

**TECHNOLOGICAL INNOVATION AND
SUSTAINABILITY FOR BUSINESS
COMPETITIVE ADVANTAGE**

TECHNOLOGICAL HORIZONS

PART B

**INSIGHTS FOR ACCOUNTING,
AUDITING AND INTERNAL CONTROL
IN EMERGING MARKETS**

EDITED BY

**HASHEM ALSHURAFAT
CLAIRE BEATTIE**

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ALLAM HAMDAN | REEM KHAMIS

Technological Horizons

TECHNOLOGICAL INNOVATION AND SUSTAINABILITY FOR BUSINESS COMPETITIVE ADVANTAGE

Series Editors: Allam Hamdan and Reem Khamis

Innovation and sustainability are broad terms that describe many interdisciplinary sciences – business success and competitiveness may not be separated from social and cultural aspects that interfere with any future development prospects. Research in across areas would provide a better understanding of international experiences, bridging the gap between developing and developed nations. This series promotes new visions for business research prospects that work in favor of innovation and sustainability in terms of governance, environment, and ethics.

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Technological Horizons: Insights for Accounting, Auditing and Internal Control in Emerging Markets

EDITED BY

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AND

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Preface

The book is a collaborative effort among esteemed contributors, who bring a wealth of expertise to explore technology across accounting realms. The book chapters are encapsulating a holistic view of technological horizon for accounting, auditing, and internal control professions. The purpose of *Technological Horizons* is rooted within the emerging markets context.

The book begins with an exploration of technological horizons within the accounting environment. The chapters in this section explore the profound impact of emerging technologies on various aspects of accounting and auditing. It begins with an exploration of how Artificial Intelligence (AI) is revolutionizing audit quality by enhancing precision and efficiency. The discussion then shifts to the role of technology in environmental accounting within emerging markets, using an institutional theoretical lens to highlight advancements in sustainable financial reporting. The book chapters also investigate the factors influencing the adoption of business analytics and their subsequent effect on financial reporting quality. The transformative potential of AI in the auditing profession is further explored, followed by a systematic literature review of the barriers to blockchain adoption. Additionally, the determinants of external auditor fees before and during the COVID-19 pandemic are analyzed through a study on nonfinancial companies listed in the Amman Stock Exchange. Finally, the application of blockchain in accounting information systems is examined, addressing its advantages, challenges, and directions for future research.

As editors, we extend our sincere gratitude to the contributors for their scholarly contributions and to the readers for joining us on this intellectual journey. May this book serve as an inspiration, guiding us toward a future where technology converges harmoniously for the betterment of accounting, auditing, and internal control professions.

The editors
Hashem Alshurafat
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Chapter 1

The Impact of Artificial Intelligence on Audit Quality

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Abstract

The chapter examining the impact of artificial intelligence (AI) on audit quality to achieve business sustainable practices, trying to found that using of AI as a substitute for human intelligence affects auditor's capability and experience, from other hand affects audit process, starting from audit planning until issuance of reporting. Based on literature review about AI and audit quality, the chapter findings showed that AI adoption is a necessary requirement for auditors due to time constraints, accuracy requirements, and job speed requirements. The impact of AI on audit quality is profound and multifaceted. By leveraging the capabilities of AI, auditors can enhance the accuracy, efficiency and objectivity of their work.

To guarantee that the application of AI benefits the auditing profession and the public it serves, it is imperative to solve the obstacles that come with it. AI has the ability to greatly improve audit quality, but its deployment needs to be closely monitored to prevent any early problems. With appropriate training, data, and governance, AI can enhance the efficiency and effectiveness of audits, leading to more accurate and reliable financial reporting. However, it is important for auditors to be aware of the challenges and risks associated with AI and to take steps to mitigate these risks. Where cybersecurity is a protection line for external threats and it is considered as a new risk management tool.

Keywords: Artificial intelligence; external auditors; audit process; audit quality; cybersecurity

1. Introduction

Artificial intelligence (AI) is a replacement for human intelligence. It is created by combining hardware and software to solve complicated business problems in a way that mimics the thinking, learning, clarifying, and step-by-step recognition of a human expert. AI uses machine intelligence rather than human intellect and utilizes expert systems in place of human experts. AI facilitates decision-making for managers by streamlining complicated choice elements and supplying more accurate information (Askary et al., 2018).

