



The Impact of Adopting Artificial Intelligence Technologies on the Reliability of Accounting Information Systems

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Abstract

This study aimed to examine the impact of using artificial intelligence technologies on the reliability of accounting information systems. It also sought to bridge a gap in the literature by elucidating the effect of AI technology adoption on the key determinants of accounting information systems reliability, and how this reflects on commercial banks and Islamic banks listed on the Amman Stock Exchange. The study adopted a descriptive-analytical approach, utilizing a structured questionnaire as a data collection tool distributed to a sample of employees from (15) banks, from which (236) valid questionnaires were obtained for analysis. The data were analyzed using SMART PLS 4 software to measure the impact of adopting AI technologies on the reliability of accounting information systems.

The study results demonstrated that the application of AI technologies brings about a fundamental transformation in the level of reliability of accounting information systems, explaining approximately (34%) of the variances in the various indicators used to measure reliability. Accordingly, the availability of AI technologies is perceived as offering significant opportunities to enhance the reliability and value of accounting information systems within banks.

This study also contributes to the existing literature by clarifying the relationship between the adoption of AI technologies and the reliability of accounting information systems in the banking sector, particularly in conjunction with the presence of a well-established infrastructure for accounting information systems. The study recommends providing specialized training programs for management and staff to support the effective use of modern AI tools and technologies. Furthermore, the findings indicate that organizations seeking to develop their accounting information systems through modern technologies can leverage these results as a foundation for formulating appropriate strategic planning to achieve that goal.

Keywords: Artificial Intelligence, Reliability of Accounting Information Systems, Jordanian Banking Sector.

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1.Introduction:

Technology and communication are rapidly expanding, which has radically changed the way businesses work and make decisions in all sectors throughout the economy as a result of the rapid development of information and communication technology (ICT). In the global economy, artificial intelligence (AI) appears to be one of the most significant developments which is changing the way companies perform tasks within their business operations by changing how they gather, process, and integrate data using computer software. In addition to AI, various types of AI applications exist, such as expert systems, machine learning, and intelligent automation. These types of technology allow businesses to collect vast amounts of information much more efficiently and accurately than previous methods allowed. As a result, organizations using AI and AI applications are able to process information more effectively than ever before because of the increased speed, reliability, and consistency of AI-based systems compared to the traditional methods of processing and storing information (Romney and Steinbart, 2020; Kulkarni and Bansal, 2024). The application of Artificial Intelligence (AI) in the field of accounting has impacted on the Accounting Information System (AIS). Through the implementation of AI into AIS, routine processing has been automated, it supports the professional judgment process, and the AIS uses AI-based systems to provide more credible, reliable and timely data to the users of the AIS. To have reliability, an AIS has to produce accurate, secure, confidential, and timely information, so that it can be depended upon by both internal and external users of the AIS when they need to make decisions (ISACA, 2018). Prior literature emphasizes that reliability of Accounting Information Systems is needed to provide the users with transparency, thus, mitigating information risk, enhancing the organization's internal controls and providing trust to the organization (Askary et al, 2018).

Despite the growing body of research examining the role of AI in accounting practices, much of the existing literature hasn't empirically focused on the effect of AI adoption on the reliability dimensions of an accounting information system (AIS). Most of the previous studies have focused on how AI can improve efficiency and reduce costs as well as provide additional benefits through enhanced performance outcomes. However, there are fewer empirical studies regarding how an organization's use of AI, impacts reliability-related AIS attributes, such as; security, confidentiality, privacy, processing integrity, and system availability. This gap exists at a time when reliability constitutes a foundational requirement for the credibility and usefulness of accounting information provided to users, particularly within highly regulated industries like banks, that operate in risk-sensitive environments (Ali et al., 2024; Solikin & Darmawan, 2023).

Further, many of the current research studies regarding AI or AIS generally only look at AI or AIS in isolation, without providing an integrated framework that captures the interaction between advanced AI techniques and the core reliability principles of accounting information systems. This limitation reduces the scope of study and restricts the potential for generalizing results across all types of organizational contexts and hampers the theoretical development of AIS reliability in the era of intelligent systems. Thus, it is necessary to undertake an extensive analytical study of AI use as a multidimensional construct to evaluate its overall effectiveness upon AIS reliability utilizing adequate empirical evidence (Hair et al., 2016).

In light of the above, this study will explore how the incorporation of artificial intelligence (AI) technology, particularly expert systems, automated machine learning and robotics, can enhance the trustworthiness and reliability of accounting information systems (AIS). Specifically, the study focuses on the primary reliability

components of AIS, with the intention of contributing to the literature of accounting and information systems by providing empirical evidence supporting the assertion that AI technologies improve AIS, regarding both trustworthiness and information quality. Additionally, this research will provide organizations that are interested in utilizing AI, to improve their accounting information environment with practical guidance for implementing AI technology, to enhance accounting information systems operating in an increasingly digital and data-driven world.

2. Research Objectives and Questions:

This research focuses primarily on the introduction of Artificial Intelligence (AI) into the accounting information systems (AIS) of Jordanian banks, by utilizing a unique conceptual framework to demonstrate how leveraging advanced AI tools may provide substantial benefits when it comes to establishing the reliability and trustworthiness of the AIS. The research categorized the main types of independent variables (IVs) associated with the various AI applications and techniques examined through this study, including Expert Systems; Automated Machine Learning; Robotics. The research also explored a vast array of methods, techniques, and key system-trust principles associated with AISs (e.g. Security, Confidentiality, Privacy, Processing Integrity, and Availability) towards the comprehensive analysis of the influence of AI techniques on the reliability and integrity of AISs.

The Jordanian banking system is one of the key economic underpinnings of Jordan. Given that Jordan is a developing economy, and due to the relative scarcity of resources available in most cases, it will require an extremely dedicated effort to attain all the potential economic benefits generated through the most efficient allocation of Jordanian financial resources (Central Bank of Jordan, 2023). This study sought to fulfill the need to create a pathway to bettering economic performance and

increasing the level of institutional efficiency of the Jordanian Banking system in a more technologically advanced environment.

In light of the theoretical background and the identified research gap, this study aims to achieve the following main and sub objectives:

Evaluate the effect of artificial intelligence, through its various (expert systems, auto machine learning, and robotics), on the reliability of AIS in banks listed on the Amman Stock Exchange?

- Investigate the impact of adopting AI on the AIS security within Jordanian banking sector.
- Investigate the impact of adopting AI on the AIS confidentiality within Jordanian banking sector.
- Investigate the impact of adopting AI on the AIS privacy within Jordanian banking sector.
- Investigate the impact of adopting AI on the AIS processing integrity within Jordanian banking sector.
- Investigate the impact of adopting AI on the AIS availability within Jordanian banking sector.

