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Assessing the Transformative Impact of AI Adoption on Efficiency, Fraud Detection, and Skill Dynamics in Accounting Practices

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Abstract: Based on the significance of AI adoption in the accounting field, this study intends to investigate its impact on the accounting profession; specifically on the efficiency and quality of financial data, financial fraud detection and tax filings, and work activities and skill requirements of accountants. A quantitative method was employed, and a questionnaire was sent to a purposive sample of 454 accountants. The results confirm that AI adoption in accounting significantly enhances the efficiency and quality of financial data, positively influences financial fraud detection and tax filings, and alters work activities and skill requirements within the accounting profession. These results highlight the transformative role of AI in modern accounting practices. Notably, the study incorporates demographic variables such as age and experience, uncovering their mediating influence on perceptions of AI's impact. Conducted in Lebanon, a developing country facing economic and political instability, the research provides valuable contextual insights into AI adoption under challenging conditions. This study contributes to the literature by empirically demonstrating AI's transformative role in accounting, offering both theoretical advancements and actionable recommendations for professionals aiming to harness AI for improved performance and innovation.

Keywords: artificial intelligence; accounting profession; digitalization economy

1. Introduction

The world is changing, and technology is becoming more pervasive in our daily lives. We are living through a novel revolution. It is critical to grasp the opportunities provided by innovative technologies such as Artificial Intelligence (AI), robotization, and cloud computing. Those new technologies will have a significant influence on all sectors and will affect the entire world (Nadikattu 2021). Thus, the key success factors for businesses will be innovation and mastery of new technology regardless of the challenges (Moeuf et al. 2020).

The science of AI conceived to construct machines capable of replicating human intelligence has witnessed remarkable evolution in recent years (Botică 2017; Raj and Kos 2023; Vilhekar and Rawekar 2024). Businesses can no longer rely on traditional business tactics to expand due to their consumers' ever-changing needs and complexity (Costa and Rodrigues 2023). These strategies, grounded in the extraction of actionable consumer data insights, signify a paradigm shift to an era where AI reshapes corporate dynamics (Sjödin et al. 2023).

One of the domains experiencing significant AI-induced transformation is accounting (Lehner et al. 2022). AI is quickly changing the reality in the accounting field and how operations are performed (Tain 2024). Accounting has experienced a significant change from paper and pencil to computers, and more prominently, programs that can lessen the amount of time spent on repetitive labor that leads to errors (Adrianto et al. 2023; Tavares et al. 2023). Historically, AI applications in accounting have spanned several decades, with innovations ranging from auditing to financial reporting (Rawashdeh 2023). The plight of accountants facing extinction has sparked widespread alarm. The goal of using AI was

to enhance accountants' performance and thereby bring more value to businesses and advance the quality of decisions (Hamza and Damak-Ayadi 2023).

Scholarly pursuits have seen a successful amalgamation of AI techniques in financial reporting and analysis arenas (Ahmad et al. 2024; Ahmad 2024; Bose et al. 2023; de Villiers et al. 2024; Han et al. 2023; Imene and Imhanzenobe 2020; Qasim and Kharbat 2020; Rawashdeh 2023; Zhang et al. 2020). Notably, the literature on AI within accounting is expansive, with a particular focus on expert systems (Bose et al. 2023; Collins et al. 2021; Damerji and Salimi 2021; Gotthardt et al. 2020; Gupta et al. 2022; Han et al. 2023; Hasan 2021; Qasim and Kharbat 2020; Ranta et al. 2023; Zhang et al. 2020, 2023).

Modern accounting workflows undergo continuous evolution due to digital technologies, compelling professionals to adapt to advanced technical proficiencies (Busulwa and Evans 2021; Schut 2023; Shahruddin and Husain 2024). This is not merely a fleeting trend; historical shifts, including the introduction of enterprise resource planning systems, underline the sector's adaptability (Cosa 2023). Today's AI-driven shifts, however, are unparalleled in their pace and magnitude, influenced by concurrent commercial and regulatory catalysts (Perifanis and Kitsios 2023).

Accounting challenges have traditionally been addressed via decision-making theories and AI applications (Han et al. 2023). AI is progressively assisting in non-routine tasks that require decisions on multifaceted and new situations (Frey and Osborne 2017), resulting in increased accounting efficiency (Fernandez and Aman 2018).