It is an emerging technology, and it aims to mimic the human judgments and cognitive skills, with competitive advantages for adopters (Munoko et al., 2020). Also, AI can be characterized as machine intelligence. According to computer science, a flexible, rational agent that senses its surroundings and acts to improve its odds of success in reaching a goal is the epitome of an “intelligent” machine (Adiloglu & Gungor, 2019). The Organization for Economic Co-operation and Development (OECD) defines AI as a machine-based system that can make predictions, suggestions, or judgments influencing actual or virtual environments for a certain set of human-specified objectives (Noordin et al., 2022).

These days, the concept of AI’s utility is crucial to both academic and business practice. The advent of the technological revolution brings about changes like industry restructuring. AI is changing how businesses, governments, organizations, and individuals operate (Issa et al., 2016).

There are two most cited definitions for the audit quality, De Angelo who defines audit quality as the joint probability that auditors both discover a breach in the client’s accounting system and report the breach, and De Fond and Zhang who define higher audit quality as greater assurance of high financial reporting quality (Rajgopal et al., 2021). Researchers suggest that audit quality is defined as the probability that the auditor will detect a breach and report it. If auditors do not remain independent, they will be less likely to report irregularities, thereby impairing audit quality (Tepalagul & Lin, 2015).

When competent and impartial individuals carry out audit tests and the techniques they employ yield pertinent and dependable data, the audit quality at the input level is enhanced. Higher audit quality is produced when members of the engagement team decide which particular tests to conduct and how best to assess the evidence gathered from those tests to create the audit report (Francis, 2011).

The chapter examining the impact of AI on audit quality, trying to found that using of AI as a substitute for human intelligence affects auditor’s capability and experience, from other hand affects audit process, starting from audit planning until issuance of reporting.

2. Artificial Intelligence

AI is defined as a branch of science and computer engineering concerned with the development of intelligent machines or computers capable of thinking, learning, and working independently. AI helps to analyze large amounts of data, recognize patterns, and make decisions on its own. Organizations can use AI in a variety of

ways. In order to facilitate decision-making, it can streamline the data analysis and document review processes. AI can also be used to provide customized reports that are tailored to the needs of the company (Noordin et al., 2022).

AI algorithms can complement other recent technologies, which determine data that can be inspected by AI (e.g., images from drones) or specific applications for AI algorithms (e.g., robotic process automation) (Fedyk et al., 2022).

According to Dheeriya and Singhvi (2021), basic tasks like information retrieval from contracts, leases, and invoices can be readily completed with AI. The National Association of Corporate states that although they view AI as the top business enabler that will likely benefit their firms in the upcoming year, they also rank it as one of the biggest technology disruptors.

Noordin et al. (2022) recommended that firms which choose to employ AI in their operations should be aware of the risks that AI poses to financial data. AI may be able to recognize sensitive information that should be kept private from outside parties as it develops its ability to recognize data patterns. This information might be used to perpetrate other crimes or to influence financial institutions if it ended up in the wrong hands.

The writers can conclude that many industries have seen significant changes as a result of AI. AI adoption is a necessary requirement for auditors due to time constraints, accuracy requirements, and job speed requirements.

3. Audit Quality

For instance, the legal view of auditing provides two types of audit quality that contrast each other: “audit failure” and “non-audit failure.” An audit failure happens in the case of lack of auditor independence, or if the auditor independence is present, but the auditor incorrectly issues an unqualified audit report due to failure to accumulate sufficient competent evidence as necessitated by auditing standards. Conversely, a “good audit,” also known as a nonfailure audit, is one in which the auditor adheres to auditing standards and provides an accurate judgment regarding the financial statements of the client while assuming a manageable amount of audit risk (Francis, 2011).

Hosseinniakani et al. (2014) outlines the various audit quality elements, including auditor standards like professional competence, technical ability, independence, and liability, as well as auditor specifications like size, industry expertise, auditor tenure, audit fees, nonaudit services, and auditor reputation.

Another common definition of audit quality is that it is a process that an auditor goes through to evaluate a financial statement’s risk level of a material misstatement. In other words, an auditor inspects whether a financial statement has been fairly documented to ensure that there are no material misstatements and to ensure a strong internal control (Brown et al., 2016).

Actual quality and perceived quality have been presented as important issues in audit quality definition. Actual audit quality can be defined as the probability of reducing the risk of reporting a material misstatement in the financial statement (Harber & Marx, 2020).

The writers can infer from the literature review that there are direct measurements for audit quality, which are related to characteristics of external auditor including knowledge and educational level, experience, industry expertise and reputation and there are indirect measurements for audit quality, which are related to audit process including audit planning, internal control evaluation and risk assessment, audit evidence and reporting (please refer to Fig. 1.1).