Based on the objectives of the study and the proposed research model, the main question that this research will focus on is: *How does artificial intelligence, through its various (expert systems, auto machine learning, and robotics), impact the reliability of AIS in banks listed on the Amman Stock Exchange?*

This central question produces multiple questions that stem from it, including the following:

- How does AI affect the security of AIS within Jordanian banking sector?
- How does AI affect the confidentiality of AIS within Jordanian banking sector?

- How does AI affect the privacy of AIS within Jordanian banking sector?
- How does AI affect the processing integrity of AIS within Jordanian banking sector?
- How does AI affect the availability of AIS within Jordanian banking sector?

3-Study Hypotheses:

Based on **Figure 1** illustrated in below, the following hypotheses were produced:

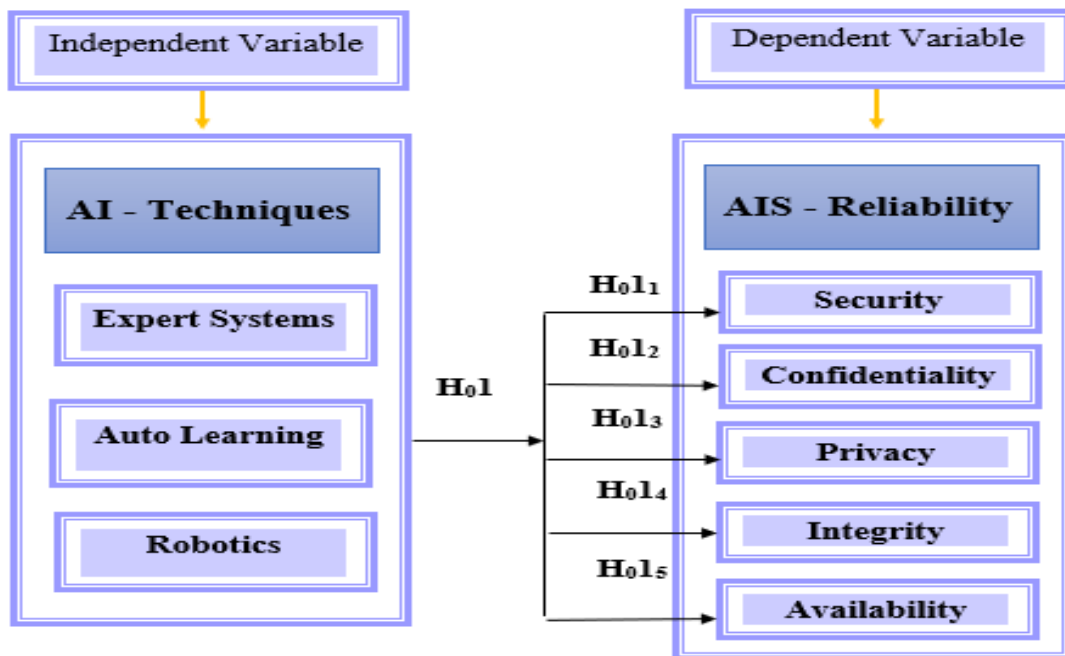


Figure 1. Study Model

Main Hypothesis H₀₁: There is no statistically significant effect, at a significance level of ($\alpha \leq 0.05$), for artificial intelligence (AI) technologies—including expert

systems, auto machine learning, and robotics—on the reliability of accounting information systems (AIS) dimensions, namely security, confidentiality, privacy, processing integrity, and availability, within banks listed on the Amman Stock Exchange.

The following sub-hypotheses stem from this main hypothesis:

- **H₀₁₁:** There is no statistically significant effect, at a significance level of ($\alpha \leq 0.05$), for AI technologies—including expert systems, auto machine learning, and robotics—on the security of AIS within banks listed on the Amman Stock Exchange.
- **H₀₁₂:** There is no statistically significant effect, at a significance level of ($\alpha \leq 0.05$), for AI technologies—including expert systems, auto machine learning, and robotics—on the confidentiality of AIS within banks listed on the Amman Stock Exchange.
- **H₀₁₃:** There is no statistically significant effect, at a significance level of ($\alpha \leq 0.05$), for AI technologies—including expert systems, auto machine learning, and robotics—on the privacy of AIS within banks listed on the Amman Stock Exchange.
- **H₀₁₄:** There is no statistically significant effect, at a significance level of ($\alpha \leq 0.05$), for AI technologies—including expert systems, auto machine learning, and robotics—on the processing integrity of AIS within banks listed on the Amman Stock Exchange.
- **H₀₁₅:** There is no statistically significant effect, at a significance level of ($\alpha \leq 0.05$), for AI technologies—including expert systems, auto machine learning, and robotics—on the availability of AIS within banks listed on the Amman Stock Exchange.

-Theoretical Framework:

This section presents what researchers have previously done on the topic of this study, and the following is a summary of these studies.

The research conducted by Solikin & Darmawan (2023) aimed to investigate how Artificial Intelligence enhances the operational efficiency of AIS that utilize AI as part of their functionalities. A survey was designed and sent out to a total of 250 respondents, comprising managers, executives and accountants who were employed by Industries within India. Using regression analysis to test the hypotheses, they were able to conclude that there is a very strong positive relationship between using AI and improving the effectiveness of AIS; they also found that AI positively impacts the quality and dependability of auditing processes; as well as the overall decision-making ability of organizations. Furthermore, the authors recommend aligning the functions of Intelligent Systems with the organization's financial objectives/goals; additionally, more comprehensive research is recommended to explore these issues in more detail, with an emphasis on larger and broader research initiatives.

The research conducted by Nwankwo (2023) sought to determine if Artificial Intelligence (AI) provides positive value when combined with an Accounting Information System (AIS) by examining the effect on non-financial performance for industrial organizations in Enugu State, Nigeria. The Research also attempted to establish the connection between AI and improved efficiency of AIS. Participants were asked to respond to a survey questionnaire, which was completed by representatives from 181 companies within three classified sectors: industrial, service, and technology. Data collected through questionnaires was analyzed using multiple linear regression analysis. The findings indicated that AI has a positive impact on both AIS efficiency and non-financial performance through improved task performance and enhanced operational efficiency.