The pervasive influence of AI begs questions about the enduring relevance of human accountants and the very essence of the profession. As AI and digitalization mold the future workspace (Parrot et al. 2023), industry perspectives oscillate. While many envision AI as a potent ally, others caution against its perceived dominance. Nielsen (2022) indicated that a large number of accountants who participated in the study were concerned that emerging technologies would render them useless in the workplace. Wisskirchen et al. (2017) assert that AI might eliminate almost 40% of the jobs performed by accountants, such as using robots to conduct inventory counts and AI tools to analyze financial reports (Barr-Pulliam et al. 2022; Huang and Vasarhelyi 2019). Irrespective of the stance, the consensus gravitates toward AI's transformative potential in bolstering service quality, efficiency, and client engagement (Gerlich 2023).

Several research gaps were identified in the literature. Firstly, many authors emphasized the need for more research to explore the ramifications of AI on the future of accounting professionals (Ahmad 2024; Mihalciuc et al. 2023; Moll and Yigitbasioglu 2019; Rawashdeh 2023; Saleem et al. 2023). Secondly, despite existing comprehensive studies on AI accounting systems, their universal adoption remains constrained, primarily due to user hesitancy (Dwivedi et al. 2021; y Mpofu 2023). Thirdly, AI recent research focused more on labor (AbuMusab 2023; Damioli et al. 2021; Frank et al. 2019; Qian et al. 2023; Zarifhonarvar 2023) while others focus on technology (Ahmad et al. 2021; Ahuja and Nair 2021; Briganti and Le Moine 2020). Thus, this study intends to fill a gap in the literature to investigate the role of AI in shaping the work of accountants by answering the following research questions: (1) What is the impact of AI adoption in accounting on the efficiency and quality of financial data? (2) What is the impact of AI adoption in accounting on financial fraud detection and tax filings? (3) What is the impact of AI integration in accounting on work activities and skills requirements of accountants?

2. Literature Review

2.1. Theoretical Insights into the Realm of AI

With enhanced access to advanced computing power and expansive databases, companies are marching toward digitization at an unprecedented rate. This technological pivot empowers them with innovative tools, revolutionizing traditional business processes and metamorphosing business models (Gomber et al. 2018). Contemporary corporate behemoths are Internet-driven and platform-based (Gao et al. 2024). Unsurprisingly, digital technologies, encapsulating blockchain, AI, big data, the Internet of Things (IoT), and cloud com-

puting, are drawing substantial investments from academia, corporations, governments, and social media alike (Dunleavy and Margetts 2023; Ge et al. 2023; Oduro et al. 2023).

John McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude E. Shannon created the term "artificial intelligence" in a proposal for the legendary Dartmouth Conference on 31 August 1955 (Kaplan 2016). The quest to define AI is elusive. Its conceptual boundaries have constantly evolved since its inception in the mid-twentieth century (Chatterjee 2020). AI is not restricted to a singular research discipline; it sprawls across diverse fields, with its core ambition being the comprehension and replication of human cognitive processes (Mukherjee 2023).

AI presents a paradigm shift in technological tools (Kotlarsky and Oshri 2023). Unlike any prior tool, AI is bereft of physical existence yet pulsates with intelligence (Mounika 2020). AI has been proposed as a mechanical simulation system for gathering knowledge and information that also processes the universe's intelligence (Barron 2023; Stevens et al. 2020). John McCarthy (1977, as cited in Hasan 2021), an AI pioneer, envisioned AI as computer programs adept at tasks requiring intricate human cognitive processes, from perceptual learning to critical reasoning. Echoing this sentiment, John McCarthy (1977, as cited by Rajaraman 2014) articulates AI as the amalgamation of science and engineering to forge intelligent machinery and brilliant computer algorithms.

AI's overarching goal is twofold: to technically emulate human mental faculties and to distill knowledge from vast data repositories. More than mere data presentation, AI emphasizes intelligent extraction rooted in machine learning, transcending conventional data displays such as sales metrics or economic indicators (Malinetsky and Smolin 2021).

Digitization serves as the bedrock for AI's ascent (Hempel 2023). This transformation, impacting multifaceted life spheres, is arguably one of the most profound shifts in contemporary society. Digitization transcends mere data reproduction; it seeks to empower machines with cognitive abilities surpassing human capacities (Meyer and Schroeder 2023). AI should not only mimic human tasks but also comprehend, analyze, and infer from environmental data, subsequently formulating responses (Duan et al. 2019). As AI permeates our world, terminologies evolve. The term "digitalization" now morphs into "digital transformation," frequently intertwined with phrases like "technological disruption" or "digital revolution" (Brunetti et al. 2020; Śledziewska and Włoch 2021; Verma et al. 2023).

