

Ethical implications of artificial intelligence in accounting: A framework for responsible ai adoption in multinational corporations in Jordan

Ahmad Y. A. Bani Ahmad^{a*}

^aDepartment of Accounting and Finance Science, Faculty of Business, Middle East University, Amman 11831, Jordan

CHRONICLE

Article history:

Received: July 16, 2023

Received in revised format: August 14, 2023

Accepted: September 17, 2023

Available online: September 17, 2023

Keywords:

Ethics

Artificial Intelligence

Accounting

Adoption

Multinational Corporations

ABSTRACT

The accelerated progress of Artificial Intelligence (AI) within the accounting field has resulted in a heightened use of this technology in international enterprises, therefore generating noteworthy ethical concerns. This research investigates the ethical implications that arise from the use of AI in accounting practices, focusing on international corporations operating in Jordan. The objective of this research is to provide a comprehensive framework for the ethical and responsible integration of AI within the accounting domain. The research used a survey methods approach while 379 respondents were selected using cluster and proportional sampling. The qualitative component of the research investigates the viewpoints and concerns of persons pertaining to the use of AI. The study results provide significant contributions to the development of a context-specific paradigm for AI ethics that prioritizes concepts such as transparency, fairness, and accountability. The findings of this study have substantial value for multinational corporations engaged in commercial operations in Jordan and similar regions. The results provide organizations with the necessary tools to proficiently address the ethical dilemmas that emerge as a result of using artificial intelligence in accounting procedures.

© 2024 by the authors; licensee Growing Science, Canada.

1. Introduction

The discipline of accounting has been significantly impacted by the integration of artificial intelligence (AI-Okaily, 2023; Hatamlah et al., 2023a). The integration of artificial intelligence (AI) into the field of accounting has brought about a significant transformation in the management of financial data, the generation of reports based on such data, and the overall decision-making procedures. Extensive evidence supports the notion that AI has had a substantial impact on contemporary company operations (Kaplan & Haenlein, 2019). Moreover, the field of accounting has also been subject to the transformative effects of AI, as shown by several studies. Svetlova (2022) asserts that AI plays a pivotal role in the development of electronic commerce technology. The exponential and extensive growth of this phenomenon has had a substantial influence on the way in which individuals participate in electronic commerce.

According to Kaplan and Haenlein (2019), robotic systems engage in the assessment and extraction of valuable insights from data with the purpose of effectively achieving predetermined objectives within the realm of AI. The use of AI has potential benefits for management accountants due to their specialized knowledge in data analysis and aptitude for extracting crucial insights (Bruun & Duka, 2018). Appelbaum et al. (2017) suggest that management accountants have the potential to augment the performance of their organizations by integrating AI with contemporary research approaches. Warren et al. (2015) claim that AI has the potential to be used in the development of management control systems that are characterized by high levels

* Corresponding author.

E-mail address: ahmad@meu.edu.jo (A. Y. A. Bani Ahmad)

ISSN 2561-8156 (Online) - ISSN 2561-8148 (Print)

© 2024 by the authors; licensee Growing Science, Canada.

doi: 10.5267/j.ijds.2023.9.014

of efficiency. According to Chen et al. (2021), the use of AI has promised for enhancing the effectiveness of management accounting.

In contemporary times, legislative measures have been enacted to acknowledge the ethical considerations that have been illuminated by the extensive use of AI (Kaplan and Haenlein, 2020; Munoko et al., 2020). Given the conditions, the medical facility has implemented proactive measures aimed at mitigating and maybe eliminating any potential hazards. The European Group on Ethics in Science and New Technologies (EGE) released a publication in 2018 entitled "Statement on Artificial Intelligence, Robotics, and Autonomous Systems". This literary work offers an extensive compilation of AI concepts and standards, aiming to foster the development and adoption of ethical AI. Many studies present a comprehensive overview of many aspects pertaining to the administration and monitoring of artificial intelligence (e.g., Hatamlah et al., 2023b). In the present year, the China Artificial Intelligence Governance Committee (CAIGC), responsible for the oversight and regulation of AI inside China, has promulgated a set of eight regulations. Businesses that develop AI software must ensure that the parameters are fulfilled. The regulations serve to safeguard both individual rights and the collective well-being of the community. Greenman (2017) asserts that within the realm of accounting, professional organizations and regulatory bodies have established guidelines governing the use of technology by accountants. The Institute of Management Accountants (IMA) upholds a set of basic values, which include honesty, fairness, impartiality, and accountability.

Although accountants possess an understanding of the imperative nature of ethical decision-making in the context of utilizing AI, there exists a dearth of scholarly investigation pertaining to the ethical considerations that are unique to this domain (Alles & Gray, 2016). Greenman (2017) asserts that ethical considerations pertaining to the use of technology have been disregarded by the accounting profession. Dillard and Ruchala (2005) conducted research examining the ethical dilemmas associated with the use of enterprise resource planning (ERP) systems. Dillard and Ruchala (2005) introduced a stakeholder accountability paradigm as a potential resolution for addressing the ethical dilemmas related to ERP software. In their study, Greenman (2017) developed a comprehensive conceptual framework for assessing the ethical concerns associated with the widespread integration of developing technologies in several domains, including personal, governmental, societal, and institutional contexts. Alles and Gray (2016) expanded upon the existing framework by offering a comprehensive elucidation of the ethical values upheld by various categories of stakeholders.

The widespread use of AI within the field of accounting gives rise to a multitude of significant ethical concerns. Various concerns have been raised pertaining to many key areas, including the safeguarding of personally identifiable information, the mitigation of algorithmic bias, the promotion of transparency and accountability, and the potential ramifications for the labor market. AI systems are responsible for the management of vast volumes of sensitive data, including personal and financial information. This situation has given rise to concerns over the confidentiality and security of these systems. Bankins and Formosa (2023) argue that the domain of accounting has encountered ethical dilemmas stemming from algorithmic prejudice, unintentional discrimination, and a dearth of openness. Bankins et al. (2023) posit that the introduction of AI has the potential to lead to job displacement and the reduction of human supervision and decision-making.

The use of AI is seeing rapid adoption among the accounting divisions of multinational entities operating in Jordan. The primary objective of this implementation is to augment productivity while simultaneously improving the precision and comprehensiveness of data analysis. The exponential progress of technology has given rise to novel ethical considerations that require resolution prior to the acceptable deployment of artificial intelligence. The integration of artificial intelligence into the accounting practices of these organizations necessitates a distinctive strategy owing to the diverse cultural and legal contexts within which these businesses functions. It is against this background that this research is conducted to examine ethical implications of artificial intelligence in accounting: a framework for responsible AI adoption in multinational corporations in Jordan.

2. Research Objectives

The objective of this research is to:

- To explore the ethical compliances on the AI adoption in accounting for multinational corporations in Jordan,
- To identify the potential ethical challenges of AI in accounting be addressed to ensure responsible AI adoption among multinational corporations in Jordan.,
- To identify the key elements in the framework for the responsible use of AI in accounting practices among multinational corporations in Jordan.

3. Hypothesis

This study examines the joint influence of ethical compliances, potential ethical challenges of AI and Key elements of AI framework and the use of AI in accounting practices in multinational corporations.