Yao et al. (2023) also researched how AIS influences financial performance and how AI moderates the relationship between AIS and financial performance. to conduct their research, Yao et al. used a combination of qualitative and quantitative methods to gather data by questionnaire containing questions about AI, financial performance, and the extent to which companies are currently using AI technology in AIS and conducted interviews and discussion groups. The study used multiple regression analysis and structural equation modeling to test the proposed hypotheses. Overall, the findings supported the hypothesis that AIS significantly and positively influences financial performance. Findings also revealed that AI integration into AIS strengthened the positive relationship of maturity between AIS and financial performance. Therefore, recommended an integrated approach of implementing AI techniques into AIS in order to enhance organizational performance, it also emphasized the importance of investing in new technology infrastructure and providing staff with continuous training and development.

Solikin and Darmawan's (2023) research conveys evidence on AI's effects on improving the credibility of financial accounting data via internal control systems through decreasing information risk, increasing the speed at which data can be processed, and improving the accuracy of financial data to create confidence in that data. Using descriptive methodology, including an extensive review of the literature on previous studies, results concluded that the automation of systems when integrated with AI resulted in reduced information risk thus providing enhanced reliability of the financial accounting information generated from the systems equipped with those systems. As a result, recommended the use of a proposed AI-based model that can be applied to multiple different types of businesses by linking to control and accounting functions of those systems as well as measuring the

expected value of each model used by the organization in generating financial accounting data.

What distinguishes this study from what was presented above?

This research also has a unique focus on AI in the banking sector, as it is one of the first studies that thoroughly investigates how AI variables and the reliability of AIS relate to one another, with the previously mentioned dimensions within the Jordanian context. This research contributes further insight into the impact this technology will have on the banking industry in Jordan, as it also allows researchers to have greater insight into this critically important segment of the Jordanian economy, and thus contribute to filling an existing gap in research about banking, opening new avenues for further research in this field and enriching the accounting literature and scholarship.

-Artificial Intelligence (AI):

In the 1950s, artificial intelligence (AI) Began to emerge, from a diverse array of disciplines including mathematics, computer science, psychology, linguistics and engineering. Over the last several decades, the development of AI has evolved as an interdisciplinary field of study that builds on the continued advancements being made by each of these disciplines as a result of ongoing research and technology innovation. Currently, AI is a specialized area of computer science and information technology that aims to develop both systems and software that will replicate the cognitive abilities of human beings. These capabilities are now being utilized in different industries, providing them with the ability to conduct knowledge management and making decisions that used to be made by people (Alalwan, 2022). According to the Financial Stability Board (FSB, 2017), artificial intelligence (AI) refers to a combination of various algorithms and computational systems that allow

computers to perform a range of tasks that normally require human cognitive skills, such as, seeing, hearing, reading, etc. AI-enabled systems are improving continuously through learning from data, identifying patterns within it, and improving their skill set related to making decisions and processing information (Puthukulam et al., 2021). Within the field of accounting, AI applications provide support to managers by helping them to increase efficiency, improve their accuracy, reduce costs, and, therefore, completely change the face of the profession (Kulkarni and Bansal, 2024). For the purposes of this research, the term AI will be used to identify techniques and tools developed by financial institutions to assist both the operational and the administrative aspects of the banking industry with intelligent data analytics and situational learning capabilities that can provide predictive insights and analytics at, or better than, current levels of human intelligence.

AI allows for tremendous data processing and analytical capabilities, which provide businesses with much greater problem-solving capability than ever before, as well as the ability to assess potential solutions to problems based on actual evidence before deciding on which of those options is best. For banks, this has completely changed how they conduct their business by creating digital business models that are more accurate and efficient. As a result, banks can offer individualized customer experiences that have a distinct competitive advantage over traditional banking practices. As the banking and finance industry evolves, AI's capacity to use predictive analytics and detailed data will enable reductions in costs of operation while increasing revenues (Akpanobong & Essien, 2022). AI has introduced several technologies that change the way decisions are made and the way work is completed. All the following technologies are commonly used in the banking industry:

- **Expert Systems:** Systems designed to replicate expert-based decision making by utilizing extensive databases of knowledge to generate real-time solutions to problems and helping preserve the organization's expertise (Gupta & Nagpal, 2020).
- **Automated Machine Learning (Auto ML):** A combination of data classification and pattern recognition that allows systems to adapt to new data with little or no need for human intervention (Shnurenko et al., 2020).
- **Robotics:** Technology that is engineered to automate certain processes and functions, typically involving the movement of products in an efficient way and the detection of environmental signals when executing those tasks (Shnurenko et al., 2020).

-Reliability of Accounting Information Systems (AIS):

An accounting information system (AIS) is an all-inclusive model integrating human capital, workflows, and technology to accomplish an organization's goals in a comprehensive and sophisticated economic landscape. The focus of an AIS is to improve the efficiency of the accounting process in decision-making and achieving organization's objectives by providing high-quality financial data to a multitude of users with various needs (Rainer et al., 2020).

The rapid change in technology and the continual evolution of the world around us means that businesses must rely upon accounting information systems to operate their financial operations reliably, accurately and securely in order to provide the integrity of their financial information and processes. As technology advances, so will financial fraud and cyber threats. Therefore, it is imperative that all accounting information systems that are designed and developed must meet the standards set forth by international accounting standards so that businesses can continue to build and enhance their confidence with investors and other stakeholders by creating the

strongest possible link between the accounting and all other business information systems. Opportunities will exist to create long-term growth and sustainability by providing high levels of reliability in accounting information systems, which ultimately creates increased trust, transparency and accountability for a company's financial reporting, as well as allowing the company's investor and stakeholder(s) to develop trust and reliance on the company's data. A company that is committed to long-term sustainable growth should continually improve their reliability with respect to the development of its accounting information system (Al-Hashimy et al., 2022).

Hashem and Alqatamin (2021) state that the dependability of an AIS provides a means by which management can effectively monitor business operations both internally and externally by allowing for adequate documentation and records of all activities recorded. All stakeholders have access to complete and accurate information, so they can make sound decisions based on the facts. Solikin and Darmawan (2023) describe an AIS as a system that enables an organization to collect, classify and distribute information more effectively using technology and computers.

The COBIT Framework specifies that to achieve an AIS that is reliable, the process must support the generation of accurate, unbiased, verified AIS output so that users can make confident decisions (ISACA, 2019; Romney et al, 2020). Integrating these advanced technologies will help to enhance the performance of all users of the AIS and ultimately provide better financial results and performance for all organizations. From a subjective point of view, the study believes that for an organization to have a successful accounting system (AIS), the organization must have an accurate, unbiased, verified output from that accounting system (AIS). Given that the accounting system produces most of the reports and output used for making

decisions, the accounting system must be reliable; thus, its output must be accurate, unbiased and verifiable, and therefore usable for effective decision making for all users and improved organizational performance and establishing stability in the future of the organization. When AI analytics are developed and utilized in conjunction with the typical AIS, it will not only improve the financial results for the organization but will also develop new innovations to the organization based upon the results of the data and AI analysis.