Deciphering the full breadth of digitization remains intricate (Li et al. 2022). It encapsulates diverse facets, from digital networking across sectors to the digital overhaul of macro processes (Farahani et al. 2017). For instance, accounting has witnessed transformative shifts via integrated systems, software robots, cloud technologies, blockchain innovations, and advanced AI technologies (Bhimani and Willcocks 2014).

The prowess of digital technologies extends beyond labor automation. They spawn vast, intricate data reservoirs, which companies harness to refine accounting precision and efficiency (Estlund 2018). The AI-infused accounting revolution capitalizes not just on work automation a phenomenon unfolding for decades but also on the vast sea of big data (Liu et al. 2023). Such data, coupled with sophisticated analytics, paves the path for futuristic predictions and insightful recommendations.

2.2. The Usage of AI in the Accounting Profession

As technological advancements redefine global socio-economic landscapes, AI emerges as a transformative force (Sampene et al. 2022). Ever since the Industrial Revolution, technology has reshaped tasks traditionally limited by human physical capacities. Given such advancements, it is plausible that AI might soon excel in various service vocations, including accounting (Hasan 2021; Spring et al. 2022). This potential paradigm shift stirs debates regarding the future trajectory of the accounting profession (Kokina et al. 2021) and its research implications (Qasim and Kharbat 2020), necessitating a comprehensive exploration from both critical (Botey and Célérier 2023; Gendron et al. 2022) and contextual (Guragai et al. 2017; Alles et al. 2022) perspectives.

With AI, exhaustive financial and accounting tasks can be streamlined (Lee and Tajudeen 2020). These tasks, which could take considerable time, can be executed in mere seconds, ensuring enhanced data quality (Wamba-Taguimdje et al. 2020). Traditionally, accountancy was retrospective in nature, hinging on data processing and regulations (Ogoun and Ayaundu 2020). Accountants would process data and computer systems would further generate insights and instructions, ultimately informing business decisions. However, the advent of AI has transitioned accounting from being retrospective to predictive (Kureljusic and Karger 2023). Now, tasks such as payment processing can anticipate potential issues, like non-payment risks, and introduce preventive measures.

The profession of accountants was traditional in the logic of retrospective accounting, this profession is governed by many laws and other regulations that fall under a real desire for modernization (Lehenchuk et al. 2023). Accountants receive the data and process it in a computer system (drawing up monthly statements of the accounting situation of the company, daily recording of accounting operations, invoice processing, payroll management, preparation of annual accounts, summary statements, and tax returns, and the system takes the data and generates more data and instructions. The rest of the data are entered into various financial and management reports for review which are then examined to make decisions about the course of a business in the future (Poppe et al. 2023), while AI creates predictive and anticipatory accounting (Goto 2023). The latter is based on a history of completing all these tasks in a short time. For example, in a situation of payment of a client, the AI can anticipate a risk of non-payment and take corrective actions to avoid it (Agarwal 2021).

Many accounting and auditing firms, like Pricewaterhouse Coopers and Ernst and Young, utilize AI to detect fraudulent issues and aid with tax filings, decreasing processing time from months to days (Fedyk et al. 2022). Management accountants who have a wide understanding of AI cannot implement its worth in the accounting field (Pilipczuk 2020; Vărzaru 2022).

Emerging technologies in AI are further refining the accounting process (Hajipour et al. 2023). First, Optical Character Recognition (OCR) is a technology that acts akin to an intelligent scanner and can digitize paper bills by recognizing text elements, streamlining the inclusion of details such as client numbers or quantities directly into the accounting systems (Lee and Tajudeen 2020). Second, Robotic Process Automation (RPA) is essential for restoring data flows. It is sometimes enhanced with AI capabilities and can extract, process, and analyze transactional data from multiple platforms, facilitating its integration into accounting software (Syed et al. 2020). RPA, in other words, will process and evaluate data, computer apps, and/or data, and return them to accounting software. Many manual processes can be automated using RPA (Chukwuani and Egiyi 2020). The main purpose is to help firms improve the efficiency and performance of their operations faster and at lower costs. Certain accounting tasks or processes entrusted to this new technology are the entry of entries, the closing of accounts, cash management, litigation management, supplier management, electronic document management, financial operations, consolidation, budgeting, forecasting, and tax operations (Zemánková 2019). By automating as much as possible manual entries, and account keeping, an accountant increases productivity and reliability. As a result, the implementation of the RPP key elements of compliance, the right way to save time, quality, and accuracy, good governance, and minimizing or limiting the number of errors. Third, Machine Learning (ML) is an application of AI; it is seen as a subset of it. It is used to make strategic decisions by modeling phenomena (Zhang et al. 2020). This entails reconciling invoices and payments to create various warnings in the event of late payment or credit limit overrun. Before earning cash, AI can also raise overpayments. Because it can more easily predict when the company will run out of funds (Helm et al. 2020). Machine learning, for example, develops an algorithm capable of constructing a representation. To accomplish so, the data had to be entered into the machine-learning system so that it could train and develop (Mohammad et al. 2020). AI is not a new phenomenon; it has burst (Hernandez-Orallo 2020). Fourth, deep learning (DL) emerged in the 2010s, deep learning