3.1 Knowledge and Educational Level of External Auditors

An essential function of external auditors is to guarantee the dependability and correctness of financial reporting. Their knowledge and educational level are essential to their ability to perform their duties effectively. Alsughayer, 2021 had shown that auditors with higher levels of education and knowledge are more likely to detect financial misstatements. This is a result of their enhanced comprehension of accounting principles and auditing practices, as well as their capacity to assess financial data critically.

Additionally, higher educated auditors are more likely to be up to date on the latest advancements in accounting and auditing, which can help them keep ahead of the curve and spot possible potential risks (Barr-Pulliam et al., 2023).

3.2 Experience of External Auditors

Experience is an important attribute that the auditor has. The professional experience is the power which can be obtained by the practice over time from past experiences and direct feedback and the general knowledge which lead to accomplish the task with high quality. The auditor's experience contributes significantly to the judgments made by the auditor. Experience can also affect the auditor's predictive and detection ability against fraud to affect opinion taken by the auditor (Merdekawati, 2022).



Fig. 1.1. Audit Quality Measurements Related to External Auditor. Source: by writers.

3.3 Industry Expertise of External Auditor

Auditors who have specialized in a particular field are called specialist auditors, for instance, those usually offer clients higher-quality services at reduced expenses.

Currently, there is a rising need for specialized auditors who are differentiated in the industries and companies they work for. By getting to know their customers' distinctive characteristics better, auditors aim to increase their level of competence in a given industry. So, having knowledge of the industry may present great chances to carry out thorough audits on several businesses with comparable needs. The specialism of the audit industry is intimately related to the caliber of financial information reported by a corporation. Auditors are better able to apply auditing procedures to find fraud and raise the audit quality when they concentrate on a single industry (Alharasis et al., 2023).

3.4 Reputation of External Auditor

The auditor's reputation is demonstrated by public confidence in the auditor through his performance (please refer to Fig. 1.2). The auditors are responsible for keeping public trust and bound in honor of the auditors themselves and public accountant firms where they work by giving opinions that are appropriate to the company's state (Kutha & Susan, 2021; Suwarno et al., 2020).

3.5 Audit Planning

Since it will decide the audit's efficiency and effectiveness, the audit planning process is the most important one. The auditor must comprehend the company's accounting system, business operations, and important internal controls in order to prepare the audit of the financial statements. They must also assess potential



Fig. 1.2. Audit Quality Measurements Related to Audit Process.

Source: by writers.

fraudulent activity, establish the degree of materiality, and conduct analytical test procedures. Ultimately, the auditor must create a systematic audit program (Apandi et al., 2022).

3.6 Internal Control Evaluation and Risk Assessment

The International Auditing and Assurance Standards Board (IAASB) has issued a number of standards on internal control evaluation and risk assessment, including ISA 315 (Revised 2019): Identifying and Assessing the Risks of Material Misstatement through Understanding the Entity and Its Environment, and ISA 330 (Revised 2019): Responding to Assessed Risks of Material Misstatement. These standards provide guidance to auditors on how to perform these important procedures.

Evaluating an organization's internal controls over financial reporting is known as internal control evaluation. This aids the auditor in assessing how much trust the company's financial statements can be trusted. Determining and evaluating the likelihood of a major mistake in the financial statements is known as risk assessment. This aids in the auditor's planning and resource allocation for the audit.

3.7 Audit Evidence

Audit evidence is an important element in the nature of the audit process where its importance in the accreditation of the auditor based on the composition of his professional opinion is not contrary to the international audit standards on the one hand and the legislation adopted on the other (Mohammed et al., 2021).

3.8 Reporting

According to International Standard on Auditing (ISA) 700: Forming an opinion and reporting on financial statements, the auditor's report should be clear, concise, and informative (IAASB, 2015). It must also be impartial and devoid of prejudice. When choosing the report's content, the auditor should apply professional judgment, keeping in mind the particulars of the audit as well as the requirements of the financial statement users.

One of the most important things external auditors do is report. It entails informing the proper parties such as the company's management, shareholders, and regulatory bodies of the audit's findings. In addition to disclosing any significant misstatements found during the audit, the auditor's report offers an assessment on the financial statements' fairness.

