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The impact of artificial intelligence on the accounting profession: A field study

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Abstract

Today, accountants use technology to complete their daily tasks more efficiently and effectively. However, as the accounting profession's pace of technology adoption slowed, the volume of data began to grow exponentially, and the current technologies employed in the profession began to become outmoded in analyzing large volumes of data in a timely manner so that the information produced could continue to yield benefits.

Information and communication technology (ICT)-based technologies have revolutionized and reshaped the operations of numerous professions, including accounting. Artificial Intelligence (AI) is one example of contemporary technological disruptions in the accounting industry. As a result, the purpose of this paper is to investigate the impact of AI on Accounting Profession (AP) from the perspectives of academics and practitioners in Egypt.

The results of this paper shows that, AI has a significant positive impact on the Professional Performance of Accountants and Auditors (PPA), AI has a significant positive impact on the ability to handle Complex Accounting and Auditing Processes (CAP), AI has a significant positive impact on the Efficiency of Accounting and Auditing Teams ($EAAT$), AI has a significant positive impact on the performance of Accounting Information Systems (AIS), Overall, AI has a significant positive impact on AP.

Key words: Artificial Intelligence, Accounting Information Systems, Accounting Profession, the Efficiency of Accounting and Auditing Teams (EAAT), Egypt

1.Introduction

Recently, Information and communication technology (ICT)-based technologies have revolutionized and reshaped the operations of numerous professions, including accounting (Chukwuani & Egiyi, 2020). Artificial Intelligence (AI) is one example of contemporary technological disruptions in the accounting industry (Aldredge et al., 2021). AI is a computer program or software application that can imitate or simulate human behavior and intellectual functions (Ng & Alarcon, 2020; Shaffer et al., 2020). Fülöp et al. (2023) argued that the introduction of AI into the accounting profession is inevitable since accounting entails multiple

repetitive activities. Moreover, Elliott (1992) emphasized the significance of AI to the future of the accounting profession.

Accounting process automation, through AI, can free accountants from time-consuming chores and allow them to focus on higher-value tasks such as consulting (Greenman, 2017; Raporu, 2016). Furthermore, AI can improve the accounting profession by analyzing large amounts of data in a timely manner (Banța et al., 2022), increasing the efficiency and effectiveness of accounting activities. (Baldwin et al., 2006). Despite these benefits, AI security concerns, such as cyber-attacks, may result in data leakage, data misuse, and privacy violations, and hence aversion to deploying AI (Fülöp et al., 2023).

As a result, the purpose of this research is to investigate the impact of AI on AP from the perspectives of academics and practitioners in Egypt.

2.Research Problem

Big Data may be collected more efficiently, processed in much less time, and promptly reviewed and reformed using advanced ICT-based technologies, particularly Artificial Intelligence (AI), saving time and resources and delivering much faster solutions for varied decisions (Bakarich & O'Brien, 2021; Fülöp et al., 2023). Moreover, by reducing the time spent on manual, rule-based, and repetitive activities, AI frees up accountants to add more value to organizations by pursuing higher-level activities that cannot be automated, such as better decision support (Aldredge et al., 2021; Li & Zheng, 2018; Stancu & Duţescu, 2021). Furthermore, utilizing AI in accounting can improve reporting quality through better fraud detection, lower error rates, and minimize redundancy, all of which improve efficiency and corporate competitiveness (Banța et al., 2022; Li & Zheng, 2018).

Despite these benefits, using AI in accounting is likely to encounter numerous challenges. For instance, accounting information security threats can emerge from poor technology use, incompatible Information Technology (IT) systems, incorrect data manipulation while stored or in transit, or the incorrect IT solution installation (Shi, 2020). Moreover, internal control deficiencies and the subjectivity of the algorithms employed in accounting operations might have a negative impact on the reliability of accounting information (Askary et al., 2018; Cho et al., 2020). Furthermore, as the accounting industry transitions from computerized to intelligent accounting, accountants must improve their IT abilities in order to operate effectively with AI (Cho et al., 2020). Finally, AI is likely to exacerbate job insecurity and have an impact on employability (Banța et al., 2022).

Egypt is executing its vision 2030, which is primarily reliant on digital technologies, making Egypt a fertile ground for IT research. Therefore, this study aims to examine the impact of AI on AP as perceived by academics and practitioners in Egypt. The study seeks to address the following main research question:

"What is the impact of Artificial Intelligence (AI) on the Accounting Profession (AP) in the Egyptian environment?"

Research Importance

The study adds to the literature by examining the impact of *AI* on *AP* in developing countries, particularly Egypt, and during times of crisis (e.g., the COVID-19 pandemic and the Russian-Ukrainian conflict). The study's scientific significance is further enhanced by capturing the perspectives of both academics and practitioners on the impact of *AI* on *AP*. This study also raises the awareness of accountants and auditors regarding the significance of *AI* to the accounting and auditing professions. The study's practical value is further enhanced by the implementation of Egypt's Vision 2030, which depends significantly on industry 4.0 technologies, such as AI, to facilitate the digitization of numerous services and professions, including accounting.