enables computers to learn autonomously. It facilitates personalization and advanced functions such as fraud detection and text translation (Zhang et al. 2020). While current AI deployment primarily utilizes "low AI" that involves some human intervention, the vision for "strong AI" remains on the horizon—an AI that mimics human consciousness and can respond autonomously (Obaid 2023). In conclusion, to create the financial services we anticipate to be flexible, we need consistency and quality data. Required to establish the ground for machine learning are the quality of the recognition of invoices by the algorithm and accounting assignments that represent the learning game (Nagy et al. 2023). Today, low AI is used in the business of numbers, that is, an AI that is used to solve problems with the intervention of a human being, even though it far exceeds the latter's capacity, as opposed to strong AI, which should be able to react autonomously and intelligently through a consciousness similar to that of a human being (Habbal et al. 2024).

As a result of new AI-based technologies, activities will change, and individuals will need new and diverse skills and certifications. Benhamou (2020) investigated which work activities carried out by individuals are transferred to AI software or robots, how coordination and division of labor occur, and whether this results in the possibility of replacing the workforce.

Previous studies have also concentrated on accounting and process automation, data processing, and data quality (Côrte-Real et al. 2020; McGilvray 2021; Wu et al. 2021). Moll and Yigitbasioglu (2019) provided detailed assessments of AI research in accounting focusing on AI's involvement in auditing tasks such as distinguishing collectibles from bad debts and assessing internal control risks.

Wang et al. (2023) stated that digitalization will mainly influence and substitute tasks with medium qualification levels. Yet, and possibly more relevant to accounting, there is an alternate theory of overall growth in the profession's qualification levels due to increased complexity and possible opportunity (Hirsch-Kreinsen and Ittermann 2021). The usage of AI will increase the quantity and complexity of data, necessitating highly skilled personnel (Frey and Osborne 2017; Groomer and Murthy 2018; Parker and Grote 2022). As a result, it appears necessary to note that inadequate qualifications on all levels of accounting personnel are viewed as substantial hurdles to the adoption of new technology (Jackson et al. 2023). In conclusion, the evolving digital landscape, characterized by the adoption of advanced technologies and data analytics, heralds a shift in roles, qualifications, and collaborative paradigms in the accounting profession (Pal 2023).

2.3. Navigating Challenges and Opportunities in the AI-Infused Landscape of Accounting

The rise of big data and automation raises concerns about accountants' future roles, especially when platforms can answer many business queries (Tiron-Tudor and Deliu 2021). As corporate decisions become more complex, accountants may play a critical role in ensuring that AI systems are educated with correct and ethically generated data (Munoko et al. 2020). In essence, their work could be similar to that of a data curator, who handles activities such as content development, selection, and validation (Zhang et al. 2023).

The incorporation of algorithmic decision-making processes creates a multidimensional quandary about managerial accountability for organizational financial outcomes (Engstrom and Ho 2020). There is an inherent tension as accountants migrate to cooperating more intimately with artificial intelligence systems, primarily because some users consider AI as a possible antagonistic creature. The critical question is who ensures the authenticity and dependability of these AI systems. The inherent complexity of machine learning approaches, particularly neural networks, adds to the difficulty. While these sophisticated models have the potential to improve financial projection accuracy, their intrinsic complexity may confound comprehension among decision makers. Disagreements between administrative perspectives and those of model developers have historically been mitigated through abstraction in the sphere of traditional modeling.

Betancourt and Irving (2019) emphasize the issues inherent in the digital culture accompanying AI's ascent, arguing that accounting figures risk becoming simple data

points, devoid of the human discourse typically associated with them. This dissociation of accountants from organizational tasks can have a negative impact on product outcomes.