Computerized Accounting Information Systems (CAIS) offer modernized versions of traditional accounting systems by utilizing modern technological tools to support organizations in their ability to achieve both their operational and strategic goals. By providing a continuous stream of relevant, accurate, and timely financial information, CAIS allows management to make informed decisions at all levels of an organization. CAIS enhances the effectiveness and efficiency of operational tasks for an organization by providing higher quality products or services to its customers and reducing costs associated with waste through continuous quality evaluation and performance analysis on production lines. Knowledge sharing within an organization enhances competitiveness by improving the quality of service to customers and reducing costs associated with the supply chain, as well as fostering stronger collaboration among partners and clients through the use of CAIS. A complete CAIS also allows an organization to implement internal controls to help detect and prevent fraud and error, thereby increasing the overall stability of the organization and increasing the effectiveness of an organization's control measures leading toward the fulfillment of the organization's strategic vision (Romney et al., 2020).

This research assesses AIS reliability using the Sys-Trust framework illustrated in **Figure 2**, which developed by the AICPA and the Canadian Institute of Chartered Accountants to reinforce user confidence in systems, which is based on five principles: security, confidentiality, privacy, processing integrity, and availability.

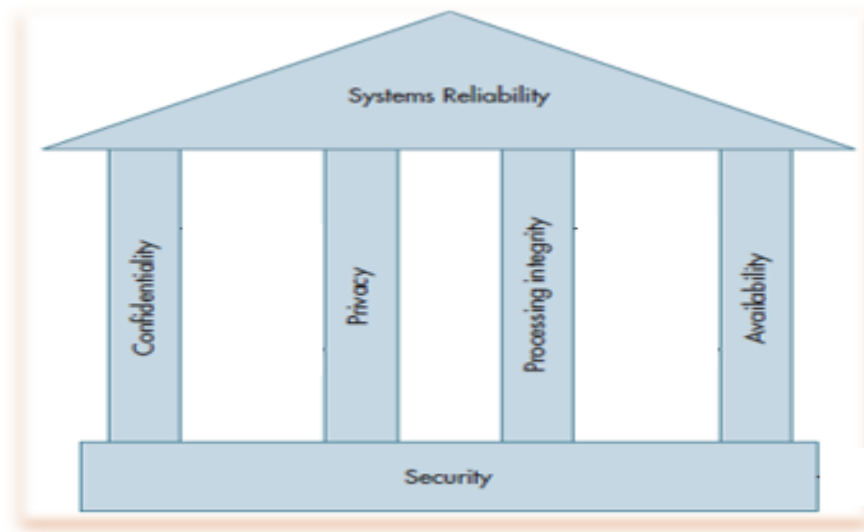


Figure 2. Sys-Trust framework (Romney et al., 2020)

Selecting the Sys-Trust framework by the study for measuring Reliability of Accounting Information Systems (AIS), has adequate method and theory support because it has both widespread acceptance and endorsement as being able to accurately assess an organization's trustworthiness. The Sys-Trust framework was developed by the (AICPA) and the Canadian Institute of Chartered Accountants (CICA) as a comprehensive and standardized set of criteria that align closely with the fundamental objectives of Accounting Information Systems. The Sys-Trust framework has also been used in previous research in Accounting and Information Systems, establishing further credibility of the framework and providing a solid

foundation for empirical investigations addressing how advanced technology (AI) may affect Reliability of Accounting Information Systems (Al-Dmour et al., 2019; Akudugu, 2023; Khalaf et al., 2024; Jaskólski, 2022). As such, implementing this framework will extend the foundation of this study and maintain a consistent approach to accepted standards in Accounting and Academic Research.

Collectively, these principles establish an ideal environment in which AIS fulfil both organizational and user expectations by providing: Secure access to data; protection of sensitive data; verification of the accuracy of data; and, the capability for operational continuity through accessibility to an information system (Akudugu, 2023; Romney, 2023). The Framework identifies five basic trust principles:

- **System Security:** which is the core principle upon which all other trust principles are built, defined as; a set of measures designed to protect an organization's data and information systems against unauthorized access, both physical and logical; to prevent the misuse and destruction of that data and information systems, through establishing the necessary level of access for authorized users; increasing protection from threats targeted at devices and networks; complying with all E-Commerce regulations; thus; reducing the potential for an organization to be misused for unethical purposes; exposing an organization to significant risks; and, establishing sufficient safeguards to alert those with responsible control to possible breaches. (Romney, 2023; Al-Dmour et al., 2019; Akudugu, 2023).

- **System Confidentiality:** Secure computing systems will protect against unauthorized access to and exposure of sensitive business records; thus, ensuring that only authorized personnel are privy to the existence of sensitive company

records contained within the AIS and thus preventing unauthorized access to such records (Al-Dmour et al., 2019; Khalaf et al., 2024).

- **System Privacy:** Protecting private data from unsolicited access; this can include an entity's collection, use, disclosure, and deletion of individuals' private information. Individuals and organizations must protect all of the data collected about them to ensure their privacy as well as their confidentiality. While privacy is related to protecting the data belonging to individuals, confidentiality focuses on the data contained within organizations and will require similar types of controls to ensure both types of information are protected (Khalaf et al., 2024).
- **Processing Integrity:** integrity includes completeness, accuracy, validity and timeliness. Additionally, it includes the appropriate authorization associated with processing, and includes all levels of processing, from data collection, data processing, and ultimately the result (output) of the processed data. Integrity assures that the computing system will effectively and accurately perform all required functions at the different stages of processing including the collection of data via input through processing, and the ultimate output of processed data (Al-Dmour et al., 2019).
- **System Availability:** Availability is the ability of a systematic computing system to work in accordance with pre-defined timelines and meet the operational objectives of an organization by enabling users to complete their assignments on the system when they require access and take advantage of the system at all times in order to meet those objectives (Jaskólski, 2022).

-Artificial Intelligence and Accounting Information Systems` Reliability in Banking:

The application of artificial intelligence (AI) to enhance the reliability of an Accounting Information System (AIS) has become increasingly popular, with a significant impact within the banking industry, as AI allows for the identification of errors and the prevention of the occurrence of fraud through advanced technologies, such as analytics (Al-Dmour et al. 2018). The use of artificial intelligence (AI) in the audit process in Jordan to automate tasks and provide data analysis has contributed to the improvement of the quality and accuracy of financial reports by reducing human error.