4. Literature Review

4.1 Historical Overview of Artificial Intelligence

AI researchers employ statistics, psychology, and cognitive science to construct multidisciplinary techniques. The ambition to provide machines with cognitive capacities drove AI research. AI is about robots becoming aware and learning new things. Historians believe the first AI appeared in the 1940s, however this is debatable. Alan Turing, a mathematician, created an examination to see whether a computer could mimic human behavior (Kaplan & Haenlein, 2019; Hatamlah et al., 2023c). This research was meant to give these activities the appearance of being done by real people. The imitation game, which tests computers' cognitive ability, is like this study. Alan Turing's Turing test assesses a machine's human-like reasoning ability. Due to its thorough examination of computer skills and the abstract concept of "intelligence", the Turing test has become the standard for assessing AI. Marvin Minsky and John McCarthy founded DSRPAI in 1956 (Haenlein & Kaplan, 2019). The eight-week conference's main goal was to integrate research and teaching across academic fields. This alliance aimed to create novel AI research projects that mimic human cognition. AI has evolved throughout time. Fiction has been inspired by AI. The iRobot vacuum uses machine learning to clean and overcome difficulties. AI relies on machine learning to teach computers new skills and information (Dickey et al., 2019). Modern culture has incorporated machine learning and AI due to the internet and computer technologies. Fraihat et al. (2023) suggest that technology might help rising countries overcome poverty, energy scarcity, and infrastructural issues. As promised, machine learning allows computer systems to improve their performance autonomously using empirical data. Machine learning can anticipate and recommend using large datasets and statistical analysis. Spotify uses machine learning in its operations. This software uses machine learning to find relationships between audio metrics, tempo, genre, and instrument attributes. Spotify can create a song recommendation system using this strategy. The recommender system may suggest songs based on prior listening habits. Supervised, unsupervised, and reinforced machine learning methods exist.

According to Iriondo (2018), machine learning algorithms can only forecast using past data. Unsupervised learning uses a different approach. Unsupervised learning is a computational process in which a computer independently analyses data and draws conclusions (Foud Ali et al., 2022; Hassan et al., 2022; Salhab et al., 2023). Unsupervised learning methods classify data based on its structure, unlike supervised learning, which needs data labels. Reinforcement learning is a popular machine learning technique in which the machine uses data from its interactions with the environment to maximize rewards and minimize negative outcomes. "Reinforcement learning" comes from the machine's capacity to continuously learn from its surroundings. Reinforcement learning is used in many computer systems, such as chess games, to monitor and analyze user activities (Iriondo, 2018). Reinforcement learning improves interactive experiences in many situations.

Using Big Data, cloud computing, and data science, Assisted AI automates simple tasks to aid decision-making. "Assisted AI" uses AI to improve human decision-making (Munoko et al., 2020). Assisted AI requires faith in the AI system's ability to do its task. AI streamlines boring activities, freeing up time and resources for more complicated jobs. Rice (2020) claims that enhanced artificial intelligence lets businesses and people tackle previously unachievable objectives. Helping people make decisions instead of trying to duplicate human intelligence achieves this goal (Al-Qudah et al., 2023; Rehman et al., 2023).

Augmented AI's capacity to make certain judgements autonomously under human supervision makes it more complicated than Assisted AI (Carter & Nielsen, 2017). Augmented AI can solve problems creatively, not only find patterns and execute pre-programmed replies. Users of Augmented AI must evaluate its results due to its fallibility. Munoko et al. (2020) suggest that augmented AI poses ethical concerns about user autonomy (p. 219). If an inexperienced person manages an Augmented AI system, there may not be enough to use it properly.

Autonomous cognitive systems are the third kind of AI. Totschnig (2020) claims that Autonomous AI is the ultimate degree of artificial intelligence since it allows computers, bots, and systems to act autonomously without human involvement. Autonomous AI is considered the most complicated in this field since it can work without human intervention. Autonomous AI systems may learn from their surroundings and perform dangerous or impossible tasks. Drones, also known as unmanned aerial vehicles (UAVs), are used to inventory assets in distant places without human intervention. According to Munoko et al. (2020), autonomous system activities without transparency are ethically problematic (Alhaj et al., 2023). Thus, people must manage or understand these automated systems' decision-making processes (p. 219). AI differs from software systems like Robotic Process Automation (RPA) in its capacity to think. RPA speeds up many monotonous administrative processes and is widely utilized. Robotic process automation (RPA) automates repetitive and rule-based operations using scripts, according to Gotthardt et al. (2020). RPA prioritizes process-driven activities above AI. Robotic Process Automation (RPA) automates rules-based procedures using existing technology and human judgement. Software robots automate flexible processes that may be mechanized to boost productivity and improve operations in robotic process automation (RPA). Robotic process automation (RPA) is only useful for digital data. Robotic process automation (RPA) allows data duplication, transfer, and correlation among software applications. Technology fails to validate data via human touch or even simple phone calls. RPA's rule-based architecture and task-oriented orientation may restrict its learning ability compared to other artificial

intelligence. RPA and AI are not frequently employed in accounting. Gotthardt et al. (2020) found that just a small percentage of companies consider their AI application fully matured. However, 15% of people think their RPA system is mature. The accounting industry is experimenting with AI and RPA. Only a few companies can pioneer AI and RPA.

Application of Artificial Intelligence (AI) in the Accounting Field

- AI has great potential and skill. AI has outperformed humans in several tasks. Its capacity to beat human champions in chess, gambling, and disease diagnostics proves this. Due to AI's powerful capabilities, accounting is a hot topic. Like any new technology, accounting's use of AI has stirred much enthusiasm and skepticism. Accountants have many advantages, but they also face many obstacles. AI has had a major influence on the accounting profession, as well as other industries. We do not know the entire extent of its impact. AI is a subfield of computer science that aims to create computational systems that can do activities that previously needed human cognition. AI can analyze financial data, automate various activities, and provide vital insights to improve decision-making. Stancu and Duțescu (2021) state that several empirical research have proven that AI may significantly change accounting. AI improves data input efficiency in automated data entry systems. Leases, invoices, contracts, and receipts may benefit from optical character recognition (OCR) technology.
- It is noted that AI algorithms are employed to find anomalies in large datasets, with the goal of detecting harmful activity. Predictions and forecasts may be made using past financial data and external influences using artificial intelligence.
- To make it academic, the user's content needs no adjustments. Accounting systems may be improved by AI. Job automation includes data sampling, risk analysis, transaction validation, detail testing, event matching, and anomaly detection. AI can change tax compliance and planning. Artificial intelligence can react to changing tax laws and make modifications. It may help identify tax optimization possibilities and ensure compliance with local and international regulatory frameworks and tax legislation. The rapid incorporation of AI into accounting has raised awareness of its benefits.
- The benefits of incorporating AI within multinational corporations (MNCs).

Many studies, (e.g., Omoteso, 2012), have proven that AI in accounting and auditing offers many advantages. The framework improves decision-making, reduces time and effort waste, expands staff training, develops competence for less-experienced workers, improves communication, and improves consistency. Accounting advantages from AI usage. These are some of the dissertation themes. AI effectively manages massive financial data and detects patterns, trends, and anomalies that humans may miss. The above benefits suggest accounting might employ AI. AI may improve operational efficiency and give vital insights to help accountants make educated decisions and simplify financial administration. AI applications in accounting have several opinions. Chukwuani and Egiyi (2020) suggest that accounting will be affected by AI integration. Fraudulent activities, accounting data quality, and conventional accounting and auditing processes may improve. Accountants and organizations may save money by keeping up with AI advances in accounting and auditing. This phenomenon may also revolutionize accounting by shifting accountants' attention from mundane tasks to data-driven analysis and decision-making. Bizarro and Dorian (2017) suggest using metadata-level AI-driven automation to review and compare internal and external sources of information, such as source material, paperwork processing, conference calls, emails, press releases, and news media. Makridakis (2017) suggests that those that fully embrace and use AI and are prepared to take entrepreneurial risks will have a significant economic advantage. Innovative products or services may become globally successful companies, achieving this edge. According to Van Bekkum and Borgesius (2022), many questions about professional AI use remain unanswered. AI systems need large amounts of sensitive data. Data privacy protection is crucial to protecting people's rights and reducing risks from illegal data retrieval and security breaches. Data quality and features affect AI bias. Biased data may lead to prejudiced AI results. Due to their complex designs and frequent usage of deep learning, artificial intelligence models may be challenging to evaluate. Lack of transparency and explainability in AI systems may lead to enquiries into the cognitive processes that underpin AI decisions, hindering AI trust.