2.4. Hypotheses Development

2.4.1. Impact of AI on the Efficiency and Quality of Financial Data

In the field of accounting, Ahmad et al. (2024) examined the effect of technology enhancements on the efficiency and reliability of financial data in Jordan's Ministry of Finance using a survey distributed to 152 employees in the ministry. The findings revealed that those technological enhancements improved the quality and efficiency of the financial data. Furthermore, Odonkor et al. (2024) found that AI advances the precision and efficiency of financial data, automates routine tasks, and enables predictive analytics for decision-making. Similarly, Solikin and Darmawan (2023) examined how AI improves the performance of accounting systems using a quantitative approach and a survey. They found that AI enhances the efficiency and quality of financial data. Moreover, Shahzad et al. (2023) investigated how AI is affecting accounting procedures in China using a sample of 235 publicly traded enterprises. Based on the results, the financial performance of Chinese businesses is significantly improved by the use of AI. Additionally, the use of AI enhances the quality of financial reports, which may help to strengthen financial responsibility and transparency protocols.

Based on previous studies and those conducted by Sampene et al. (2022), Lee and Tajudeen (2020), and Wamba-Taguimdje et al. (2020) and discussed in the literature review, the first hypothesis was developed and is as follows:

H$_1$: *The adoption of AI in accounting improves the efficiency and quality of financial data.*

2.4.2. Impact of AI on Financial Fraud Detection and Tax Filings

Bao et al. (2022) conducted a systematic literature review to investigate the impact of machine-learning models on predicting fraud and found that AI significantly helps in fraud detection. Also, Yalamati (2023) examined the adoption of AI technologies in fraud detection using an inclusive analysis of historical tax data and advanced algorithms to separate understated patterns revealing fraudulent behavior. The findings showed that AI helps in fraud detection. Furthermore, Bello and Olufemi (2024) found that AI-enhanced technologies offer innovative solutions for fraud detection regardless of the challenges. The authors stressed the importance of AI in fraud detection and the necessity of continuous enhancements in innovation and research in this field.

Based on those previous studies and those conducted by Fedyk et al. (2022), Pilipczuk (2020), and Vărzaru (2022) and discussed in the literature review, the second hypothesis was developed, and it is as follows:

H$_2$: *AI positively impacts financial fraud detection and tax filings.*

2.4.3. Impact of AI on Accountants' Work Activities and Skills Requirements

Mohammad et al. (2020) focused on the potential effects of AI on accountants to evaluate the effects of implementing AI-based innovations in the accounting field, describe how these breakthroughs have changed the landscape for accounting specialists, and provide recommendations to pertinent governments. The study found that the main issues that contemporary accountants deal with can be replaced by an automated system powered by AI. Moreover, Rawashdeh (2023) found that AI's adoption contributes to job displacement, reforms decision-making processes, and resounds across economic and social dimensions using a survey distributed to accounting professionals. In this context, Leitner-Hanetseder et al. (2021) discussed the impact of AI on the accounting profession using workshops and found that tasks and skills for existing professional occupations will be subject to major changes in the coming years due to AI-based technologies, while core tasks will continue to exist in the future, some will not be performed by individuals but

by AI-based technology. For other new roles, individuals will need to collaborate with AI-based technology. Also, Banța et al. (2022) discussed that accountants need to adapt their skills to use AI technologies since the benefits are much greater than the challenges.

Based on previous studies and those conducted by Benhamou (2020), Groomer and Murthy (2018), and Parker and Grote (2022) and discussed in the literature review, the third hypothesis was developed and is as follows:

H₃: *The integration of AI in accounting alters work activities and skills requirements.*

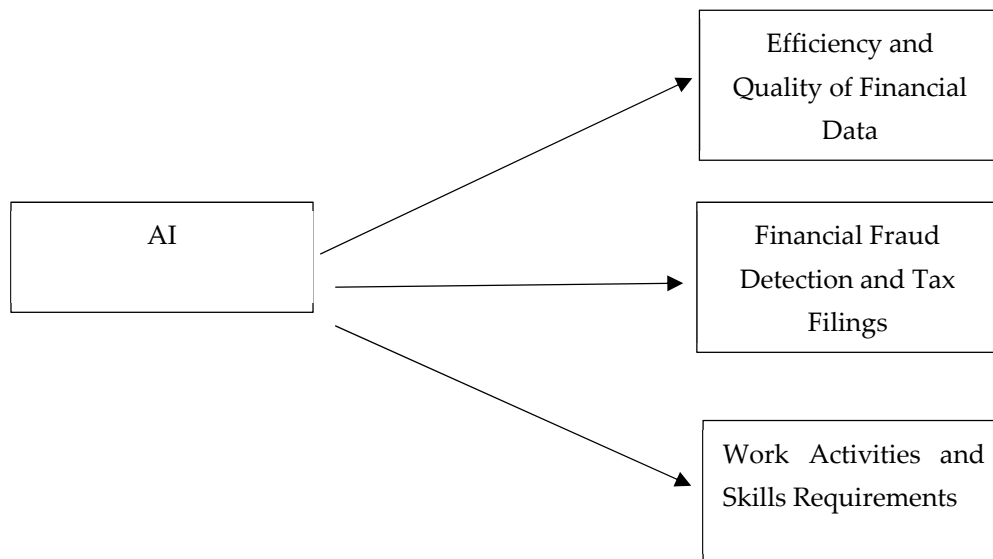Figure 1 shows the research model, which includes the variables under investigation in this study.

