows the distribution of the sample based on their awareness of AI technology:

Level of Awareness	Frequency	Percentage (%)
Low	17	31.5%
Medium	21	38.9%
Good	14	25.9%
Excellent	2	3.7%
Total	54	100%

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

The table shows that the majority of the sample have a medium level of awareness of AI technology, with 21 participants (38.9%). This is followed by a low level of awareness (31.5%), a good level (25.9%), and an excellent level of awareness (3.7%).

2-4-2 Presentation and Analysis of Responses Towards Study Sections

To analyze the data, a one-sample T-test was used. Before analyzing the responses regarding the study variables, the data distribution type and measurement method were identified. Parametric tests require the data to follow a normal distribution, and this test is essential to determine the

appropriate tests for the study (parametric or non-parametric). The Kolmogorov-Smirnov test, which is commonly used to assess normality, was selected, as shown in the following table:

Section Number	Z Value	P-value (Sig)
First Section	0.083	0.200*
Second Section	0.086	0.200*
All Sections	0.099	0.200*

Source: Prepared by the researcher based on 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.

The above table shows that the p-values for the study sections are greater than the significance level of 0.05, indicating that the data follow a normal distribution according to the Kolmogorov-Smirnov test. This allows us to use parametric tests for data analysis.

Additionally, a five-point Likert scale was used to measure the data, as it is one of the most common scales for determining the degree of agreement with questionnaire items. The Likert scale includes five levels, allowing respondents to select one degree of agreement. When calculating the study averages, the results may include decimals, so we calculate the hypothetical mean based on the five-point Likert scale by first determining the range between the upper and lower limits of the categories: 5−1=45 - 1 = 45−1=4. The category length is then calculated as follows:

Category Length

Category Length == =. To obtain the hypothetical weighted mean, the category length is added progressively according to the weights of the categories, starting from the first category up to the last. Based on this, the direction of agreement is determined as shown in the following table:

Table 9: Distribution of the Five-Point Likert Scale

Measurement Level	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Weight	1	2	3	4	5
Weighted Mean Range	[1 - 1.80]	[1.80 - 2.60]	[2.60 - 3.40]	[3.40 - 4.20]	[4.20 - 5]
Agreement Direction	Very Low	Low	Medium	High	Very High

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

Analysis of Responses Towards the First Section

The responses were analyzed using a one-sample T-test, as shown in the following table, to determine the level and direction of agreement on these statements:

Table 10: Analysis of Responses from the Study Sample

Section 1: Accountants Have Adequate Knowledge of AI Technologies

Statement Number	Statement	Mean	Standard Deviation	Agreement Direction	Level of Agreement
1	You have adequate knowledge of AI technologies	2.76	1.008	Neutral	Medium
2	AI technologies can be applied in practice	2.87	0.972	Neutral	Medium
3	I believe AI technologies are the future of accounting systems	3.26	0.915	Neutral	Medium
4	I have positive expectations towards adopting AI technologies	3.19	0.933	Neutral	Medium
5	I am willing to use AI technologies	3.46	0.966	Agree	Good
6	I have adequate qualifications to use AI technologies	3.15	0.856	Neutral	Medium
Overall		3.11	0.658	Neutral	Medium

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

The table shows that most of the mean scores belong to the neutral category, with low standard deviation, indicating a low degree of variability in the responses. This suggests that the respondents have a neutral stance on most items in this section. The mean scores range between 2.76 and 3.46, with statement 5 having the highest mean (3.46) and statement 1 the lowest (2.76). The overall mean for this section is 3.11, indicating a medium level of awareness of AI technologies.

Analysis of Responses Towards the Second Section

The mean scores and standard deviations were calculated for the items in the second section, as shown in the following table:

Table 11: Analysis of Responses from the Study Sample

Section 2: Accountants' Perception of AI's Impact on the Accounting Profession

Statement Number	Statement	Mean	Standard Deviation	Agreement Direction	Level of Agreement
1	AI technologies reduce the time required for recording transactions	3.52	0.906	Agree	Good
2	AI digitizes accounting documents, invoices, and contracts online	3.59	0.942	Agree	Good
3	AI reduces the number of accountants needed for precise tasks	3.30	0.944	Neutral	Medium
4	AI brings faster and more flexible changes to accounting practices	3.44	0.883	Agree	Good
5	AI prevents errors during human intervention in documentation	3.15	0.960	Neutral	Medium
6	AI enables real-time financial reporting	3.37	1.015	Neutral	Medium
7	AI helps prevent manipulation and fraud in financial data	3.33	0.991	Neutral	Medium
8	AI improves the credibility of accounting records	3.30	0.983	Neutral	Medium
9	AI significantly reduces tax evasion	3.35	1.031	Neutral	Medium
10	AI impacts the transition from double-entry to triple-entry accounting	3.33	0.932	Neutral	Medium
11	AI reduces the costs of accounting records and documentation	3.48	0.906	Agree	Good

Statement Number	Statement	Mean	Standard Deviation	Agreement Direction	Level of Agreement
12	AI allows transparent access to accounting information by all parties	3.48	0.966	Agree	Good
Overall		3.38	0.711	Neutral	Medium

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

The table indicates that most mean scores fall within the neutral category with low standard deviation, suggesting little variation in responses. The highest mean score was for statement 2 (3.59), indicating that respondents believe AI digitizes accounting documents online. The lowest mean score was for statement 5 (3.15), suggesting that AI helps prevent errors during documentation. The overall mean for this section is 3.38, reflecting a medium perception of AI's impact on the accounting profession.