The use of AI has the capacity to obviate the need for human involvement in performing mundane tasks. The issue has raised concerns around job loss and the need to equip the workforce with further training or education to meet the demands of emerging employment opportunities in the market. The use of biased or low-quality data for training AI models may lead to erroneous predictions and harmful decision-making, hence exacerbating any existing bias or inaccuracy present in the training data. Various businesses and countries have formulated distinct legislation pertaining to the use of AI and the governance of data. Due to the dynamic and rapid progression of these standards, attaining compliance may provide challenges. The potential for AI to bring about a paradigm shift in several sectors is widely acknowledged, although its extensive use gives rise to ethical inquiries. Concerns over AI-based employment practices are particularly justified in instances when they have the capacity to perpetuate discriminatory biases, such as when autonomous vehicles are tasked with making decisions that directly impact human lives. It is conceivable that AI systems may be targeted by cyberattacks. Adversarial assaults are a kind of attack that may be used against machine learning systems. These assaults include the manipulation of input data with the intention of deceiving the system into generating false predictions.

If developers fail to adequately represent the diversity of society, there is a risk of producing artificial intelligence algorithms that exhibit prejudice, hence impeding their ability to effectively cater to the needs and expectations of all users. Smaller enterprises or those operating within resource-limited contexts may have challenges (AI Tarawneh et al., 2023; Shan et al., 2022), in using and implementing AI systems due to the substantial computational resource and infrastructure demands involved (Alawadhi et al., 2022b; Foud Ali et al., 2022). Certain industries or occupational classifications may see more significant impacts than others due to the possible displacement of employment resulting from the extensive use of AI in job-related activities. This phenomenon has the potential to induce fluctuations in the economy. The integration of AI systems into extant workflows and decision-making processes may provide challenges in striking a harmonious balance between human judgment and AI ideas. In domains characterized by significant consequences, such as healthcare and finance, the allocation of responsibility and the establishment of accountability for decisions made by artificial intelligence systems may pose complex and intricate difficulties.

To surmount these challenges, it is imperative to implement all-encompassing legislation aimed at safeguarding data privacy and alleviating algorithmic bias. Additionally, incorporating ethical principles into the realm of AI, prioritizing diversity and inclusivity in AI advancement, and fostering transparency and comprehensibility in AI models are crucial measures. In order to ensure the ethical and suitable use of AI for the advancement of society, it is imperative to underscore the importance of ongoing research, joint endeavors, and transparent public dialogue.

Factors to Consider While Implementing Artificial Intelligence in the Field of Accounting

Undoubtedly, the use of AI in the domain of accounting yields several benefits. Nevertheless, there are certain challenges that need to be addressed to successfully integrate AI-powered solutions within this sector. According to Soori et al. (2023), the incorporation of AI into the domain of accounting entails the management of highly confidential and critical financial information. Securing sensitive information against infiltration, breach, and hacking is a substantial problem. The establishment of comprehensive data security protocols is of utmost importance for organizations to safeguard financial data and adhere to essential data protection regulations such as GDPR and CCPA. Incorporating encryption, permissions, and safe storage are among the essential ways that must be included into the protocols. AI systems use algorithms and patterns derived from data to facilitate optimal decision-making. The ethical use of AI within the field of accounting necessitates meticulous examination of potential biases, the significance of impartiality, and the degree of transparency. Businesses must address concerns about AI-driven judgements that have the potential to impact several stakeholders, including loan approvals, credit ratings, and resource allocation. This is crucial to ensure fairness, objectivity, and accountability in the decision-making process. In 2023, detailed research was undertaken by Soori et al. (2023) to emphasize the significance of companies in tackling these challenges. The insufficiency of experts with expertise in both accounting and artificial intelligence is a recurring issue. The implementation of programs focused on enhancing the skills and knowledge of professionals in the fields of accounting and finance is crucial for effectively addressing this gap and optimizing the use of artificial intelligence (AI) solutions (Soori et al., 2023).

The Integration of AI into conventional accounting methods is a complex and demanding process. It is conceivable that older systems may lack the necessary architectural framework to include artificial intelligence components. This necessitates a significant amount of effort to guarantee the compatibility of AI systems with existing software, the synchronization of their data, and the smooth integration of their operations. The seamless integration of a solution with pre-existing enterprise resource planning (ERP) systems and other solutions is of utmost importance (Natour et al., 2021; Alshurafat, 2023).

Employees may express resistance towards the use of AI in the field of accounting, mostly driven by apprehensions around the potential displacement of human workers by automated systems and a prevailing skepticism about the dependability of computer-generated conclusions (Alshurafat, 2023). To effectively address these challenges, it is imperative to adopt a holistic strategy including emerging technology, regulatory structures, ethical guidelines, and ongoing educational initiatives. The proficient use of this methodology is pivotal to the optimal and proficient incorporation of artificial intelligence into accounting protocols.

Adoption and Implementation of Artificial Intelligence (AI) in Accounting Practices

Given the ethical significance associated with accounting, more investigation is needed to explore the potential ramifications of AI. The ethical ramifications associated with the use of AI are widely acknowledged and have been extensively scrutinized in scientific publications (Floridi, 2018; Hagendorff, 2020; Jobin et al., 2019). The emergence of ethical guidelines for the use of AI has been prompted by the development of many publications that delineate ethical principles. These standards have been established by a range of entities, including corporations, governments, and international bodies. Nevertheless, the significance of artificial intelligence in the realm of accounting is not emphasized in these standards. Jobin et al. (2019) did an extensive meta-analysis examining the examination of ethical principles pertaining to AI. The researchers identified eleven distinct concepts via an analysis of the literature under investigation. It is essential to emphasize, though, that none of these criteria effectively encapsulate the notion of fulfilling employment. Ryan and Stahl (2020) argue that a compelling need exists

to provide training and resources for human workers who are being displaced by AI. This approach fails to adequately consider the broader ramifications of AI inside the accounting industry, as well as the need for collaborative relationships between humans and AI in professional environments. Although the AI4People paradigm does not explicitly include accounting, it does recognize the potential of AI to alleviate the tedium associated with some occupations (Floridi et al., 2018, p. 691).

Accounting ethics, as a subdivision of practical philosophy that deals with normative matters, encompasses moral philosophy and endeavors to address the fundamental inquiry of appropriate action in society (Alawadhi et al., 2022a; Alqaraleh et al., 2022). According to Leidner and Plachouras (2017), this ethical framework has the potential to be used in several aspects of human behavior (p. 30). Ethics encompasses a wide range of moral concepts that have influence on people and their processes of decision-making. Given the heavy dependence of AI systems on algorithms developed by humans to facilitate decision-making, it is imperative to thoroughly contemplate the ethical ramifications associated with their implementation. An instance illustrating the potential ethical implications of incorporating a novel technology into the decision-making process may be seen in the use of machine learning. One possible use of integrating machine learning-based prediction models into an account is the ability to anticipate and detect possibly fraudulent activities. Contemporary autonomous artificial intelligence (AI) systems operate independently by using accessible data to generate interpretations and predictions. This poses ethical dilemmas as contrasted with earlier systems that depended on human input for pre-population (Munoko et al., 2020).