Figure 1. Research model.

3. Methodology

3.1. Procedures

A questionnaire was used and responses were collected from accounting professionals using purposive sampling. Therefore, participants were requested to discuss their work experiences using an online platform (like LinkedIn or industry-specific forums) to gather data, which took approximately two months (June–August 2024). Since persons in this age range are more likely to be actively involved in the accounting and auditing professions, participation in the study required that they be at least 22 years old. A total of 20 accountants took part in pilot research to evaluate the survey instrument's validity. The final questionnaire was revised to improve validity and clarity in response to input from the pilot test. By comparing partial responses with complete ones and concentrating on demographics, professional background, and prior online participation, non-response bias was examined. There were no statistically significant differences. A total of 454 responses to the questionnaire, which was used to collect the data at random, were received.

3.2. Measuring Instruments

This study employs a quantitative research design to examine the impact of AI adoption in the field of accounting. The back-translation technique recommended by Brislin (1970) has been used to translate the questionnaire from English to Arabic.

The questionnaire is composed of sections addressing general information to obtain the sample profile, Likert scale agreement statements regarding the adoption of AI (independent variable), efficiency and quality of financial data (dependent variable 1), impact on fraud detection and tax filings (dependent variable 2), and alterations in work activities and skills requirements (dependent variable 3).

The statements related to AI adoption in accounting were adopted and adapted from Banța et al. (2022), the statements related to the efficiency and quality of financial data were adopted and adapted from Ahmad et al. (2024), those related to the impact on fraud detection and tax filings were adopted and adapted by the authors based on the intensive literature review, and those related to alterations in work activities and skills requirements were adopted and adapted from Emetaram and Uchime (2021) and Banța et al. (2022).

3.3. Data Analysis and Ethical Considerations

The data analysis was carried out through SPSS, and it included descriptive statistics and regression analysis. Ethical considerations such as participant confidentiality and informed consent were carefully addressed during the research process.

4. Findings

Table 1 shows the sample profile of the respondents.

Table 1. Sample profile.

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	288	63.4	63.4	63.4
	Female	166	36.6	36.6	100.0
Age	22–25	83	18.3	18.3	18.3
	26–35	206	45.4	45.4	63.7
	36–45	83	18.3	18.3	81.9
	46 and above	82	18.1	18.1	100.0
Years of Experience	<1 year	82	18.1	18.1	18.1
	1–5 years	83	18.3	18.3	36.3
	6–10 years	289	63.7	63.7	100.0
	Total	454	100.0	100.0	

Table 2 shows the Cronbach's Alpha for all variables. The values are all greater than 0.7, which means that the data are reliable.

Table 2. Reliability test.

Variable	Number of Items	Cronbach's Alpha
Efficiency and Quality of Financial Data	4	0.913
Financial Fraud Detection and Tax Filings	4	0.965
Work Activities and Skills Requirements	4	0.945
AI	4	0.929

Table 3 shows the regression analysis results. For the first model, AI is the independent variable, and the efficiency and quality of financial data are the dependent variable. *R* (0.899) shows a significantly strong correlation between the variables. The R^2 value (0.809) means that 80.9% of the total variation in efficiency and quality of financial data can be accounted for. For the second model, AI is the independent variable, and financial fraud detection and tax filings are the dependent variable. *R* is 0.972, which means that there is a strong correlation between the variables. R^2 is 0.945, meaning that 94.5% of the total variation in financial fraud detection and tax filings can be accounted for. For the third model, AI is the independent variable, and alterations in work activities and skills requirements are the dependent variable. *R* is 0.829, indicating a strong correlation. Also, 68.8% of the total

variation in alterations in work activities and skills requirements can be accounted for, which is regarded as a moderate proportion.