3.Literature Review

This section reviews the literature on the influence of Artificial Intelligence (*AI*) on the Accounting Profession (*AP*). The study divides the literature into three themes: the literature related to the use of industry 4.0 technologies in the accounting profession, the literature related to the impact of *AI* on various organizational variables, and the literature related to the impact of *AI* on *AP*.

A) The literature on the Use of Industry 4.0 Technologies in the Accounting Profession

Numerous industries, including the accounting industry, have used industry 4.0 technologies to improve the efficiency of their operations. Industry 4.0 technologies include Big Data, AI, robotics, Internet of Things (IoT), and cloud computing (Frank et al., 2019).

The influence of industry 4.0 technologies, such as Big Data and cloud computing, on the accounting profession has been adequately covered in the literature. For instance, Osei-Assibey Bonsu et al. (2023) examined the influence of Fintech tools, particularly *AI* and Big Data Analytics (BDA), on accounting practices, such as financial reporting, management performance, corporate budgeting, audit evidence, and fraud and risk management, in Ghana and Nigeria. The study collected data from 201 chartered and qualified accountants. Using Structural Equation Modeling (SEM), the study reported a significant and positive impact of BDA on accounting practices.

İdil and Akbulut (2018) examined the impact of BDA on accounting and financial reporting. The research utilized a qualitative approach, relying on in-depth interviews with accounting professionals from several businesses. BDA, according to the findings, does not affect the essence of accounting and financial reporting, but it does modify the procedures of recording, gathering, and analyzing accounting information. According to the study, revenue recognition in numerous industries, such as airlines and telecommunications, entails a large volume of data due to complicated billing systems.

Similarly, Al-Htaybat and von Alberti-Alhtaybat (2017) investigated the influence of Big Data on corporate reporting as perceived by accountants and non-accountants. The study used a qualitative method, gathering data through interviews with 25 individuals in 2014 and 2016. Coding techniques were then used to analyze the data. Particularly, researchers carried out a line-by-line coding procedure in which they went through each transcript to generate codes. The codes of each researcher were then compared to reach joint conclusions. Findings revealed that three concepts emerged from the coding analysis, namely the Big Data state of mind and corporate reporting, Accountants' role and future related to Big Data, and perceived opportunities and risks of Big Data.

McKinney Jr et al. (2017) examined the cognitive skills required by accountants to effectively analyze Big Data. They found that accountants need to approach Big Data analysis as informed skeptics by asking suitable questions pertinent to understanding the boundaries of measurement and representation, the subjectiveness of insight, the challenges of statistics and data integration, and the effects of underdetermination and inductive reasoning. As a result, the researchers created a framework and an illustrated case to help accounting students become informed sceptics in the Big Data era.

Al-Zoubi (2017) examined the influence of cloud computing on various elements of Accounting Information Systems (AIS), such as establishment, financial operations, documents, accounting books, financial reporting, users, procedures, software, and physical devices. The study utilized a descriptive approach based on previous research. According to the findings, cloud computing reduces business size in terms of buildings and offices, improves operational performance by improving the efficiency and accuracy of accounting operations, reduces the number of salespeople because it allows electronic selling orders, and allows the use of software without the need to purchase it.

Tarmidi et al. (2014) explored the level of awareness and adoption of cloud computing among accounting practitioners in Malaysian SMEs. The data was collected from 329 accountants and was then analyzed using descriptive analysis. Respondents were asked to indicate the level of awareness of cloud computing, the reasons for not adopting cloud computing, and the cloud computing services they use. Most respondents were found to be unaware of cloud computing, hesitant to adopt it because they did not think they needed the technology, primarily utilizing cloud services like Google Apps and Dropbox, and citing lower costs as the most crucial justification for using cloud computing.

B) The Literature on the Impact of Artificial Intelligence (AI) on Various Organizational Variables

AI's impact on various organizational variables has been a rich arena for research since its debut. For instance, Czarnitzki et al. (2023) examined the influence of AI on firm productivity. The study assessed AI using two measures: a binary (i.e., an indicator) 0 – 1 variable and the intensity with which firms utilize AI in their operations. Using cross-sectional and panel datasets,

the study found a significant positive effect of AI on firm productivity and that this effect holds for the different measures of AI. Similarly, Gao and Feng (2023) investigated the influence of AI on firm productivity and found that AI has a positive influence on firm productivity.