The ethical issues pertaining to the use of AI are contingent upon the presence of informed consent and user awareness. All these concerns pertain to the process of obtaining consent from persons whose data is being used or whose decisions are influenced by artificial intelligence. The development of the idea of informed consent (Naik et al., 2022) aims to ensure that individuals possess comprehensive knowledge about the use of personal data, the precise AI technologies employed, and the potential ramifications of decisions facilitated by AI. The concept of informed consent is closely intertwined with the idea of user awareness, which involves teaching individuals about the many aspects of AI technology and its potential consequences. The notion of informed consent relates to the dissemination of thorough and readily understandable information to persons about the use of artificial intelligence (AI) technology and the handling of their personal data in the context of AI implementation. Granting individuals the autonomy to choose their participation in AI-enabled endeavors and ensuring their comprehension of the rationale behind data collection and use are of paramount importance. In situations when AI algorithms possess the capacity to impact an individual's rights or have significant influence over their life, the imperative of acquiring informed consent assumes heightened importance (Naik et al., 2022). It is important for organizations to exhibit full transparency about their intentions and strategies pertaining to the use of AI. Effectively communicating the function of AI technology in decision-making, customer interactions, and other relevant domains is of utmost importance. According to Naik et al. (2022), the authors believe that the incorporation of openness is a crucial factor in fostering trust in AI systems. This approach enables users to access the necessary information, empowering them to make educated choices about their engagements with these systems.

Informed Consent and user awareness: The use of AI raises significant ethical concerns, particularly in relation to informed permission and user awareness. The difficulties revolve on the procedure of acquiring consent from individuals whose data is being used or whose judgments are impacted by artificial intelligence systems. The notion of informed consent aims to guarantee that people are provided with sufficient knowledge about the utilization of their data, the specific AI technologies used, and the possible ramifications connected with AI-driven judgments (Naik et al., 2022). The notion of user awareness is closely linked to the concept of informed consent since it encompasses the process of providing users with information about the many aspects of AI technology and their possible consequences. In the context of implementing artificial intelligence (AI), the concept of informed consent pertains to the provision of comprehensive and comprehensible information to individuals on the use of AI technologies and the handling of their personal data. Granting people the liberty to make informed choices about their participation in processes driven by AI is of utmost importance. Additionally, it is crucial to guarantee that individuals comprehend the underlying objectives for collecting and using their personal data. The need of obtaining informed permission becomes more salient in situations where artificial intelligence (AI) algorithms can affect an individual's rights or have a substantial effect on their existence (Alghazzawi et al., 2022; Al-Okaily et al., 2022; Naik et al., 2022). The paramount significance of organizations is in guaranteeing openness regarding the implementation methods of artificial intelligence (AI). The effective communication of the use of artificial intelligence (AI) technology in decision-making processes, consumer interactions, and other pertinent fields has significant significance. Naik et al. (2022) assert that the incorporation of transparency is of paramount importance in fostering trust and empowering users to make informed decisions in their engagements with artificial intelligence (AI) systems.

Users Orientation: The education of end-users of the ramifications of AI technology is of utmost importance. A comprehensive comprehension of the underlying mechanisms of AI algorithms, together with their possible benefits and inherent limitations in facilitating decision-making processes, is of utmost importance for individuals. It is essential for businesses to enhance their efforts in educating their clients about the advantages and disadvantages of artificial intelligence (Al-Okaily & Al-Okaily, 2022), therefore enabling them to make well-informed choices pertaining to the use of this technology. In the context of managing confidential data, obtaining explicit authorization has become more crucial, as emphasized by Zhang and Aslan (2021). The provision of access to and control over individuals' personal data, as well as their comprehension of

the processes involved in its collection, analysis, and dissemination, is of utmost importance. It is essential for businesses to guarantee compliance with data protection legislation and to use ethical and secure practices when handling user data. It is important for organizations to maintain transparency on the use of AI in decision-making processes, particularly in cases where these judgments have substantial implications for individuals, such as the assessment of creditworthiness or job prospects. Zhang and Aslan (2021) assert the importance of facilitating human comprehension of the many elements that influence decision-making processes driven by artificial intelligence. Facilitating convenient access to human assistance is equally vital to ensure individuals may readily seek support when required.

Informed Consent: The inclusion of a checkbox on a website does not adequately meet the criteria for fulfilling the obligations of Informed Consent. The provision of mechanisms for people to obtain, modify, and erase the personal data stored about them is of utmost importance. Furthermore, individuals possess the entitlement to be informed about their legal entitlements pertaining to choices influenced by AI that significantly affect their livelihoods. Establishing and sustaining consistent channels of communication between enterprises and consumers is of paramount importance in the process of integrating AI and managing its consequential impacts. Zhang and Aslan (2021) emphasize the need to provide clients with updated information about advancements in AI and the potential ramifications that may ensue. The implementation of this approach is crucial for maintaining transparency and cultivating user confidence. Nevertheless, the integration of AI technology needs informed consent and user consciousness to ensure effectiveness and ethical integrity. To promote a comprehensive understanding of AI use and enable users to exert control over their data and interactions with AI systems, it is imperative for organizations to prioritize the principles of openness, education, and user empowerment. By adhering to these ethical principles, organizations have the potential to enhance customer trust and happiness, while also making a substantial contribution towards fostering an ethical and responsible AI ecosystem.

Adherence to the legal and regulatory framework: To function validly and responsibly within the confines of a given society, people, businesses, and other organizations must comply to the legal and regulatory frameworks in place. The concept comprises the adherence of appropriate legal laws, rules, and conventions that control different elements of human activity, such as commercial enterprises, environmental preservation, consumer right protection, data privacy, and other important areas.

Data Privacy and Security: Information management professionals, particularly in the modern digital era, have a responsibility to ensure the confidentiality and safety of their clients' data. Their primary objective is to prevent unauthorized individuals from gaining access to, using, disclosing, or destroying sensitive data. An individual's right to direct the collection, processing, and dissemination of his or her own personal information lies at the heart of the concept of data privacy. The procedure comprises following the law and being respectful of people's wishes while handling their personal information. "Personal data" refers to any information that may be used to identify and contact a single person. Information about an individual's identity, including their name, home address, date of birth, email address, phone number, bank details, and IP address, may be gathered and processed. (Zhang & Aslan, 2021).

Transparency and Explainability: Ensuring transparency and explainability of AI algorithms and decision-making processes is of paramount importance for enterprises. It is essential for both users and stakeholders to prioritize the cultivation of a comprehensive comprehension about the decision-making mechanisms used by artificial intelligence systems. To cultivate trust and enhance accountability in the use of AI technology, it is essential for individuals to possess a comprehensive understanding of this concept.

Data Privacy and Security: Ensuring data privacy and implementing robust security measures are of utmost importance for enterprises to protect sensitive information. Obtaining clear consent from individuals whose data is being utilized and adhering to relevant data protection legislation are crucial imperatives for firms.

Algorithmic Bias and Fairness: It is imperative for organizations to proactively address and eliminate biases included in AI algorithms to avert the occurrence of discriminatory outcomes. It is imperative to consistently evaluate AI systems to ascertain their adherence to principles of fairness. This entails verifying that the algorithms employed by these systems exhibit impartial treatment towards all individuals, ensuring equity in their outcomes.