By means of expert systems, machine learning, robotics, and including other automated systems, the efficiency of business operations is enhanced while also assisting in creating sound and accurate financial reporting frameworks. There are many advantages associated with utilizing AI with AIS, as demonstrated by Ali et al. (2024). However, implementation challenges are evident when implementing AI systems in developing countries such as Jordan, where current infrastructure does not have adequate resources for implementing AI systems and there are still no established regulations for incorporating these systems within business operations that align with international standards and guidelines. As AI technology evolves, the reliability and validity of any AIS will improve as long as the AIS can adapt quickly to the rapid changes within AI technology and thus provide the basis for reliable and quality financial and administrative audits, as well as creating a more competitive environment for banks and financial services in Jordan and elsewhere.

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4-Methodology:

-Research Design:

Due to focusing on banks in Jordan, this research can be classified as applied research. The research also has the characteristics of an exploratory research study, as it tries to determine how AI could affect AIS reliability, and it is non-experimental, as it involved no external interventions and was conducted in a natural, cross-sectional setting (Sekaran & Bougie, 2016).

5-Study Population and Sample:

The study population comprises banks listed on the Amman Stock Exchange, with a total of 15 banks, including 13 commercial banks, and 2 Islamic banks. Because of the small size of the population, the organizational level census approach was used. The individual level of the participants was reached through a structured questionnaire administered to employees from both the head offices and branches of the selected banks. A comprehensive survey was used to gather information from all of these banks' employees in order to meet the requirement to collect data from each of the banks represented in the study population.

A total of 300 electronic questionnaires were sent out, of which 236 responses were returned, resulting in an approximate 79% response rate. The respondents were randomly selected from each bank for the purpose of making the sample representative. Participants included all Managers, Deputy Managers, Assistant Managers and Senior Employees working in Accounting, Accounting Information Systems, Information Technology, Finance, Banking, and Business Administration. These participants were specifically chosen for their direct involvement with Accounting Information Systems and requisite level of knowledge to use Artificial Intelligence applications.

-Data Collection Methods:

The study employed the descriptive-analytical methodology to gather data and perform a thorough investigation of the components and elements related to the study. This method is one of the most popular methods of applied research because it highlights the characteristics and components of a given phenomenon, and it also provides an overall description and analysis of that phenomenon. This method allows one to discover truths and gain insight into a particular area of inquiry.

The study used the following sources to collect data for this study:

- **Secondary Sources:** The secondary sources include books, academic research, theses and dissertations, scientific journals, articles, and periodicals that relate to the topic and variables of the study and could be found through library or online resources. Secondary sources were referenced in the development of the theoretical framework for this study.

- **Primary Sources:** The primary sources consist of all the scientific tools developed by the researcher to gather primary data from the population sampled for this study. The primary data collection tool for this study was a questionnaire, which was created specifically to collect data related to the variables in the study model from various secondary sources (Al-Dmour, 2018; Al-Qasaimeh & Abu Salim, 2021; Al-Sharif et al., 2019).

The survey was designed in order to fulfil the study objectives, and test the study hypotheses, so that the responses collected from participants would provide a basis for identifying field data relative to the dimensions associated with both the dependent and independent variables utilized among the study.

The survey consisted of two sections:

1. Section One: Demographics or Personal information contains questions about the job traits of the employees within the area of analysis, such as experience, educational qualification, academic specialization, professional certificates, job title, and workplace; providing a clear profile of the respondents' personal and professional attributes relevant to the area of analysis.

2. Section Two: Study factors are made up of items that are related to the study's factors and grouped by their dimensions, which are used to assess the surveyed parties' perceptions about the application of these factors in the Jordanian banks whose stocks can be purchased on the Amman Stock Exchange.

The independent variable, AI, was measured through 24 items divided across three sub-dimensions: expert systems, machine learning, and robotics, with eight items per dimension.

The dependent variable, accounting information system reliability, was measured using 25 items across five sub-dimensions: system security, information confidentiality, privacy, system integrity, and system readiness, with five items per dimension.

-Results of Descriptive Analysis and Hypothesis Testing:

-Instrument Validity Tests:

To measure all aspects and characteristics of the variables measured accurately and correctly, we must be sure that the instruments used will produce accurate results (validity). The validity of the instruments was established through both face validity checks, which included checking for clarity in terms of both language and concept, as well as field experts reviewing the instruments. Internal consistency or reliability of the survey instrument was verified by conducting Cronbach's Alpha Test. The findings from the tests for internal consistency of the survey instrument can be viewed in **Table 1** below. The reliability coefficients for Cronbach's Alpha

exceeded the minimum recommended reliability coefficient of 0.60 and ranged from 0.616 to 0.871 (Sekaran & Bougie, 2016).

Table 1: Cronbach's Alpha for Study Instrument

Variable	Cronbach's Alpha
Expert Systems	0.685
Auto Learning	0.654
Robotics	0.793
Artificial Intelligence	0.871
System Security	0.662
System Confidentiality	0.642
Privacy	0.616
System Integrity	0.648
System Readiness	0.743
Accounting Information Systems Reliability	0.902

On the other hand, Pearson's correlation coefficient was employed to ensure independence among independent variables and avoiding significant multicollinearity that could artificially inflate the coefficient of determination. **Table 2.** below, shows that correlations among the independent variables ranged from 0.582 to 0.685, which remains below 0.80, supporting the independence of artificial intelligence dimensions.

Table 2 : Pearson's Correlation Coefficient Among Independent Variables

Variable	Expert Systems	Machine Learning	Robotics
Expert Systems	1.000		
Auto Learning	0.685**	1.000	
Robotics	0.582**	0.599**	1.000

(**) Significant at 0.01 level.

-Model Testing:

The study used SMART-PLS for hypotheses analysis through a two-step model, including a standard and structural model.

Standard Model Testing:

The use of Cronbach's Alpha for the purpose of standard model testing demonstrates high internal consistency with respect to reliability of the survey items. Also, Composite Reliability (CR) offers evidence of similar robust internal consistency. Cronbach's Alpha values have ranged from 0.730 to 0.890, while the CR values have ranged from 0.770 to 0.916 (Hair, 2016).

As **Table 3** presents, Cronbach's alpha reliability coefficients of the survey item that comprise each dimension have been reported as ranging between the values of 0.730 and 0.890, indicating all observed Composite Reliability (CR) values to be statistically significant and acceptable. As for the CR values (RHO_a) range from 0.770 to 0.894, the RHO_c values have been observed to range from 0.829 to 0.916. These values are deemed suitable, reflecting a high level of internal consistency and reliability among the study items, thereby supporting their suitability for conducting statistical analysis (Hair, 2016).