Table 3. Regression analysis results.

	R	R-Square	Constant Coefficient	AI Coefficient	*p*-Value
Efficiency and Quality of Financial Data	0.899	0.809	0.141	0.964	0.000
Financial Fraud Detection and Tax Filings	0.972	0.945	−0.623	1.301	0.000
Work Activities and Skills Requirements	0.829	0.688	0.91	0.818	0.000

As for the coefficients, all coefficients are positive and *p*-values are less than 5%. This means that AI has a positive impact on all the dependent variables.

To investigate the impact of demographic variables on the relationship between the dependent variables and the independent variable, mediation analysis was conducted. As shown in Table 4, while gender has no meaningful mediation effect, age and years of experience are significant mediators for certain outcomes. Older age and greater years of experience tend to reduce the perceived benefits of AI in improving financial data efficiency and fraud detection. Age and experience slightly enhance perceptions of AI's role in transforming work activities and skill requirements. The analysis underscores the nuanced ways in which demographic factors influence perceptions of AI's impact in the accounting practices domain.

Table 4. Mediation analysis.

					Estimate	*p*
AI	→	Gender	→	Efficiency and Quality of Financial Data	-5.961×10^{-4}	0.837
AI	→	Age	→	Efficiency and Quality of Financial Data	−0.076	<0.001
AI	→	Years of Experience	→	Efficiency and Quality of Financial Data	−0.028	<0.001
AI	→	Gender	→	Financial Fraud Detection and Tax Filings	5.431×10^{-4}	0.837
AI	→	Age	→	Financial Fraud Detection and Tax Filings	−0.059	<0.001
AI	→	Years of Experience	→	Financial Fraud Detection and Tax Filings	−0.005	0.276
AI	→	Gender	→	Work Activities and Skills Requirements	0.003	0.837
AI	→	Age	→	Work Activities and Skills Requirements	0.062	<0.001
AI	→	Years of Experience	→	Work Activities and Skills Requirements	0.013	0.047

5. Discussion

The study's conclusions provide important new information about how AI is revolutionizing the accounting profession. Incorporating AI technologies into accounting procedures has a positive effect on tax filings, financial fraud detection, and the quality and accuracy of financial data. Furthermore, the introduction of AI is changing the roles and competencies required by accountants, requiring a move towards more analytical and strategic roles.

The research findings supported the first hypothesis, which proposed that implementing AI will enhance the correctness and dependability of financial data. The findings of Ahmad et al. (2024), Lee and Tajudeen (2020), Odonkor et al. (2024), Sampene et al. (2022), Shahzad et al. (2023), Solikin and Darmawan (2023), and Wamba-Taguimdje et al. (2020) are in line with this particular result. Together, these researchers emphasized how crucial AI is to improving the standard of financial reporting by automating repetitive operations, decreasing human error, and offering real-time financial insights.

It was also verified that AI would positively affect tax returns and the identification of financial wrongdoing, according to the second hypothesis. This result aligns with the studies conducted by Fedyk et al. (2022), Bello and Olufemi (2024), Pilipczuk (2020), Vărzaru (2022), Bao et al. (2022), and Yalamati (2023). Their research shows how artificial intelligence AI-enabled tools, like machine learning algorithms and predictive analytics, can

effectively process massive amounts of financial data to find anomalies and discrepancies, improving the accuracy of tax reporting and the ability to spot fraudulent activity.

Moreover, the findings validated the third hypothesis, which looked at how AI would affect the changing responsibilities and skill sets needed for accountants. The results show that accountants will need to have greater expertise in data analysis, strategic decision-making, and technology management as AI automates more transactional and routine jobs. This change is in line with more general patterns noted in the literature, which show that the profession is shifting from traditional bookkeeping responsibilities to higher-value offerings like financial advice and consultancy. The findings are in line with the findings of Banța et al. (2022), Benhamou (2020), Groomer and Murthy (2018), Leitner-Hanetseder et al. (2021), Mohammad et al. (2020), Parker and Grote (2022), and Rawashdeh (2023).

Finally, the findings of the mediation analysis provide critical insights into how demographic variables influence perceptions of AI's impact. While gender does not play a significant mediating role, age and years of experience demonstrate noteworthy effects. Specifically, older individuals and those with greater experience are less likely to perceive AI as enhancing efficiency in financial data processes or improving fraud detection capabilities. This could be attributed to resistance to change or the tendency of experienced professionals to rely on traditional methods. Conversely, these same demographic groups show a modestly enhanced perception of AI's transformative role in reshaping work activities and skill requirements. This suggests that, while seasoned professionals may be skeptical about AI's immediate efficiency benefits, they recognize its potential to redefine the professional landscape. These findings emphasize the importance of tailoring AI adoption strategies to address the unique perspectives of different demographic groups, particularly in the context of age and experience.