Chen et al. (2022), on the other hand, examined the influence of AI on firm performance. The study collected data from 394 entrepreneurs. The data was then analyzed using Partial Least Squares-SEM (PLS-SEM). Findings revealed Artificial Intelligence Capability (AIC) indirectly affects Firm Performance (FP) through Firm Creativity (FC), Artificial Intelligence Management (AIM), and Artificial Intelligence-Driven Decision Making (AIDDM), and that Innovation Culture (IC) positively mediates the relationship between AIDDM and FP.

Kim et al. (2022) examined the influence of AI adoption on firm performance, particularly firm value, profit, and cost structure, using an empirical study. The study analyzed a sample of 105 listed US companies that embraced AI technologies between 2008 and 2014. The findings indicated that AI has a positive link with firm value, that automation AI has a significant positive impact on firm cost structure, and that augmentation AI has no impact on firm profit and cost structure. On the contrary, Lui et al. (2022) investigated the influence of AI on firm value and concluded that AI investment had a negative impact on firm market value. This effect is larger for non-manufacturing firms, firms with limited information technology (IT), and firms with poor credit ratings.

Babina et al. (2021) examined the relationship between AI, firm growth, and product innovation. According to the study, AI-investing firms witnessed significant growth in sales, employment, and market values, which is primarily related to product innovation. Moreover, Yang (2022) examined the effect of AI on firm productivity and employment in Taiwan. The study analyzed the text of Taiwan patent grants using the keyword-matching method to generate matched firm-level data on AI innovations in Taiwan's electronics industry from 2002 to 2018. Findings revealed that AI is positively linked to firm productivity and employment. Xu et al. (2021) examined whether AI enhanced firm competitiveness during the COVID-19 pandemic. According to the findings, firms that were engaged in AI prior to the pandemic experienced an increase in revenue after the outbreak. This effect is more pronounced in developing countries and countries where property rights are more protected.

C)The literature on the impact of AI on the accounting profession

Numerous research investigated the impact of AI on the accounting profession. For instance, Osei-Assibey Bonsu et al. (2023) investigated whether AI leads to better accounting practices. Using SEM, the study reported a significant positive influence of AI on accounting practices. The study also indicated that AI’s impact on accounting practices exceeds that of BDA.

Fülöp et al. (2023) examined the ethical concerns related to the use of AI in the accounting profession. The study adopted a deductive approach, which started by examining basic concepts before conducting an empirical study based on an interview. According to the findings, while most

accountants have adequate knowledge of AI, only a few completely comprehend it. To address ethical issues about the use of AI in the accounting profession, ethical governance and regulatory guidance are required.

In the Egyptian context, Amirahm (2022) examined the impact of AI on the future of the accounting profession. Using a sample of accountants and auditors, the study found that sample participants recognize the link between AI, on the one hand, and accounting and job instability, on the other. The study also revealed that AI does not endanger employability. Moreover, Ali et al. (2022) investigated the impact of AI on internal auditing activities. The study hypothesized that AI has a significant impact on internal auditing activities. Using descriptive analysis conducted on a sample of 66 individuals, the study concluded that AI improves the activities of internal auditing. Furthermore, Nafea (2022) investigated the impact of industry 4.0 tools, including AI, on the accounting profession using a field study. The study hypothesized that there is no significant difference in how sample members perceive the impact of Industry 4.0 techniques, digital transformation techniques and cloud computing, robotics and blockchain on the accounting profession. The study collected data from 96 accountants. The study found a significant impact of Industry 4.0 techniques, including AI, on the accounting profession.

Furthermore, Noordin et al. (2022) examined the impact of AI on audit quality as perceived by UAE external auditors. The study hypothesized that external auditors perceive that AI contributes to audit quality and that this perception varies between local and international audit firms. Using data from 61 audit firms (22 local and 41 international), the study found that external auditors perceive that AI contributes to audit quality and that there is no significant difference in the perceived contribution of AI to audit quality between local and international audit firms.

Banța et al. (2022) analyzed the benefits and challenges of AI as perceived by accounting practitioners in Romania. The study collected data from accounting practitioners using a questionnaire over the period from June till August 2021. The study showed that accounting practitioners possess adequate knowledge on the benefits and challenges of AI. Moreover, accounting practitioners do not perceive AI as a threat to employability. Yet, they believe that accountants should develop the required skills to operate in an AI-based environment.

Moreover, Zhang et al. (2020) analyzed the impact of AI on the accounting profession by reviewing the recent developments in Big Data, machine learning, and AI utilized by practitioners in the accounting profession. The study concluded that emerging technologies such as AI have brought substantial changes to the accounting profession, such as reengineering accounting operations, minimizing errors and distortions, and increasing accounting efficiency. Furthermore, by improving security structures and regulations, the obstacles associated with the use of AI in accounting, such as data security, can be addressed.