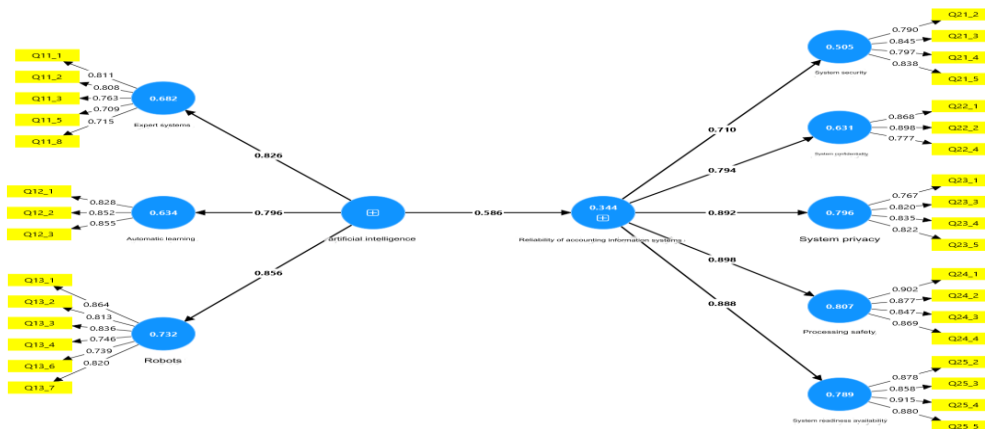
Table 3: Internal Consistency and Convergent Validity (SMART PLS4)

Dimension	Variables	Average Variance Extracted (AVE)	Composite Reliability	
			RHO_c	RHO_a
Artificial Intelligence	Expert Systems	0.677	0.862	0.770
	Auto Learning	0.715	0.883	0.800
	Robotics	0.647	0.916	0.893
Accounting Information Systems` Reliability	Security	0.542	0.841	0.838
	Confidentiality	0.522	0.831	0.827
	Privacy	0.528	0.829	0.827
	Integrity	0.610	0.864	0.894
	Availability	0.629	0.884	0.891

The indicator's reliability and Average Variance Extracted represent the Convergent Validity of the construct being measured. Outer Loadings are the basis for identifying the reliability of an indicator. In short, all outer loadings associated with an indicator must be above 0.70 in order for that indicator to provide a reliable measurement of the construct it is measuring. Therefore, any indicator that has outer loading values less than 0.70, as shown in **figure 3** (items included in statistical analysis), was excluded from analysis as it would decrease Cronbach's alpha and Composite Reliability as well as decrease Average Variance Extracted (Hair, 2016).

Figure 3. Outer Loading Analysis Results after Item Removal

Convergent validity was further verified to assess the degree of correlation between outcomes, when applying two different measures of the same construct. The Average Variance Extracted (AVE) exceeded 0.5 for all variables, as shown in **Table 3**, which confirms convergent validity in the measurement model (Hair, 2016).



Discriminant validity measures how different a construct is, relative to other constructs that may be contained within the same model. This research utilized the

Fornell-Larcker approach to demonstrate that each dimension was more strongly correlated to itself than to any other of its constituent sub-variables (see **Table 4**). For instance, the internal correlation of the auto learning dimension with itself was found to be 0.845, a number which exceeds its correlations with any other sub-variable and as such, it meets the requirements for establishing discriminant validity.

Table 4: Fornell-Larcker Matrix of Correlations between Dimensions of the Independent and Dependent Variables

Dimension s	Exper t Systems	Auto Learning	Robot ics	Securi ty	Confidenti ality	Priva cy	Integr ity	Availabi lity
Expert Systems	0.762							
Auto Learning	0.585	0.845						
Robotics	0.492	0.523	0.804					
Security	0.530	0.499	0.474	0.818				
Confidenti ality	0.412	0.420	0.243	0.538	0.849			
Privacy	0.558	0.473	0.353	0.537	0.666	0.811		
Integrity	0.473	0.395	0.258	0.495	0.641	0.770	0.874	
Availability	0.549	0.434	0.264	0.511	0.596	0.744	0.787	0.883

Structural Model:

Table 5 reflects the coefficients of determination (R^2) used to analyze and assess the structure of the study model, which is indicative of how much predictive capability exists within the structural model. The results indicate that the dimensions of

Artificial Intelligence are responsible for 34.3% of the variability in the reliability of Accounting Information Systems. Nonetheless, the effects size (F^2) of the dimensions of Artificial Intelligence on the reliability of Accounting Information Systems is considered strong, with a calculated value of 0.586.

Table 5: Coefficient of Determination (R^2 , F^2) Results

Latent Variables	Value	Effect Size
Accounting Information Systems Reliability	$R^2 = 0.343$	Weak
Artificial Intelligence → Accounting Information Systems Reliability	$F^2 = 0.586$	Strong

-Descriptive Statistics of Study Variables:

Description of Demographic and Personal Data:

This section gives an overview of the results of the demographics analysis of the sample group that contains employees of Jordanian banking. The Summary contains a description of the personal and professional characteristics of employees of the various departments and divisions of the bank that have been put into the study. The largest percentage of the sample group 33.1% were employees with between 5-10 Years of Experience. The second largest percentage 31.8% of employees in the sample group were employees with less than 5 Years of Experience. Therefore, the employees in the departments and divisions of the study are likely to possess the knowledge and experience to carry out their work duties in a proficient and professional manner.

Moreover, bachelor's degrees represent the largest group of holders among all educational attainment groups (72.9% of the sample). In contrast, just over 1% (or 1.3%) of employees hold varying academic credentials other than diplomas (e.g.,

certifications). Such diversity of educational backgrounds implies that employees in each category possess a wide array of skills or knowledge within their discipline and can therefore competently perform their responsibilities.

The finding that fewer than half of employees (44.1%) have areas of expertise within accounting while less than 20% of employees have certification from a recognized governing body demonstrates that employees have received adequate formal academic training as accountants. Low levels of certification among employees may be attributable to excessive workloads in conjunction with financial and temporal limitations associated with pursuing certification thus adversely affecting completion of certification criteria, particularly given that 38.5% of the total population sampled classifies as an accounting professional requiring complete concentration, commitment, and specialized skills.

The bank survey response distribution considers that the highest percentage of employee representation in the total banking sector sample was at Cairo Amman Bank (15.7%) while all other bank responses were generally evenly distributed. This response distribution indicates that the data collected were representative across the entire population of all banks that comprised the sample.

-Description of Main Variables and Sub-Dimensions in the Study:

This section gives the descriptive analysis results of the variables and subdimensions of the main study according to the research model. Therefore, the objective of this research is to obtain information on the findings regarding the environment of this research using Banks listed on the Amman Stock Exchange as the Environment for this Research.