Human Oversight and Accountability: The inclusion of human supervision in the functioning of AI systems is of utmost importance to avoid complete dependence on automated decision-making processes for critical topics. The implementation of accountability measures is of utmost importance in efficiently managing mistakes and unanticipated repercussions that may emerge from choices driven by artificial intelligence.

Ethical Data Collection and Use: It is imperative to ensure that the data utilized for training artificial intelligence (AI) models is obtained in a manner that adheres to ethical and legal standards. It is imperative for organizations to refrain from utilizing data acquired by unethical means or that may encroach upon individuals' privacy rights.

Responsible Automation: There are many business processes that may benefit from being automated with the help of AI. Businesses must, however, give serious consideration to how such automation will affect their employees and the community at large. The goal is to create an automated system that is both responsible and effective in preventing the loss of jobs that aren't necessary.

Safeguarding against Misuse: It is imperative for organizations to exercise constant vigilance to mitigate the potential for misuse of AI technology. It is imperative to prevent the utilization of AI systems for detrimental objectives, including the dissemination of false information, surveillance practices, and hostile undertakings.

Informed Consent and User Awareness: Obtaining informed consent from people is crucial in scenarios where AI is used to make choices that directly affect them. The objective is to promote the widespread sharing of information on the use of AI and its consequential effects, with the aim of improving user awareness.

Continuous Monitoring and Evaluation: The establishment of a consistent monitoring procedure is of utmost importance in ensuring the evaluation of performance, accuracy, and ethical compliance of AI systems. Regular evaluations of AI outputs are essential to identify and mitigate any possible issues that may arise.

4.2 Theoretical Framework

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) has a prominent position within the domains of information systems and technology adoption research. The model in question was established by Venkatesh, Morris, Davis, and Davis in 2003 with the aim of enhancing comprehension and prediction of consumers' propensity to accept and use advanced technology. The Technology Adoption paradigm (TAM), the Theory of Reasoned Action (TRA), and the Theory of Planned Behavior (TPB) are integrated and further developed under the Unified Theory of Acceptance and Use of Technology (UTAUT) paradigm. The following elucidation pertains to the utilization of the Unified Theory of Acceptance and Use of Technology (UTAUT) in the examination of artificial intelligence's use in the field of accounting.

Performance Expectancy (PE): The term "performance expectancy" within the domain of AI accounting pertains to the perceptions held by accountants about the potential enhancements and efficiency gains that AI technologies may bring to their professional capabilities and workflow acceleration. When evaluating predicted performance, many factors are taken into consideration, such as enhanced precision, expedited data processing, and less reliance on human labor.

Effort Expectancy (EE): Effort expectation refers to how much ease and simplicity users anticipate while working with AI-powered bookkeeping software. For accountants to fully embrace AI, we need to know how much time and effort they believe AI accounting would save them by more manual processes like data input and computations.

Social Influence (SI): The term "social influence" refers to the influence that social factors, such as the advice and support given by coworkers, managers, and business professionals, have on an accountant's propensity to use AI accounting technologies. The presence of positive social influence has the potential to facilitate the widespread acceptance and implementation of artificial intelligence (AI) technologies within the field of accounting.

Facilitating Conditions (FC): Facilitating circumstances refer to the presence of essential resources and supporting mechanisms that are required for the effective implementation and exploitation of AI accounting in practical settings. This entails the supply of necessary hardware, software, training, and technical support. The existence of these facilitating elements may have a positive impact on the implementation of artificial intelligence technology within the domain of accounting.

Perceived Risk (PR): Accountants may perceive risks associated with AI accounting, such as concerns about data security, privacy, and potential job displacement. Addressing and mitigating these perceived risks is essential for increasing acceptance and adoption of AI technologies in accounting.

Job Relevance (JR): In the UTAUT framework, job relevance pertains to the extent to which individuals think that the utilization of AI accounting is congruent with their job duties and obligations. The likelihood of accountants adopting and utilizing AI technology is contingent upon their perception of the relevance and benefits associated with such technologies.

IT Self-Efficacy (SE): The concept of IT self-efficacy pertains to an individual's level of assurance and proficiency in utilizing information technology. There is a positive correlation between the level of IT self-efficacy among accountants and their inclination to adopt AI accounting solutions and effectively adjust to technological advancements.

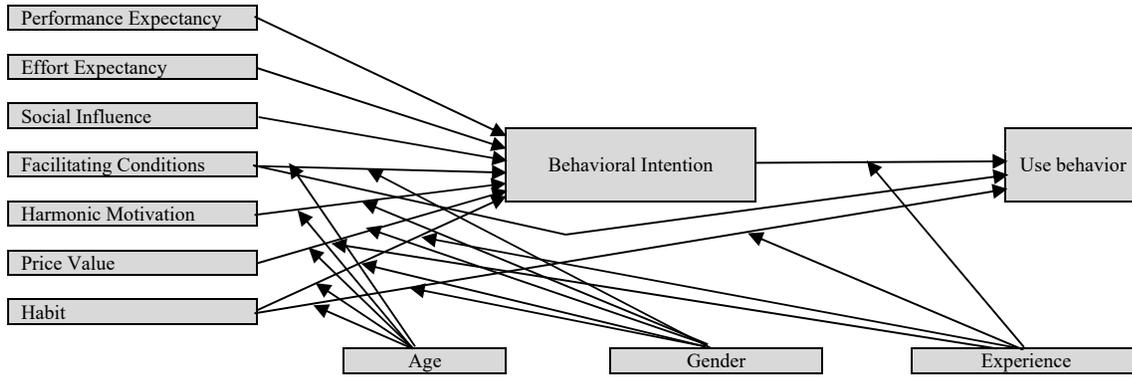


Fig. 1. DOI theory

By carefully considering these elements, both enterprises and governments may develop well-designed regulations to facilitate the use of artificial intelligence in financial reporting. Our organization offers educational seminars and training courses specifically designed for accountants, with the aim of enhancing their proficiency and confidence in using AI-based accounting software.

Minimize potential hazards by implementing rigorous protocols for data protection and effectively conveying the advantages of AI in the context of accounting.

Promote a conducive atmosphere that actively promotes the use of AI technology, while also incentivizing workers for their innovative contributions.

To facilitate a smooth integration of AI technology into accounting procedures, it is necessary to ensure the availability of essential resources and establish conducive circumstances.

To enhance comprehension of the determinants that influence the adoption of technology in the field of artificial intelligence (AI) accounting, scholars may find it advantageous to use the Unified Theory of Adoption and Use of Technology (UTAUT) framework. Furthermore, this resource may serve as a guide for effectively incorporating AI-driven solutions inside the accounting industry.

5. Research Methodology

The study area is Amman; it is surrounded by hills and valleys in the north-west, creating a lovely landscape. The area is a regional commerce, transportation, and political center due to its favorable location. This survey employed qualitative and quantitative methods to gather data. The literature review examined research goals. Research, journals, textbooks, and direct observation of international firms in Amman helped accomplish this. 2,353 staff from Amwaj International for Real Estate Investment, Arab Banking Corporation, G4S Secure Solutions Int. (Jordan), and Global Investment House form the population of the study. The researchers selected 379 cohort members using cluster and proportional sampling. The researchers recruited respondents via snowball sampling. Google Forms helped distribute the questions to chosen responders through WhatsApp groups and email. Snowball sampling prevented face-to-face interviews with participants. Due to their social ties, the snowball strategy helped find participants (Parker et al., 2019). 312 people completed and submitted the research's electronic questionnaires to meet all study requirements. Data was analyzed using statistical methods. Descriptive analysis answered research questions, whereas regression analysis tested the null hypothesis.