2-5 Hypothesis Testing

This section of the study tests the hypotheses related to the description of the study variables using inferential statistical methods.

2-5-1 Testing Hypotheses Describing the Study Variables

Most tests require an assessment of data distribution, which is essential for hypothesis testing. The Kolmogorov-Smirnov test indicated that the data follow a normal distribution, allowing the use of parametric tests for hypothesis testing.

- **Testing the First Main Hypothesis:**

H0: Accountants do not have an understanding of the characteristics of AI technologies in the accounting profession.
H1: Accountants have an understanding of the characteristics of AI technologies in the accounting profession.

Table 12: Results of One-Sample T-Test for the First Hypothesis

Hypothesis	Mean	Standard Deviation	Calculated Value	T Table Value	P-value (Sig)	Agreement Level	Decision
H1	3.11	0.658	1.28	3.442	0.104	Medium	Hypothesis Rejected

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

The table shows that the mean score for the variable "Accountants' understanding of AI characteristics" falls within the neutral category. The calculated T value (1.28) is less than the table

T value (3.442), and the P-value is greater than the significance level (0.05), leading to the rejection of the alternative hypothesis and acceptance of the null hypothesis.

- **Testing the Second Hypothesis:**

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

Table 13: Results of One-Sample T-Test for the Second Hypothesis

Hypothesis	Mean	Standard Deviation	Calculated Value	T Table Value	P-value (Sig)	Agreement Level	Decision
H1	3.38	0.711	4.000	2.001	0.000	Medium	Hypothesis Accepted

The table indicates that the mean score for "AI technologies impact the accounting profession" falls within the agreement category. The calculated T value (4.000) is greater than the table T value (2.001), and the P-value is less than the significance level (0.05), leading to the acceptance of the alternative hypothesis.

This shows that AI technologies have an impact on the accounting profession according to the respondents in the study.

From the table above, it is clear that the coefficient of determination R2R^2R2 is high, reaching 0.509. This indicates that the independent variable explains 50% of the variance in the dependent variable. The T-value and the significance of the F-test, with a p-value of 0.000 (less than 0.05), confirm the significance of the test. Therefore, the alternative hypothesis H1H1H1 is accepted, and the null hypothesis H0H0H0 is rejected. This means there is a statistically significant relationship between the level of awareness of information technology developments among the sample members and their understanding of the impact of AI technologies on the accounting profession, according to the respondents' opinions.

Conclusion

In this study, we aimed to address an important topic relevant to organizations seeking to modernize their accounting systems and transition to advanced accounting systems. This study revealed the level of knowledge that accounting professionals possess regarding the modern technologies used in their field. The focus was on the following primary research question: **What is the contribution of AI technologies to the accounting profession?** This topic was explored by providing theoretical foundations on AI technologies and their relationship with accounting, as well as conducting a field survey to assess the awareness of accounting professionals about the features and uses of AI technologies and their impact on the profession, using a random sample. The study produced the following key findings:

- AI technologies in organizations are still in their early stages, resulting in low awareness among the sample regarding their features and uses.

- Respondents expressed cautious opinions about the impact of AI technologies on the accounting profession, as these technologies are unfamiliar to them, making it difficult to judge them positively or negatively without direct experience.
- AI technologies are innovative, helping to reduce time and cost 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 adequate training.
- There is a positive relationship between the respondents' awareness of information technology developments and their understanding of the impact of AI technologies on the accounting profession.
- Accountants who adopt AI technologies in accounting software and learn to use them effectively can achieve greater productivity and quality in their work, making them more effective and competitive in the job market.
- The replacement of accountants by modern technologies is highly unlikely; however, it will inevitably affect those who do not keep up with advancements or fail to utilize the latest technologies in their work.
- AI does not eliminate the role of accountants but rather enhances it, helping them significantly improve their accounting performance. There are no concerns about the future of accountants being replaced by AI or losing their jobs in the near future, as organizations will continue to need accountants who can analyze and interpret AI-generated data and provide consulting services.

Recommendations

In conclusion, we offer the following recommendations based on 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 derived from the study results:

- Training and educating accountants on modern and contemporary technologies, including AI (understanding their features and uses), is essential to enhance their skills and ability to adapt to the evolving requirements of the profession.
- Educational and training institutions should integrate AI theories into all curriculum units to equip graduates with the necessary skills to work in an automated environment.
- It is crucial for practicing accountants to earnestly acquire AI skills to keep up with the profession's growth and development, as human intelligence remains vital for performing accounting tasks, and its effectiveness is enhanced when supported by smart technological tools.
- Incorporating new courses into the curriculum for accounting students is necessary to focus on modern accounting technologies, given their significant role in advancing the profession. Students should be equipped with knowledge and skills related to these technologies.

- Establish stronger links between researchers in information technology and accountants.
- Encouraging more research in the field of digitization is essential by increasing the number of conferences and scientific seminars dedicated to modern technologies in the accounting profession.
- A collaborative approach between academics and professionals is needed to stay abreast of the latest developments in the accounting profession through joint efforts.
- It is necessary to advance the accounting profession in Algeria to keep pace with modern developments.

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