The independent variable for this research study was Artificial Intelligence (AI) which had three dimensions: Expert Systems; Machine Learning; and Robotics. The table below demonstrates the levels of Banks in Jordan regarding their

understanding of each dimension of AI, as well as their level of concern regarding the use of AI.

As indicated in **Table 6**, a mean of 3.792 and a standard deviation of 0.450 indicate that Banks generally had a high level of concern regarding AI. However, the levels of concern about the three dimensions of AI varied from a medium level to a high level. The ranking of the different dimensions of AI indicated that there was the greatest level of concern regarding the use of machine learning with a mean of 3.897 and a standard deviation of 0.459, followed by expert systems with a mean of 3.825 and a standard deviation of 0.487, and finally, robotics with a mean of 3.653 and a standard deviation of 0.616 representing the medium level of importance.

Table 6: Descriptive Statistics for AI and its Dimensions in Jordanian Banks

Dimension	Mean	Standard Deviation	Rank	Relative Importance
Expert Systems	3.825	0.487	2	High
Auto Learning	3.897	0.459	1	High
Robotics	3.653	0.616	3	Medium
Artificial Intelligence	3.792	0.450		High

Five dimensions were used to measure the dependent variable that represents the reliability of accounting information systems: system security, confidentiality, privacy, integrity and availability. This section describes measurement and scoring this variable using the dimensions used to evaluate banks registered and listed on the Amman Stock Exchange.

Table 7 shows that all banks perceive the reliability of accounting information systems as a high priority with an overall score of 4.096 and a standard deviation of 0.441. Each of these five dimensions of reliability were considered of equal

importance as well. In order of Most important to least important, the dimensions were ranked as follows: Confidentiality (mean score 4.220; standard deviation 0.517); Privacy (mean 4.138; standard deviation 0.512); and Security (mean 4.028; standard deviation 0.540), all were scoring high on importance.

Table 7: Descriptive Statistics for Accounting Information Systems Reliability

Dimension	Mean	Standard Deviation	Rank	Relative Importance
Security	4.028	0.540	5	High
Confidentiality	4.220	0.517	1	High
Privacy	4.138	0.512	2	High
Integrity	4.041	0.516	4	High
Availability	4.054	0.547	3	High
AIS Reliability	4.096	0.441		High

-Hypothesis Testing:

This section presents the results of hypothesis testing, using Path Analysis to explore the impact of AI (as represented by expert systems, machine learning, and robotics) on the reliability of accounting information systems, including its dimensions (security, confidentiality, privacy, integrity, and availability) which are represented in **Table 8** below.

Table 8: Path Coefficients for the Main Hypothesis and Sub-Hypotheses

Hypothesis	Independent Variable	Dependent Variable	Path Coefficient (B)	Standard Deviation	T-value	P-Value
H ₀₁	AI Dimensions	AIS Reliability	0.586	0.050	11.679	0.000
H _{01₁}		Security	0.416	0.056	7.430	0.000
H _{01₂}		Confidentiality	0.466	0.047	9.971	0.000
H _{01₃}		Privacy	0.523	0.048	10.887	0.000
H _{01₄}		Integrity	0.526	0.047	11.162	0.000
H _{01₅}		Availability	0.521	0.047	11.119	0.000
R ² = 0.344						

The primary hypothesis is to identify the relationship between AI and the reliability of Accounting Information Systems for banks that are listed on the Amman Stock Exchange with the hypothesis posits: "There is no statistically significant effect at the $\alpha \leq 0.05$ significance level of AI, in terms of its dimensions (expert systems, machine learning, robotics), on the reliability of accounting information systems in banks listed on the Amman Stock Exchange."

To test this hypothesis and its sub-hypotheses, Path Analysis was conducted, and the results are as follows:

The value of $R^2 = .344$, this means that AI by dimension (Expert Systems, Machine Learning, Robotics) accounts for 34.4% of the variance in Accounting Information Systems' reliability for banks listed on the Amman Stock Exchange.

The Path Analysis results show that there is a statistically significant relationship between AI by dimension and the reliability of Accounting Information Systems at the following value(s): $B = .586$; $T = 11.679$; $p = .000$. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted, which states:

"There is a statistically significant effect at the ($\alpha \leq 0.05$) significance level of AI dimensions (expert systems, machine learning, robotics) on the reliability of accounting information systems in banks listed on the Amman Stock Exchange."

The results indicate AI has a high impact on security systems with an impact factor of 0.416 and a calculated T value of 7.430 (Sig T = 0.000) demonstrating statistically significant effects on system security at the ($\alpha \leq 0.05$) level, thus rejecting first sub-hypothesis and supporting Alternative Hypothesis, namely:

"There is a statistically significant effect at the ($\alpha \leq 0.05$) significance level of artificial intelligence, in terms of its dimensions (expert systems, machine learning, and

robotics), on the security of accounting information systems in banks listed on the Amman Stock Exchange."

The findings clearly indicate that AI technology has reached an emerging point in its development and application, demonstrating a strong level of influence over system confidentiality. The effect has a B-value of 0.466 and a T-value of 9.971 (p-value = 0.000), proving to be statistically significant at a 5% level of significance ($\alpha \leq 0.05$). As such, the null hypothesis for this dimension cannot be supported; therefore, the alternative hypothesis is accepted:

"There is a statistically significant effect at the ($\alpha \leq 0.05$) significance level of artificial intelligence, in terms of its dimensions (expert systems, machine learning, and robotics), on the confidentiality of accounting information systems in banks listed on the Amman Stock Exchange."

The results also show that intelligent systems significantly affect human system privacy based on the B value of .523 and T-value of 10.887 (Sig T < 0.000), confirming that it has a statistically significant effect ($\alpha \leq 0.05$); therefore, the Third Sub-Hypothesis is rejected, and the following alternate is accepted:

"There is a statistically significant effect at the ($\alpha \leq 0.05$) significance level of artificial intelligence, in terms of its dimensions (expert systems, machine learning, and robotics), on the privacy of accounting information systems in banks listed on the Amman Stock Exchange."

In addition to this, there is a strong statistical correlation between System Integrity & AI, with a B of 0.526 & a T of 11.162 (SIG T=0) demonstrating the relationship has a statistically significant effect at $\alpha \leq 0.05$; therefore, the fourth sub-hypothesis is rejected in favor of an alternative hypothesis that states:

"There is a statistically significant effect at the ($\alpha \leq 0.05$) significance level of artificial intelligence, in terms of its dimensions (expert systems, machine learning, and robotics), on the integrity of accounting information systems in banks listed on the Amman Stock Exchange."