6. Data Analysis

6.1 Research Question One

What are the ethical implications of AI adoption in accounting for multinational corporations in Jordan?

Table 1
Percentage analysis of the ethical implications of AI adoption in accounting for multinational corporations in Jordan

Items	\bar{X}	SD	Decision
Data privacy and security	3.02	1.34	Agree
Algorithmic unbiases	2.96	1.30	Agree
Transparency and explainability of AI decisions	3.45	1.47	Agree
Responsibility and accountability	2.88	1.53	Agree
Third party usage protection	3.33	1.41	Agree
OVERAL INDEX	3.13	1.41	Agree

Legend: X = Mean; SD = Standard Deviation; N: 312

Table 1 presents the findings of the research study pertaining ethical compliances on the AI adoption in accounting for multinational corporations in Jordan, as perceived by the participants of the study. The entire index had a grand mean of 3.13 and a standard deviation of 1.41. Item 1 indicate that the assertion "Transparency and explainability of AI decisions "has the highest average score of 3.45. Conversely, the statement "responsibility and accountability" has the lowest mean score of 2.88 and a standard deviation of 1.53. Therefore, based on the above analysis, ethical compliances priorities by the sample corporations shows that they pay attention to transparency and explainability of AI decisions in course of adopting AI for accounting in multinational corporations in Jordan.

6.2 Research Question Two

To find out the potential ethical challenges of AI in accounting that affects responsible AI adoption among multinational corporations in Jordan?

Table 3

Mean rating analysis of potential ethical challenges of AI in accounting that affects responsible AI adoption among multinational corporations in Jordan

Items	\bar{X}	SD	Decision
Consumer protection	3.69	1.38	Agree
individuals' rights, and fairness in AI decision-making processes	3.08	1.56	Agree
Employees attitude towards change management	3.23	1.58	Agree
Technical glitches	3.13	1.50	Agree
Algorithmic manipulation	2.64	1.54	Agree
OVERAL INDEX	3.16	1.51	Agree

Legend: X = Mean; SD = Standard Deviation; N: 312

The statistical analysis presented in Table 2 indicates that the overall index mean score of 3.16, with a standard deviation of 1.51, demonstrates a positive correlation between potential ethical challenges of AI in accounting that affects responsible AI adoption among multinational corporations in Jordan. Question item (1) obtained the highest mean score of 3.69, indicating that respondents agreed with the statement that consumer protection is a potential challenge in adopting AI. On the other hand, question item (5) received a lower mean score, which suggests that respondents were less inclined to agree with the assertion that algorithmic manipulation is a potential challenge of AI adopting in MNC. Therefore, based on the above analysis, there are potential ethical challenges of AI in accounting that must be addressed to ensure responsible AI adoption is significant.

6.3 Research Question Three

What are the key elements in the framework for the responsible use of AI in accounting practices among multinational corporations in Jordan?

Table 4

Percentage analysis of the key elements in the framework for the responsible use of AI in accounting practices among multinational corporations in Jordan

Items	\bar{X}	SD	Decision
Human-AI collaboration	3.66	1.49	Agree
Ethical AI development and use	3.07	1.55	Agree
Regulatory compliance	3.23	1.58	Agree
Long-term ethical strategy	3.13	1.50	Agree
Ethics training and awareness	2.70	1.64	Agree
OVERAL INDEX	3.16	1.51	Agree

Legend: X = Mean; SD = Standard Deviation; N: 312

The statistical analysis presented in Table 4 indicates that the overall index mean score of 3.16, with a standard deviation of 1.51, shows the key elements in the framework for the responsible use of AI in accounting practices among multinational corporations in Jordan. Question item (1) obtained the highest mean score of 3.66, indicating that respondents agreed with the statement that human-AI collaboration as a key element responsible for the use of AI in accounting while question item (5) received a low mean score, which suggests that respondents were less inclined to agree with the assertion that ethics and training awareness list among the key element in the framework for the responsible use of AI in MNC. Therefore, based on the above analysis, the key elements in the framework for the responsible use of AI in accounting practices among multinational corporations in Jordan is statistically significant.

6.4 Hypothesis Testing

There is no significant relationship between the joint influence of compliance of transparency and data privacy, potential ethical challenges of AI and Key elements of AI framework and the use of AI in accounting practices in multinational

corporations. To test the hypothesis, regression analysis was then used to analyze the data in order to determine the relationship between the two variables.

Table 5

Model Summary of the joint influence of ethical compliances, potential ethical challenges of AI and Key elements of AI framework and the use of AI in accounting practices in multinational corporations

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.949 ^a	.900	.899	.947	.900	927.247	3	309	.000	2.010

Source: Author's Computation (SPSS Version 20.0 IBM)

The calculated R-value 094 was greater than the table R-value of 0.90 at 0.000 alpha level with 2.01 value of Durbin Watson. The R-square value 0.90 predicts 90% of the joint influence of ethical compliance of transparency and data privacy, potential ethical challenges of AI and Key elements of AI framework and the use of AI in accounting practices in multinational corporations. This rate of percentage is highly positive and therefore implies that there is significant joint influence of the transparency and data privacy, potential ethical challenges of AI and Key elements of AI framework and the use of AI in accounting practices in multinational corporations. It was pertinent to find out if there is significant difference in the influence exerted by each independent variable (see Table 6).

Table 6

Analysis of variance of the difference in the influence exerted by each independent variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2494.021	3	831.340	927.247	.000 ^b
	Residual	277.040	309	.897		
	Total	2771.061	312			

Source: Author's Computation (SPSS Version 20.0 IBM)

The table presents the calculated F-value as (927.247) as the computer critical F-value (0.000^a) is below the probability level of 0.05 with 3 and 309 degrees of freedom. The result therefore means that there is significant difference in the influence exerted by the independent variables on the dependent variable. To test the contribution of each of the independent variables, coefficient analysis was performed (see Table 7).

Table 7

Coefficient analysis of the influence of each of independent variable on the dependent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.923	.644		2.987	.003
	Transparency and data privacy	1.657	1.129	.821	12.847	.000
	Potential ethical challenges of AI	-.105	1.106	-.053	10.992	.322
	Key elements of AI framework	.314	1.157	.182	8.006	.046

Source: Author's Computation (SPSS Version 20.0 IBM)

From the table, it was observed that the most positively influencing the use of AI in accounting practices in multinational corporations was Transparency and data privacy (t: 12.847, B: .129). This was seconded by Potential ethical challenges of AI (t: 10.99, B: 1.10). The third one was Key elements of the AI framework (t: 8.00, B: 1.15) seen having influence on the use of AI in accounting practices in multinational corporations.

7. Discussion of Findings

The research findings shown in Table 1 highlight several significant ethical considerations associated with artificial intelligence (AI). These include concerns regarding the safeguarding of data privacy and security, the potential for algorithmic bias, the need for openness and explainability in AI decision-making processes, the allocation of responsibility and accountability, as well as the potential influence on the workforce. The examination of Table 2 reveals that the ethical dilemmas highlighted emphasize the significance of establishing a comprehensive structure that not only optimizes the potential advantages of artificial intelligence in the field of accounting, but also maintains ethical principles, protects individuals' rights, and guarantees fairness in decision-making procedures. The examination of table three reveals that the framework for responsible AI adoption in multinational corporations (MNCs) in Jordan comprises crucial pillars. These pillars include ethical development and utilization of AI, collaboration between humans and AI, training and awareness regarding ethics, compliance with regulations, and the formulation of a long-term ethical strategy. The primary objective of this framework is to provide guidance to multinational corporations (MNCs) on the responsible integration of AI technology. It seeks to promote a culture that prioritizes ethical awareness and ensures that MNCs connect their AI practices with larger issues related to ethics, legality, and society.