D) Research Gap

Following a thorough review of the literature, the researcher argues that little research has been conducted on the impact of AI on the accounting profession in crisis-ridden developing countries such as Egypt, which is dealing with a slew of issues because of the COVID-19 pandemic and the Russian-Ukrainian conflict. The first set of research examined the implications of industry 4.0 technologies, notably BDA and cloud computing, on the accounting profession and showed that industry four technologies had a positive impact on the accounting profession. The second set of research investigated the impact of AI on several organizational aspects such as firm value, firm performance, firm innovation, firm competitiveness, and firm cost structure, and showed that AI had a beneficial impact on such organizational variables. The impact of AI on the accounting profession has received inadequate attention in the first and second sets of research. Nonetheless, despite the adequate attention dedicated to the link between AI and AP in the third set of research, little research has been conducted in Egypt during times of crisis (e.g., COVID-19 and the Russian-Ukrainian conflict). Therefore, this study adds to the literature by investigating the influence of AI on AP in developing nations during the times of crisis. Egypt's implementation of its 2030 vision, which is centered on digital transformation employing industry 4.0 technologies such as AI, adds to the study's significance. Furthermore, the study adds to the literature by capturing the views of academics and practitioners on the impact of AI on AP.

4.The Benefits and Drawbacks of Using AI in the Accounting Profession

According to Fülöp et al. (2023), advancements such as AI have immense economic potential. Businesses all around the world are gaining huge benefits from using AI into accounting operations, including (Bose et al., 2023; Petkov, 2020):

a) Accounting functions employ AI to *provide more accurate and acceptable financial statements.* Because of its proficiency and consistency in analyzing and interpreting accounting data, AI can provide information faster than humans. As a result, AI accounting functions can produce timely and accurate results. The production of output in real time enhances the timeliness of accounting information and assists users in making informed decisions.
b) AI that has been well-trained to achieve accuracy, i.e., that has been designed to follow accounting rules, will generate more accurate and consistent accounting information. In line with this notion, introducing AI into accounting tasks can help to eliminate accounting and human errors when generating financial statements. Furthermore, some organizations throughout the world have implemented AI with preset "trained principles," and these companies are reaping the benefits of increased financial reporting comparability.
c) Accounting firms are actively integrating AI into auditing operations to assure compliance and eliminate managers' intentional errors. Managers' ability to employ certain formulants' financial functions would be hampered as a result. Even though just a few accounting firms

have integrated AI into their auditing functions, the bulk of them utilize AI to manage audit risk.

d) The most noteworthy advantage of introducing AI into a company's accounting function is the reduction of future costs. In the long run, relying on AI will lessen the need for human operations while improving the efficiency and accuracy of a company's financial reporting (Bose et al., 2023).

5. Research Variables:

The purpose of this research is to examine the impact of Artificial Intelligence (AI) on the Accounting Profession (AP). Accordingly, the study covers two variables, AI, the independent variable x, and the AP, the dependent variable y. Each variable is discussed below in detail:

A) The Independent Variable (Artificial Intelligence (AI x)):

This variable assesses the role of AI in improving business operations such as planning, control, problem solving, and decision making as perceived by academics and practitioners. It is assessed using a 20-item scale developed by Hassan (2021) and utilized in various research, including Aljaaidi et al. (2023) and Amirahm (2022). The items were modified to match the purpose of the study. They are phrased positively and scored over 5-point Likert scale, with 1 being strongly disagree and 5 being strongly agree.

B) The Dependent Variable (Accounting Profession (AP y)):

This variable evaluates how AI can be utilized to improve several aspects of the accounting profession, which are: the Professional Performance of Accountants and Auditors ($PPA\ y_1$), the ability to perform Complex Accounting and Auditing Processes ($CAP\ y_2$), the Efficiency of Accounting and Auditing Teams ($EAT\ y_3$), and Accounting Information Systems ($AIS\ y_4$). A 23-item scale, which was developed by Rashwan and Alhelou (2020) and adopted by Aljaaidi et al. (2023), was utilized to assess $AP\ y$; 6 items are used to assess each of $PPA\ y_1, CAP\ y_2, and\ EAT\ y_3$, and 5 items are used to assess $AIS\ y_4$. The items were modified to fit the objective of the study. They are stated positively and evaluated on a 5-point Likert scale, with 1 being strongly disagree and 5 being strongly agree.

6. Research Methodology

This study aims to investigate how Artificial Intelligence (AI) affects the Accounting Profession (AP). To attain the research objective, the researcher conducts a field study on a group of academics and practitioners to capture their views on the relationship between AI and AP.

6.1 Research Population, Sample size, and Sampling Technique

Academics (teaching assistants and assistant lecturers) and practitioners (accountants employed by accounting companies) constitute the research population. As a population frame, the researcher used lists of academics available on the websites of Tanta University's Faculty of

Commerce and, as well as an unpublished list of accountants employed by accounting firms in Tanta. This combination ensures that the views of academics and practitioners are captured.