Finally, the analysis confirms a significant impact of artificial intelligence on system availability, with a B value of 0.521 and a T-value of 11.119 (Sig T = 0.000). This result demonstrates a statistically significant effect at the ($\alpha \leq 0.05$) level, leading to the rejection of the fifth sub-hypothesis and acceptance of the alternative one, which states:

"There is a statistically significant effect at the ($\alpha \leq 0.05$) significance level of artificial intelligence, in terms of its dimensions (expert systems, machine learning, and robotics), on the availability of accounting information systems in banks listed on the Amman Stock Exchange."

-Discussion:

According to research results exposed by Banks traded in Amman Stock Exchange, a great deal of growing interest among Banks in adopting Artificial Intelligence (AI) technologies through the introduction of Expert Systems, Machine Learning and Robotics into their existing operations. Banks plan to utilize these techniques to improve financial performance and to make their accounting applications more efficient when processing financial data. Although the specific level of implementation differed amongst banks, as revealed by the descriptive statistics, however, there was a general agreement amongst all the banks in the Amman Stock Exchange that they are very serious about adopting AI applications into their existing operations. Each bank's commitment to adopting AI applications parallels other current studies that clearly indicate the improving role of AI on financial /

operational performance in many of the same types of businesses (Gupta, 2024; Kulkarni, 2024).

Additionally, the results of the study illustrate that the banks placed an enormous emphasis on the reliability of their accounting information systems and that the Banks are placing a great deal of importance and investment into security, confidentiality and data Integrity in order to be able to build trust and maintain the resiliency of their accounting information systems against security threats. Thus, this finding also coincides with previous research showing that banks are taking steps to significantly enhance the reliability of their Information Systems (Al-Dmour et al., 2019; Khalaf et al., 2024).

The analysis further revealed a statistically significant positive effect of AI dimensions, namely expert systems, machine learning, and robotics, on accounting information systems` reliability, and its various aspects, including security, confidentiality, privacy, processing integrity, and system`s availability. These insights reinforce similar findings, such as Ali et al. (2024); Askary et al. (2018); Li and Zheng (2018), which demonstrated a strong relationship between AI applications and the reliability of accounting information systems in financial institutions (Ali et al., 2024; Askary et al., 2018; Li, 2018).

As a result, the integration of AI technologies can support the establishment of a sound base for accounting information that fosters confidence from clients and investors while facilitating the overall improvement of transparency within Financial Institutions. The research findings indicate that there is a positive correlation between the application of AI techniques on the reliability of banking information systems; this model demonstrates the ability of AI technologies to enhance the accuracy, speed, and processing of data associated with an organization's operations.

These results reaffirm the findings of previous studies demonstrating how advanced technologies can be used to enhance the operational efficiencies of organizations across numerous industries requiring high accuracy and reliability, such as Banking. Thus, there is further justification for promoting AI as a tool for developing banking accounting information systems and providing an avenue for future sustainable competitive advantage.

-Future Recommendations:

Based on the empirical results and their academic interpretation, the study offers the following recommendations:

1. **Strategic Integration of AI into Accounting Systems**

Banks are encouraged to embrace a strategy of embedding AI technologies within a broader framework of governance/risk management in order to achieve maximum reliability of the Accounting Information System.

2. **Prioritizing Security and Data Protection via AI Applications**

The effect of AI on security/confidentiality is significant; therefore banks should increase their utilization of AI-enabled monitoring tools and intelligent access controls as a safeguard for sensitive accounting data.

3. **Aligning Internal Controls with AI**

Integrating AI applications, especially expert systems and machine learning, with internal audit and continuous monitoring provides greater processing integrity and therefore greater reliability of the systems.

4. **Investing in Human Capital and AI Competencies**

In order to sustain the continued positive impact of ai on the reliability of accounting information systems (AIS) depends upon banks providing employees with specialized training to improve their ability to efficiently use and operate AI-based accounting systems.

5. Positioning AIS Reliability as a Strategic Digital Transformation Outcome

Banks should consider the reliability of their AIS, as a direct outcome of their digital transformation initiatives, as a key organization outcome in order to achieve the long-term financial return of the adoption of AI.

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أثر تبني تقنيات الذكاء الاصطناعي على موثوقية أنظمة المعلومات المحاسبية

الملخص

هدفت هذه الدراسة إلى فحص أثر استخدام تقنيات الذكاء الاصطناعي في موثوقية نظم المعلومات المحاسبية. كما سعت الدراسة إلى سد فجوة في الأدبيات من خلال بيان تأثير استخدام تقنيات الذكاء الاصطناعي على العوامل الرئيسية لموثوقية نظم المعلومات المحاسبية، وكيف ينعكس ذلك على البنوك التجارية والبنوك الإسلامية المدرجة في بورصة عمان. اعتمدت الدراسة المنهج الوصفي التحليلي، من خلال استخدام استبانة منظمة كأداة لجمع البيانات عبر عينة من موظفي (15) بنكاً، حيث تم الحصول على (236) استبانة صالحة للتحليل، تم تحليلها باستخدام برمجية SMART PLS 4 لقياس أثر تبني تقنيات الذكاء الاصطناعي في موثوقية نظم المعلومات المحاسبية.

أظهرت نتائج الدراسة أن تطبيق تقنيات الذكاء الاصطناعي يحدث تحولاً جوهرياً في مستوى موثوقية نظم المعلومات المحاسبية، حيث استطاع تفسير ما يقارب (34%) من الفروقات في المؤشرات المختلفة المستخدمة لقياس الموثوقية. وبناءً على ذلك، يُنظر إلى أن توفر تقنيات الذكاء الاصطناعي يتيح فرصاً مهمة لتحسين موثوقية وقيمة نظم المعلومات المحاسبية داخل البنوك. كما تسهم الدراسة في الأدبيات الحالية من خلال توضيح العلاقة بين تبني تقنيات الذكاء الاصطناعي وموثوقية نظم المعلومات المحاسبية في سياق القطاع المصرفي، وذلك بالاقتران مع وجود بنية تحتية راسخة لنظم المعلومات المحاسبية. حيث توصي الدراسة بضرورة توفير برامج تدريب متخصصة للإدارة والعاملين لدعم الاستخدام الفعال لأدوات وتقنيات الذكاء الاصطناعي الحديثة. وتشير النتائج أيضاً إلى أن المنظمات الساعية إلى تطوير نظم المعلومات المحاسبية لديها من خلال التقنيات الحديثة يمكنها الاستفادة من هذه النتائج كأساس لوضع استراتيجيات تخطيط مناسبة لتحقيق ذلك.

الكلمات المفتاحية: الذكاء الاصطناعي، موثوقية أنظمة المعلومات المحاسبية، والقطاع المصرفي.

الأدب