Thus, the study supports the body of research that has already been carried out, highlighting the idea that AI is both a potent instrument for enhancing the precision and efficiency of accounting procedures and a driving force behind the advancement of the accounting field. It is anticipated that as AI develops, it will have a greater impact on the industry and redefine the duties, responsibilities, and competencies of accountants of the future.

6. Conclusions

The study investigated the impact of AI on various aspects of accounting, including efficiency and quality of financial data, fraud detection, and tax filings, and work dynamics and skills. The results confirm that AI adoption in accounting significantly enhances the efficiency and quality of financial data, positively influences financial fraud detection and tax filings, and alters work activities and skill requirements within the accounting profession. These results highlight the transformative role of AI in modern accounting practices.

From a theoretical perspective, the study makes a significant contribution to the growing body of literature on AI in accounting. By empirically validating AI's positive effects on efficiency, quality, fraud detection, and the evolution of work roles, this research extends the understanding of how AI integration reshapes accounting practices. This is especially relevant in the Lebanese context, where economic, social, and political instability and technological adoption present unique challenges and opportunities. The study offers a theoretical framework for future research at the intersection of technology and accounting, with a particular focus on the implications of AI adoption in developing and crisis-affected environments.

For practitioners, the study underscores the critical importance of embracing AI to enhance operational efficiency and data accuracy. In Lebanon, where the accounting profession is adapting to both global technological shifts and local economic, social, and political turmoil, accounting professionals need to acquire new skills aligned with AI-driven tasks and decision-making processes. Firms in this country and other countries facing similar crises are encouraged to invest in AI technologies and prioritize tailored training programs to ensure a smooth transition for their workforce. This proactive approach will

help those firms not only maintain competitiveness in a globalized market but also navigate the complexities of operating in a developing, crisis-affected environment. By addressing these local challenges, accounting professionals can leverage AI for enhanced performance, innovation, and sustainable growth.

7. Limitations and Future Research

Despite the insights provided, several limitations should be acknowledged. First, the study is based on a specific sample of accounting professionals in the context of Lebanon, which may limit the generalizability of the findings to other regions or industries. Moreover, the study primarily focuses on the immediate effects of AI adoption in accounting using cross-sectional data, without exploring the long-term impacts or potential challenges that may arise as AI technology continues to evolve. The scope of the research is also limited to certain AI applications, potentially overlooking other emerging technologies that could further influence the accounting field.

Future research could conduct longitudinal studies to investigate the long-term effects of AI on accounting practices. Considering a different sample which includes diverse industries and geographical regions would augment the generalizability of the findings. Besides, future studies could explore the adoption of AI with other advanced technologies, such as blockchain or machine learning, to provide a more inclusive understanding of how these innovations collectively shape the future of accounting. Finally, exploring the ethical implications of AI in accounting, particularly in areas like decision making and data privacy, could offer important insights for both academics and practitioners.

8. Contributions of the Study

This study makes several important contributions to the existing literature on AI adoption in the accounting profession. First, it highlights the multifaceted impact of AI on key accounting functions, including financial data accuracy, fraud detection, and the evolving role of accountants. These findings reinforce existing knowledge while extending it by providing empirical evidence within the under-researched context of Lebanon. By focusing on a developing country facing economic, social, and political turmoil, the study bridges a critical gap in the literature, showcasing how technological advancements are perceived and adopted in environments with unique challenges.

Second, the incorporation of demographic variables such as age, gender, and years of experience as mediators represents an added dimension of analysis. While gender was found to have no significant impact, age and experience played a noteworthy role in shaping perceptions of AI's benefits and challenges. This demographic perspective enriches the understanding of how individual characteristics influence attitudes toward technological adoption, particularly in the accounting field.

Finally, the study's contextual focus on Lebanon adds value by offering insights into how AI can be leveraged in environments characterized by economic, social, and political instability and resistance to change. The results suggest the need for tailored strategies that consider the demographic and contextual nuances of such environments. By addressing these gaps, the research provides actionable insights for policymakers, industry leaders, and educational institutions aiming to promote effective AI adoption in the accounting profession.

Data Availability Statement: Data collected from participants answering the questionnaire are available upon request due to privacy and ethical restrictions.

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