A total of 191 academics (Tanta university) and 273 practitioners were obtained, making a population size of 464 individuals. Since the population is finite, the researcher uses the following equation, which is based on the Central Limit Theorem (CLT), to estimate sample size:

$$n = \frac{\left(\frac{z_{\frac{\alpha}{2}}^2 \, P.Q}{E^2}\right)}{\left(1 + \frac{z_{\frac{\alpha}{2}}^2 \, P.Q}{E^2 \times N}\right)}$$

Where:

n: The sample size.

N: The population size.

P: The population proportion (the probability of getting a success in any one trial). Generally, when P is unavailable in the literature, it is substituted with 0.5 to allow for greater sample size.

Q: The complement of the population proportion (the probability of getting a failure in any one trial).

E: The estimation error, which is the difference between the sample proportion $\hat{p}$ and the population proportion P.

$z_{\frac{\alpha}{2}}$: The standard z score, which equals 1.96 at a confidence interval of 95% (α = 0.05).

The application of the formula results in a sample size of 262 individuals. In order to identify sample participants and to minimize sampling error, the researcher uses the Proportionate Stratified Random Sampling Technique (PSRS), as shown in **Table 0-1**.The researcher divided the population into two strata, academics, and practitioners, based on a demographic variable, particularly area of expertise.

Table 0-1: The PSRS Technique

Stratum	Population	Proportion	Sample
Academics	191	41.16%	41.16% × 262 = 108
Practitioners	273	58.84%	58.84% × 262 = 154
Total	464	100%	262

The researcher e-mailed 262 questionnaires to sample participants. The researcher obtained 198 responses, none of which were eliminated for invalidity, yielding a sample size of 198 (response rate: 75.57%).

6.2 Research hypotheses

The purpose of this study is to examine the impact of AI on AP. Based on an extensive review of literature, the researcher develops the following hypothesis for testing:

"H_1: Artificial Intelligence (AI) has a significant impact on the Accounting Profession (AP) in the Egyptian environment."

Testing the following supporting hypotheses can help support or reject the main research hypothesis:

"H_{1a}: AI has a significant impact on the Professional Performance of Accountants and Auditors (PPA) in the Egyptian environment".

"H_{1b}: AI has a significant impact on the ability to perform Complex Accounting and Auditing Processes (CAP)".

"H_{1c}: AI has a significant impact on the Efficiency of Accounting and Auditing Teams (EAT) in the Egyptian environment".

"H_{1d}: AI has a significant impact on Accounting Information Systems (AIS) in the Egyptian environment".

6.3 Research Variables and Measurement Scales

This study aims to examine the influence of AI on AP. AI is the independent variable x, whose effect is to be examined on the dependent variable y, AP, which is further decomposed into four variables, the Professional Performance of Accountants and Auditors ($PPA\ y_1$), the Complex Accounting and Auditing Processes ($CAP\ y_2$), the Efficiency of Accounting and Auditing Teams ($EAT\ y_3$), and Accounting Information Systems ($AIS\ y_4$). Each variable and the corresponding measurement scale is discussed below in detail:

a-The independent variable (Artificial Intelligence ($AI\ x$): This variable assesses the extent to which AI can improve business processes (e.g., planning, control, and decision making) from the perspectives of academics and practitioners. The researcher assesses this variable using a 20-items scale adopted from Hassan (2021). Similar items were also utilized by Amirahm (2022) and Aljaaidi et al. (2023). The original items were drastically altered to match the purpose of the study. All items are positively worded and scored over 5-point Likert scale, with 1 being strongly disagreed and 5 being strongly agree.

b-The dependent variable (Accounting Profession ($AP\ y$)): This variable evaluates the extent to which $AI\ x$ can improve $AP\ y$, which is further divided into four dimensions: the

Professional Performance of Accountants and Auditors ($PPA\ y_1$), the ability to perform Complex Accounting and Auditing Processes ($CAP\ y_2$), the Efficiency of Accounting and Auditing Teams ($EAT\ y_3$), and Accounting Information Systems ($AIS\ y_4$). The researcher assesses this variable using a 23-items scale adopted from Rashwan and Alhelou (2020). Similar items were also used by (Aljaaidi et al., 2023). $PPA\ y_1, CAP\ y_2, and\ EAT\ y_3$ are assessed using 6 items each, whereas $AIS\ y_4$ is assessed using 5 items. The items were rephrased and modified to match the purpose of the research. All items are positively worded and scored over 5-point Likert scale, with 1 being strongly disagreed and 5 being strongly agree.

All items were grouped into a single questionnaire. It is split into two sections. Section one obtains respondent characteristics using demographic variables such as gender, age, and expertise, and section two captures respondent perceptions of the role of AI in enhancing business processes and AP.