8. Conclusion

The study titled "Ethical Implications of Artificial Intelligence in Accounting: A Framework for Responsible AI Adoption in Multinational Corporations in Jordan" provides insights into the ethical concerns arising from the extensive utilization of AI technologies in accounting departments of multinational corporations (MNCs) in Jordan. This research highlights the need for a comprehensive framework to provide guidance to multinational corporations (MNCs) on the ethical use of artificial intelligence (AI), as well as the ethical concerns linked to the adoption of AI. In line with previous research, the findings of the current study support the conclusions reached by Issa et al. (2016) and Dai and Vasarhelyi (2016).

Recommendations

- Considering the research findings and the proposed framework for responsible use of AI in accounting among multinational corporations (MNCs) in Jordan, the following recommendations are put forth:
- Multinational corporations (MNCs) ought to establish ethical review boards or committees that include a diverse range of experts from many disciplines, such as ethicists, data privacy specialists, AI researchers, and accounting professionals. These boards have the capacity to evaluate AI initiatives and analyze their prospective ethical ramifications prior to their execution.
- It is recommended that multinational corporations (MNCs) offer thorough training on AI ethics to personnel who are engaged in the development, deployment, and decision-making processes of AI. The focal point of this training program should be the prioritization of responsible utilization of artificial intelligence, the cultivation of ethical decision-making skills, and the development of an understanding about the existence of potential biases and discriminatory practices (Svetlova, 2022).
- Multinational corporations (MNCs) ought to give precedence to the use of AI models and algorithms that provide transparency and explainability. Gaining insight into the rationale behind decisions made by artificial intelligence is crucial in establishing credibility with stakeholders and upholding adherence to ethical standards.
- Multinational corporations (MNCs) ought to engage in routine ethical assessments of AI systems inside their accounting procedures to detect and address any instances of prejudice, violations of data privacy, or other ethical concerns. This practice aids in maintaining continuous adherence to ethical principles and standards.
- Multinational corporations (MNCs) ought to adopt comprehensive data governance and security protocols in order to safeguard sensitive financial and personal information. It is imperative to ensure that data processing procedures are in accordance with the pertinent data privacy rules in Jordan.

Acknowledgments

We acknowledge the role of Middle East University, Amman Jordan as significant in this research.

References

- Al Tarawneh, E., Alqaraleh, M. H., Ali, B., & Bani Atta, A. (2023). The Impact of the Efficiency and Effectiveness of Electronic Accounting Information Systems on the Quality of Accounting Information. *Information Sciences Letters*, 12(3), 1685-1692. doi:<http://dx.doi.org/10.18576/isl/120352>
- Alawadhi, S. A., Zowayed, A., Abdulla, H., Khder, M. A., & Ali, B. J. (2022b). Impact of Artificial Intelligence on Information Security in Business. Paper presented at the 2022 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSIS).
- Alghazzawi, R., Alkhwalidi, A.F., & Al-Okaily, A. (2022). The effect of digital accounting systems on the decision-making quality in the banking industry sector: a mediated-moderated model. *Global Knowledge, Memory and Communication*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/GKMC-01-2022-0015>.
- Alhaj, A., Zanoon, N., Alrabea, A., Alnatsheh, H., Jawabreh, O., Abu-Faraj, M., & Ali, B. J. (2023). Improving the Smart Cities Traffic Management Systems using VANETs and IoT Features. *Journal of Statistics Applications & Probability*, 12(2), 405-414. doi:<http://dx.doi.org/10.18576/jsap/120207>
- Alles, M., & Gray, G. L. (2016). Incorporating big data in audits: Identifying inhibitors and a research agenda to address those inhibitors. *International Journal of Accounting Information Systems*, 22, 44-59.
- Al-Okaily, M. (2022). Toward an integrated model for the antecedents and consequences of AIS usage at the organizational level. *EuroMed Journal of Business*. Vol. and No. ahead-of-print. <https://doi.org/10.1108/EMJB-05-2022-0100>.
- Al-Okaily, M. (2023). Does AIS usage matter in SMEs performance? an empirical investigation under digital transformation revolution. *Information Discovery and Delivery*. Vol. and No. ahead-of-print. <https://doi.org/10.1108/IDD-08-2022-0072>.
- Al-Okaily, M., & Al-Okaily, A., (2022). An Empirical Assessment of Enterprise Information Systems Success in a Developing Country: The Jordanian Experience. *The TQM Journal*, 34(6), 1958-1975. <https://doi.org/10.1108/TQM-09-2021-0267>.
- Alqaraleh, M. H., Almari, M. O. S., Ali, B., & Oudat, M. S. (2022). The mediating role of organizational culture on the relationship between information technology and internal audit effectiveness. *Corporate Governance and Organizational Behavior Review*, 6(1), 8-18. doi:<https://doi.org/10.22495/cgobrv6i1p1>