4. Impact of AI on Audit Quality

Albitar et al. (2020) mentioned that using cybersecurity and AI are improving the internal control by protecting information from threats on the internet. AI

reduces human errors, increases accuracy, and protects firms against unknown threats and learns its patterns while cybersecurity protects firms' information against known cyber threats. Audit quality gives a guide for auditors on the things that should be regarded in relation to the effect of social distancing measures on audit quality.

Albawwat (2021) explained the perceived ease of use, usefulness, and contribution to the audit quality of different AIs types. The results indicate that auditors perceive assisted and augmented AI systems as ease of use in auditing while perceiving autonomous AI systems as complicated to use.

Fedyk et al. (2022) examined how AI affected the effectiveness and quality of audits for the biggest audit companies, as well as which audit companies employed AI personnel and how well they performed. The findings demonstrated how AI lowers costs, enhances audit quality, and eventually replaces human auditors.

Yebi and Cudjoe (2022) investigated how AI is affecting the audit process, audit quality, and the abilities and competencies of auditors. The findings demonstrated that AI has significantly impacted the abilities and competences of auditors, with many respondents confirming that IT skills are now among the essential competencies required of auditors. AI has also had a favorable impact on audit quality and process.

Noordin et al. (2022) described the opinions of external auditors regarding the application of AI in various United Arab Emirates (UAE)-based audit firms. The findings demonstrated that local and foreign audit firms' perceptions of AI's contribution to audit quality differed not significantly. Regarding the audit

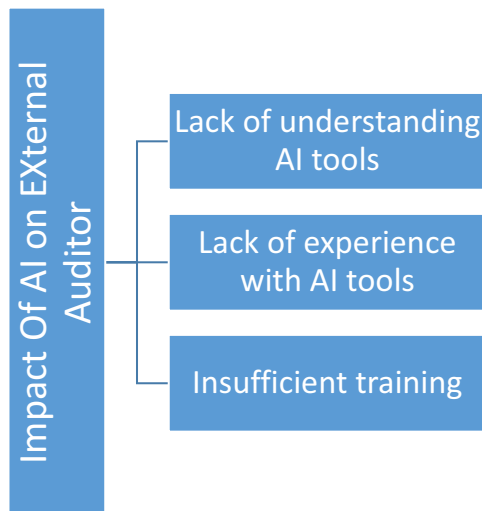


Fig. 1.3. Impact of AI on External Auditor. *Source:* by writers.

quality, all audit firms – local and foreign – perceive the same contributions (please refer to Fig. 1.3).

The writers can infer from the literature review there is negative impact of AI on external auditors and positive impact on audit process as follow.

The impact of AI on external auditors presents challenges, such as the need for auditors to develop new skills, knowledge, and training, to effectively utilize AI technologies. Moreover, the growing reliance on AI prompts questions about potential biases and highlights the necessity of strong control and oversight frameworks to guarantee the moral and appropriate application of AI in auditing (please refer to Fig. 1.4).

The audit process is being profoundly impacted by AI, which is changing how auditors carry out their duties and provide their services. Automation of different audit procedures, increased productivity, and improved accuracy and consistency of audit processes are all being achieved with AI-powered tools and methodologies.

One of the most significant impacts of AI on auditing is the automation of data analysis and testing. Large data sets can be swiftly and effectively analyzed by AI algorithms, which can also spot trends and anomalies that could point to fraud or mistakes. This can greatly cut down on the time and work needed for manual review, freeing up auditors to work on more difficult and valuable jobs. AI is also being utilized to improve planning and risk assessment. AI systems are able to examine past data and spot trends and patterns that could point to possible

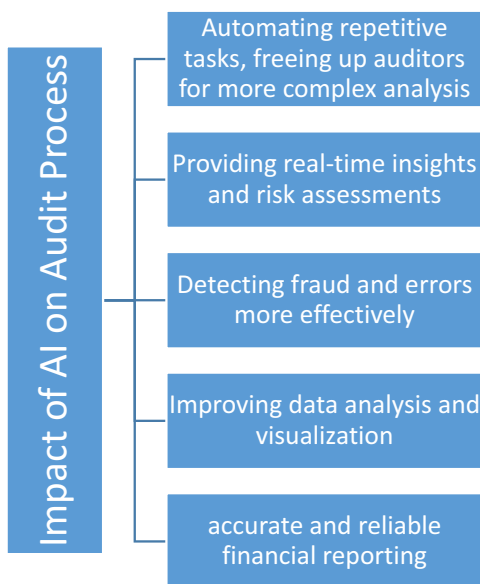


Fig. 1.4. Impact of AI on Audit Process. *Source:* by writers.