6.4 The statistical models

This study employs five regression models to examine the influence of $AI\ x$ on $AP\ y$. For simplicity, the study divides the models into two sets: the first consists of four models to examine the impact of $AI\ x$ on the four dimensions of AP ($PPA\ y_1, CAP\ y_2, and\ EAT\ y_3$, and $AIS\ y_4$), and the second consists of a single model to study the impact of $AI\ x$ on $AP\ y$. The two sets of regression models are summarized below:

*** The impact of $AI\ x$ on the dimensions of AP (Models 1 to 4, Hypotheses H_{1a} to H_{1d}):

Model 1: $AI = \beta_0 + \beta_1 PPAA$ Model 2: $AI = \beta_0 + \beta_1 CAAP$

Model 3: $AI = \beta_0 + \beta_1 EAAT$ Model 4: $AI = \beta_0 + \beta_1 AIS$

*** The impact of $AI\ x$ on $AP\ y$ (Model 5, Hypothesis H_1):

Model 5: $AI = \beta_0 + \beta_1 AP$

The study uses regression analysis to test research hypotheses using the Statistical Package for Social Sciences (SPSS) version 26.

7. Statistical Results

The study reports the results of statistical analysis. First, the results of the instrument's reliability and validity are presented, followed by descriptive analysis results, correlation analysis results, and finally regression analysis results.

7.1 The validity and Reliability Test

The validity and reliability of the instrument are tested using the opinion of experts and the Cronbach's coefficient α, respectively. To examine the validity of the instrument, the study

conducts a set of interviews with experts (academics and practitioners). The experts believe that the instrument is readable, understandable, and adequately covers the variables of the research. Furthermore, the fact that the instrument was utilized in previous research adds to its validity.

Table 7-1: Cronbach's α and Item Discrimination Indices (D)

Scale	Number of Items	Cronbach's α	Item Discrimination Index (D)
$\boldsymbol{AI\ x}$	20	0.794	0.169 (Min) – 0.507 (Max)
$\boldsymbol{PPA\ y_1}$	6	0.895	0.488 (Min) – 0.788 (Max)
$\boldsymbol{CAP\ y_2}$	6	0.923	0.632 (Min) – 0.834 (Max)
$\boldsymbol{EAT\ y_3}$	6	0.941	0.667 (Min) – 0.889 (Max)
$\boldsymbol{AIS\ y_4}$	5	0.849	0.480 (Min) – 0.815 (Max)
$\boldsymbol{AP\ y}$	23	0.806	0.147 (Min) – 0.459 (Max)

The researcher assessed the instrument's reliability using Cronbach's coefficient α. For the instrument to be reliable, the value of Cronbach's coefficient α for each measurement scale must be equal to or exceeds 0.7. As shown in Table 7-1, Cronbach's coefficient α for all measurement scales exceed 0.7. Furthermore, the item discrimination indices (D) demonstrate a moderate to strong correlation between the items on each scale, indicating that the items accurately reflect the variables being evaluated.

7.2 Descriptive analysis

This section presents the characteristics of sample participants and describes the data using measures of central tendency (Arithmetic mean μ) and measures of dispersion (Standard deviation σ). Table 7.2 summarizes the characteristics of sample participants.

Table 7-2: Characteristics of sample participants

Demographic Variables	Total	%
Age ($n = 198$)		
Below 30	110	55.6%
From 30 to 40	53	26.8%
Above 40	35	17.7%
Gender ($n = 198$)		
Male	109	55.1%
Female	89	44.9%
Expertise ($n = 198$)		
Academic	80	40.4%
Practitioner	118	59.6%

A total of 198 individuals responded to the questionnaire, of which 110 were below 30 years of age (55.6%), 53 aged from 30 to 40 years of age (26.8%), and 35 were above 40 years of age (17.7%). Males made up 109 (55.1%) of responders, while females made up 89 (44.9%). There

were 80 (40.4%) respondents with an academic background and 118 (59.6%) respondents with a professional background.

Table 7-3 shows the results of descriptive analysis. The mean score μ of AI is 3.5982, with a standard deviation σ of 0.61051, a minimum score of 1.95 and a maximum score of 4.65. Such results indicate that an average individual with an academic or professional background believes that AI is important for improving business operations.

The mean score μ of PPA is 3.6465, with a standard deviation σ of 0.77622, a minimum score of 1.17 and a maximum score of 5.00. These results show that an average individual with an academic or professional background believes that AI would enhance the professional performance of accountants and auditors. The mean score μ of CAP is 3.6355, with a standard deviation σ of 0.71208, a minimum score of 1.33 and a maximum score of 5.00. Such results imply that an average individual with an academic or professional background believes that AI would enhance the ability to handle complex accounting and auditing processes.