- Al-Qudah, A. A., Hamdan, A., Al-Okaily, M., & Alhaddad, L. (2023). The impact of green lending on credit risk: Evidence from UAE's banks. *Environmental Science and Pollution Research*, 30(22), 61381-61393.
- Alshurafat, H. (2023). The usefulness and challenges of chatbots for accounting professionals: application on ChatGPT.
- Appelbaum, D., Kogan, A., Vasarhelyi, M., & Yan, Z. (2017). Impact of business analytics and enterprise systems on managerial accounting. *International journal of accounting information systems*, 25, 29-44.
- Bankins, S., & Formosa, P. (2023). The ethical implications of artificial intelligence (AI) for meaningful work. *Journal of Business Ethics*, 1-16.
- Bankins, S., Formosa, P., Griep, Y., & Richards, D. (2022). AI decision making with dignity? Contrasting workers' justice perceptions of human and AI decision making in a human resource management context. *Information Systems Frontiers*, 24(3), 857-875.
- Berk, R. A. (2021). Artificial intelligence, predictive policing, and risk assessment for law enforcement. *Annual Review of Criminology*, 4, 209-237.
- Bizarro, P. A., & Dorian, M. (2017). Artificial intelligence: The future of auditing. *Internal Auditing*, 5(1), 21-26.
- Bruun, E., & Duka, A. (2018). Artificial intelligence, jobs, and the future of work. *Basic Income Studies*, 13(2), 1-15.
- Carter, S., & Nielsen, M. (2017). Using artificial intelligence to augment human intelligence. *Distill*, 2(12), e9.
- Chen, C. X., Hudgins, R., & Wright, W. F. (2022). The effect of advice valence on the perceived credibility of data analytics. *Journal of Management Accounting Research*, 34(2), 97-116.
- Chukwuani, V. N., & Egiyi, M. A. (2020). Automation of accounting processes: impact of artificial intelligence. *International Journal of Research and Innovation in Social Science (IJRISS)*, 4(8), 444-449.
- Dai, K. and Vasarhelyi, A. (2016). Continuous Audit Intelligence as a Service (CAIaaS) and Intelligent App Recommendations: Emerging Technol. Account (2020).
- Dickey, G., Blanke, S., & Seaton, L. (2019). Machine Learning in Auditing. *CPA Journal*, 89(6), 16-21.
- Dillard, J. F., & Ruchala, L. (2005). The rules are no game: From instrumental rationality to administrative evil. *Accounting, Auditing & Accountability Journal*, 18(5), 608-630.
- Floridi, L. (2018). AI4People: An ethical framework for a good AI society. *Minds and Machines*, 28(4), 689-707.
- Foud Ali, A., Zowayed, S. I., Showaiter, D. A., Khder, M. A., & Ali, B. J. (2022, June). Artificial intelligence's potential on Bahrain's labour market. In *2022 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSIS)* (pp. 430-436). IEEE.
- Fraihat, A. Ahmad, Y., & Alaa, A. (2023). Evaluating Technology Improvement in Sustainable Development Goals by Analysing Financial Development and Energy Consumption in Jordan. *International Journal of Energy Economics and Policy*, 2023, 13(4), 348-355.
- Gay, L. R. (1996), *Educational Research: Competencies for Analysis and Application*, London: Prentice Hall Incorporated.
- Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., & Lehner, O. (2020). Current state and challenges in the implementation of smart robotic process automation in accounting and auditing. *ACRN Journal of Finance and Risk Perspectives*.
- Greenman, C. (2017). Exploring the impact of artificial intelligence on the accounting profession. *Journal of Research in Business, Economics and Management*, 8(3), 1451.
- Hagendorff, T. (2020). The ethics of AI ethics: An evaluation of guidelines. *Minds and Machines*, 30, 99-120.
- Hassan, W. M., Aldoseri, D. T., Saeed, M. M., Khder, M. A., & Ali, B. J. (2022). Utilization of Artificial Intelligence and Robotics Technology in Business. *Paper presented at the 2022 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSIS)*.
- Hatamlah, H., Allahham, M., Abu-AlSondos, I., Al-Junaidi, A., Al-Anati, G., & Al-Shaikh, M. (2023) The Role of Business Intelligence adoption as a Mediator of Big Data Analytics in the Management of Outsourced Reverse Supply Chain Operations, , *Applied Mathematics & Information Sciences*. 17 (5) 897-903
- Hatamlah, H., Allahham, M., Abu-AlSondos, I., Mushtaha, A., Al-Anati, G., Al-Shaikh, M., & Ali, B. (2023) Assessing the Moderating Effect of Innovation on the Relationship between Information Technology and Supply Chain Management: An Empirical Examination, *Applied Mathematics & Information Sciences*. 17(5) 889-895.
- Hatamlah, H., Allan, M., Abu-AlSondos, I., Shehadeh, M., & Allahham, M. (2023). The role of artificial intelligence in supply chain analytics during the pandemic. *Uncertain Supply Chain Management*, 11(3), 1175-1186.
- Iriondo, R. (2018). Machine Learning (ML) vs. *Artificial Intelligence (AI)—Crucial Differences*.
- Issa, H., Sun, T., & Vasarhelyi, M. A. (2016). Research ideas for artificial intelligence in auditing: The formalization of audit and workforce supplementation. *Journal of Emerging Technologies in Accounting*, 13(2), 1-20. <https://doi.org/10.2308/jeta-10511>.
- Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, 1(9), 389-399.
- Jordan's Artificial Intelligence Strategy and Implementation Plan (2023)
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business horizons*, 62(1), 15-25.
- Leidner, J. L., & Plachouras, V. (2017, April). Ethical by design: Ethics best practices for natural language processing. In *Proceedings of the First ACL Workshop on Ethics in Natural Language Processing* (pp. 30-40).
- Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures*, 90, 46-60.

- Munoko, I., Brown-Libur, H. L., & Vasarhelyi, M. (2020). The ethical implications of using artificial intelligence in auditing. *Journal of Business Ethics*, 167, 209-234.
- Naik, N., Hameed, B. M., Shetty, D. K., Swain, D., Shah, M., Paul, R., ... & Somani, B. K. (2022). Legal and ethical consideration in artificial intelligence in healthcare: who takes responsibility?. *Frontiers in surgery*, 9, 266.
- Natour, A. R. A., Shishan, F., Al-Dmour, A., Alghazzawi, R., & Alsharairi, M. (2021). Sustainable FinTech Innovation Orientation: A Moderated Model. *Sustainability*, 13(24), 1-12.
- Omotoso, K. (2012). The application of artificial intelligence in auditing: Looking back to the future. *Expert Systems with Applications*, 39(9), 8490-8495.
- Parker, C., Scott, S., & Geddes, A., (2019). *Snowball Sampling*. In P. Atkinson, S. Delamont, A. Cernat, J.W. Sakshaug, & R.A. Williams (Eds.), SAGE Research Methods Foundations. <https://doi.org/10.4135/9781526421036831710>
- PwC, (2017) Spotlight: Robotic Process Automation (RPA): What Tax Needs to Know.
- Rehman, S. U., Al-Shaikh, M., Washington, P. B., Lee, E., Song, Z., Abu-ALSondos, I. A., ... & Allahham, M. (2023). FinTech Adoption in SMEs and Bank Credit Supplies: A Study on Manufacturing SMEs. *Economies*, 11(8), 213.
- Ryan, M., & Stahl, B. C. (2020). Artificial intelligence ethics guidelines for developers and users: clarifying their content and normative implications. *Journal of Information, Communication and Ethics in Society*, 19(1), 61-86.
- Salhab, H., Allahham, M., Abu-ALSondos, I., Frangieh, R., Alkhwaldi, A., & Ali, B. (2023). Inventory competition, artificial intelligence, and quality improvement decisions in supply chains with digital marketing. *Uncertain Supply Chain Management*, 11(4), 1915-1924.
- Sandra Melo, (2018) Advantages and disadvantages of Google forms. <https://datascope.io/en/blog/advantages-and-disadvantages-of-google-forms/>
- Shan, R., Xiao, X., Dong, G., Zhang, Z., Wen, Q., & Ali, B. (2022). The influence of accounting computer information processing technology on enterprise internal control under panel data simultaneous equation. *Applied Mathematics and Nonlinear Sciences*. doi:10.2478/amns.2022.2.0157
- Soori, M., Arezoo, B., & Dastres, R. (2023). Artificial intelligence, machine learning and deep learning in advanced robotics, A review. *Cognitive Robotics*.
- Stancu, M. S., & Duțescu, A. (2021). The impact of the Artificial Intelligence on the accounting profession, a literature's assessment. In *Proceedings of the International Conference on Business Excellence* (Vol. 15, No. 1, pp. 749-758).
- Svetlova, E. (2022). AI ethics and systemic risks in finance. *AI and Ethics*, 2(4), 713-725.
- Totschnig, W. (2020). Fully autonomous AI. *Science and Engineering Ethics*, 26, 2473-2485.
- Van Bekkum, M., & Borgesius, F. Z. (2023). Using sensitive data to prevent discrimination by artificial intelligence: Does the GDPR need a new exception?. *Computer Law & Security Review*, 48, 105770.
- Warren, J. D., Moffitt, K. C., & Byrnes, P. (2015). How big data will change accounting. *Accounting horizons*, 29(2), 397-407.
- Wasserbacher, H., & Spindler, M. (2022). Machine learning for financial forecasting, planning and analysis: recent developments and pitfalls. *Digital Finance*, 4(1), 63-88.
- Zhang, K., & Aslan, A. B. (2021). AI technologies for education: Recent research & future directions. *Computers and Education: Artificial Intelligence*, 2, 100025.



© 2024 by the authors; licensee Growing Science, Canada. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).