Table 7-3: Descriptive analysis

Scale	Mean μ	Standard deviation σ	Min	Max
$AI\ x$	3.5982	.61051	1.95	4.65
$PPA\ y_1$	3.6465	.77622	1.17	5.00
$CAP\ y_2$	3.6355	.71208	1.33	5.00
$EAT\ y_3$	3.5682	.82439	1.33	4.83
$AIS\ y_4$	3.6232	.80510	1.00	5.00
$AP\ y$	3.6217	.71858	1.35	4.87

The mean score μ of EAT is 3.5682, with a standard deviation σ of 0.82439, a minimum score of 1.33 and a maximum score of 4.83. Such results suggest that an average individual with an academic or professional background believes that AI would enhance the efficiency of accounting and auditing teams. The mean score μ of AIS is 3.6232, with a standard deviation σ of 0.80510, a minimum score of 1.00 and a maximum score of 5.00. Such results indicate that an average individual with an academic or professional background believes AI would enhance the efficiency of accounting information systems.

Overall, the mean score μ of AP is 3.6217, with a standard deviation σ of 0.71858, a minimum score of 1.35 and a maximum score of 4.87. Such results indicate that an average individual with an academic or professional background believes that AI would enhance AP.

7.3 Correlation Analysis

Table 7-4 presents the results of correlation analysis using Spearman's rho correlation coefficient. As shown in Table 4-4, $AI\ x$ has a significant (p-values (0.000) $\leq$ 0.01), positive, and strong ($PPA\ y_1$ = +0.853, $CAP\ y_2$ = +0.823, $EAT\ y_3$ = +0.846, and $AIS\ y_4$ = +0.838) correlation with AP dimensions at α = 0.01. Overall, $AI\ x$ is significantly (p-values (0.000) $\leq$ 0.05), positively, and strongly ($AP\ y$ = +0.873) correlated with $AP\ y$ at α = 0.01.

7.4 Regression Analysis Results

This section provides the results of regression analysis. The study discusses the strength and predictability of regression models by assessing the overall significance of each model using F test, the significance of each model's regression coefficients β using t test, and model fit using measures of fit (Coefficient of determination R^2 and Standard Error of the estimate S_e). Afterwards, the study uses the results of regression models to support or reject research hypotheses. The first set of regression models, which assesses the impact of $AI\ x$ on the dimensions of $AP\ y$ ($PPA\ y_1, CAP\ y_2, and\ EAT\ y_3$, and $AIS\ y_4$), are discussed first, followed by the second set, which assesses the impact of $AI\ x$ on $AP\ y$.

Table 7-4: Correlation analysis

Scale	Correlation	AI x	$PPAA$ y_1	$CAAP$ y_2	$EAAT$ y_3	AIS y_4	AP y
AI x	Corr.	1.000					
	Sig.	-----					
PPA y_1	Corr.	.853**	1.000				
	Sig.	.000	-----				
CAP y_2	Corr.	.823**	.826**	1.000			
	Sig.	.000	.000	-----			
EAT y_3	Corr.	.846**	.839**	.770**	1.000		
	Sig.	.000	.000	.000	-----		
AIS y_4	Corr.	.838**	.797**	.824**	.769**	1.000	
	Sig.	.000	.000	.000	.000	-----	
AP y	Corr.	.873**	.930**	.873**	.917**	.871**	1.000
	Sig.	.000	.000	.000	.000	.000	-----
**Correlation is significant at the 0.01 level (2-tailed).							

Table 7-5 shows the results of regression models 1 to 4. As shown in Table 7-5 , the regression models are significant at α = 0.01 (Model 1: F (483.906) is significant (0.000), Model 2: F (450.054) is significant (0.000), Model 3: F (436.435) is significant (0.000), and Model 4: F (415.518) is significant (0.000)). The regression coefficients are also significant at α = 0.01 (Model 1: t (21.998) is significant (0.000), Model 2: t (21.214) is significant (0.000), Model 3: t (20.891) is significant (0.000), and Model 4: t (20.384) is significant (0.000)). Such results indicate that each regression model, using $AI\ x$ as an independent variable (i.e., factor), adds significant predictability of the dependent variable ($AP\ y$ dimensions: $PPA\ y_1, CAP\ y_2, EAT\ y_3$, and $AIS\ y_4$) as compared to a null model containing only the regression constant.

Table 7-5: Regression analysis results: Models 1 to 4

Models and variables	Sig. of coefficients			Overall Significance (F test)		Measures of Fit (R^2 and S_e)	
	β	t	Sig.	F	Sig.	R^2	S_e
Model 1 ($AI\ x$ and $PPA\ y_1$)							
Constant	-.213	-1.198	.233	483.906	.000	.712	.41783
$AI\ x$	1.073	21.998	.000				
Model 2 ($AI\ x$ and $CAP\ y_2$)							
Constant	.133	.792	.429	450.054	.000	.697	.39321
$AI\ x$	.973	21.214	.000				
Model 3 ($AI\ x$ and $EAT\ y_3$)							
Constant	-.468	-2.389	.018	436.435	.000	.690	.46011
$AI\ x$	1.122	20.891	.000				
Model 4 ($AI\ x$ and $AIS\ y_4$)							
Constant	-.288	-1.481	.140	415.518	.000	.679	.45696
$AI\ x$	1.087	20.384	.000				

The independent variable, $AI\ x$, explains 71.2% of the variability in $PPA\ y_1$, 69.7% of the variability in $CAP\ y_2$, 69% of the variability in $EAT\ y_3$, and 67.9% of the variability in $AIS\ y_4$. Meaning that only 28.8% of the variability in $PPA\ y_1$, 30.3% of the variability in $CAP\ y_2$, 31% of the variability in $EAT\ y_3$, and 32.1% of the variability in $AIS\ y_4$ are unexplained by $AI\ x$. The unexplained variations can be attributed to other factors that are outside the scope of this study. Furthermore, the standard error of the estimate S_e for all models is relatively small, indicating the accuracy of the models.

The regression coefficient of model 1 β is positive (+1.073) and significant (0.000) at α = 0.01, meaning that AI has a significant positive impact on PPA. Therefore, $\boldsymbol{H_{1a}}$ **is supported.** The regression coefficient of model 2 β is positive (+0.973) and significant (0.000) at α = 0.01, meaning that AI has a significant positive impact on CAP. Therefore, $\boldsymbol{H_{1b}}$ **is supported.** The regression coefficient of model 3 β is positive (+1.122) and significant (0.000) at α = 0.01, meaning that AI has a significant positive impact on EAT. Therefore, $\boldsymbol{H_{1c}}$ **is supported.** The regression coefficient of model 4 β is positive (+1.087) and significant (0.000) at α = 0.01, meaning that AI has a significant positive impact on AIS. Therefore, $\boldsymbol{H_{1d}}$ **is supported.**

Table 7-6: Regression analysis results: Model 5

Model 5 ($AI\ x$ and $AP\ y$)		Sig. of coefficients		
		β	t	Sig.
Constant		-.211	-1.614	.108
$AI\ x$		1.065	29.767	.000
Overall Significance (F test)	F	886.087		
	Sig.	.000		
Measures of Fit (R^2 and S_e)	R^2	.819		
	S_e	.30660		

Table 4-6 shows the results of regression model 5. The regression model is significant (F (886.087) is significant (0.000)) at α = 0.01. The regression coefficient β is also significant (t (29.767) is significant (0.000)) at α = 0.01. The regression model, using $AI\ x$ as an independent variable, explains 81.9% of the variability in $AP\ y$, meaning that only 18.1% of the variability of $AP\ y$ are accounted for by other factors outside the scope of this study. The standard error of the estimate S_e is relatively small, indicating the accuracy of the model. These results suggest that the regression model, using $AI\ x$ as an independent variable, adds significant predictability of $AP\ y$ than does a null model containing only the regression constant.

As shown in Table 7-6, the regression coefficient of β is positive (+1.065) and significant (0.000) at α = 0.01, meaning that AI has a significant positive impact on AP. Therefore, H_1 is supported.

8. Research Results

Based on the results of the statistical analysis, the study finds that:

- Individuals with academic or professional background believe that AI is useful for business operations (μ_{AI} = 3.5982).
- Individuals with academic or professional background believe that AI can enhance the professional performance of accountants and auditors (μ_{PPA} = 3.6465).
- Individuals with academic or professional background believe that AI can aid in handling complex accounting and auditing processes (μ_{CAP} = 3.6355).
- Individuals with academic or professional background believe that AI can enhance the efficiency of accounting and auditing teams (μ_{EAT} = 3.5682).
- Individuals with academic or professional background believe that AI can enhance the performance of accounting information systems (μ_{AIS} = 3.6232).
- Overall, individuals with academic or professional background believe that AI can enhance the accounting profession (μ_{AP} = 3.6217).
- AI has a significant (0.000) positive (β = +1.073) impact on the Professional Performance of Accountants and Auditors (PPA).
- AI has a significant (0.000) positive (β = +0.973) impact on the ability to handle Complex Accounting and Auditing Processes (CAP).
- AI has a significant (0.000) positive ((β = +1.122) impact on the Efficiency of Accounting and Auditing Teams ($EAAT$).
- AI has a significant (0.000) positive (β = +1.087) impact on the performance of Accounting Information Systems (AIS).
- Overall, AI has a significant (0.000) positive (β = +1.065) impact on the Accounting Profession (AP).

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