INTERNATIONAL JOURNAL OF EDUCATIONAL AND SCIENTIFIC RESEARCH FINDINGS, MAY, 2025, ISSN: 2749-7481 VOL. 7 NO.1, GERMANY

ARTIFICIAL INTELLIGENCE AND THE EFFICIENCY OF SYSTEM MANAGEMENT IN BANKS: AN /ACADEMIC DISCOURSE

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ABSTRACT

Today's global economy is witnessing increasing competitiveness driven by therapid development of information technologies, which have become pivotal in various sectors, including regional and urban planning. The tremendous advancement in information systems has propelled institutions, both in the public and private sectors, towards adopting modern technologies to process financial and accounting data in innovative ways characterized by professional and intellectual intelligence. This transformation is crucial for enhancing the sustainability of financial institutions, particularly banks, in a dynamic environment that demands continuous adaptation to cyclical, contingent, and sudden changes. In the context of regional and urban planning, the efficiency of financial and banking systems has become a fundamental element in supporting sustainable development and effectively financing urban projects. However, traditional methods of bank management are no longer sufficient to keep pace with the accelerating developments in enhancing the efficiency of financial systems, especially concerning the prevention of manipulation, detection of fraud, and management of risks. This situation has necessitated the adoption of advanced methodologies based on Artificial Intelligence (AI), which provides sophisticated technologies that enable the enhancement of the efficiency and reliability of banking system management. This contributes to achieving the requirements of SAR and QIP necessary for highly efficient bank management, which positively reflects on regional and urban planning by improving project financing and directing investments in more accurate and sustainable ways. Artificial intelligence is considered one of the most important modern technologies that significantly contribute to rapid technological development, thereby enhancing opportunities for innovation and growth in various fields. With the increasing use of AI technologies, it has become vital in improving the efficiency of urban planning, resource management, and enhancing the sustainability of cities, in addition to improving the quality of banking services and increasing the potential and efficiency of banks. Despite the widespread adoption of these technologies and the extensive discussion about their capabilities, they are still surrounded by ambiguity or exaggeration that may raise expectations and lead to unrealistic perceptions. This makes the understanding of AI and its real potential unclear to many decision-makers or executives in the public and private sectors, which calls for conscious strategies that effectively employ these technologies in supporting sustainable regional development. This research seeks to achieve two main objectives: The first is to clarify the concept of artificial intelligence and its technologies, along with the concept of electronic financial auditing, its procedures, and everything related to bank management. The second objective is to demonstrate the role of artificial intelligence in enhancing the quality of bank management and its reflection on overall

performance, with a focus on its impact on regional and urban planning. These technologies contribute to the development of financial systems that support urban projects and enhance the efficiency of regional planning through effective financial resource management and the achievement of economic sustainability in urban areas. The research was based on two main hypotheses: The use of artificial intelligence techniques helps in achieving quality bank management and performance in the implementation of all banking systems and programs (electronic auditing, deposits, withdrawals, etc.), thereby enhancing the efficiency of regional and urban planning by supporting development projects and improving the investment of financial resources. The use of artificial intelligence plays a role in achieving quality performance, and the use of digital transformation technologies leads to the activation of continuous auditing. Electronic financial banking auditing in general, supported by artificial intelligence, helps in enhancing transparency and governance within banks, leading to more accurate financial decisions that positively reflect on the sustainability and financing of urban and development projects. On the practical side, work was done to test the role of artificial intelligence in implementing the efficiency of banking system management and its role in achieving quality performance, through the use of a questionnaire distributed electronically to a number of academic accountants and auditors in a selected group of banks. A total of (54) questionnaires were distributed, and (32) questionnaires were answered and analyzed using the (SPSS 30 - 2024) program. Based on this, the research was divided into four main axes:

The first axis dealt with the research methodology, while the second axis reviewed the theoretical framework of artificial intelligence and its role in improving the efficiency of banking system management. The third axis focused on the applied aspect, while the research concluded in the fourth axis with conclusions and recommendations aimed at enhancing the integration between artificial intelligence and bank management within the framework of sustainable regional planning.

KEYWORDS: Artificial Intelligence in Bank Management, Sustainable Urban and Regional Planning, Risk Management, Fraud Detection, Urban Project Financing, Quality Performance, Technological Innovation, Financial Decision-Making.

Axis One: Research Methodology

1-1 Research Problem: The increasing volume, diversity, and complexity of banking financial operations, particularly in light of the expansion of institutional activities and the growing pressures on them, have led to reliance on methods and approaches that incorporate financial, accounting, and administrative patterns to achieve high levels of efficiency and performance. To achieve this, these banks need to control their internal systems involved in financial transactions, which necessitates the use of artificial intelligence to implement electronic auditing of financial activities, and thus the adoption of advanced technologies embodied by AI. Accordingly, the research problem has been formulated by posing several questions as follows:

1- Does the use of artificial intelligence help in implementing efficiency (comprehensive auditing of banking systems) in electronic auditing?

2- Does the use of artificial intelligence play a role in achieving quality performance?

1-2 **Research Importance: The importance of the research stems from the following:**

1- The significant role of using advanced electronic systems in influencing decision-makers and gaining the trust of clients and stakeholders within banks, and the necessity for banks to pay attention to its application to improve performance.

2- Identifying the role of artificial intelligence in implementing efficient electronic financial auditing and its role in achieving quality performance.

1-3 **Research Objectives:** By presenting the research problem and its importance, this research seeks to achieve the following objectives:

1- To explain the concept of artificial intelligence and its technologies, and the concept and procedures of using electronic systems.

2- To demonstrate the role of artificial intelligence in implementing the use of electronic auditing banking systems and its role in achieving quality performance in bank management.

1-4 Research Hypotheses: Based on the research problem, importance, and objectives, the research is based on two hypotheses:

1- The use of artificial intelligence leads to the implementation of electronic financial auditing.

2- The use of artificial intelligence plays a role in achieving quality performance in bank management.

1-5 **Data Collection Methods:**

Theoretical Aspect: Sources collected from Arabic and foreign journals, along with theses, dissertations, and modern scientific conferences that addressed the research topic, specifically those related to artificial intelligence and electronic auditing, were utilized.

Practical Aspect: To cover the research hypotheses and its theoretical framework and to reach conclusions, the research relied in its practical aspect on the preparation and design of an electronic questionnaire. This questionnaire was distributed to accountants and auditors working in a selected group of banks, totaling distributed electronic questionnaires. questionnaires were answered, questionnaires were not answered, and were invalid for analysis. The statistical program (SPSS) was used to test the hypotheses and reach conclusions.

Axis Two: Theoretical Framework

2. The Genesis of Artificial Intelligence

Artificial intelligence is considered a modern cognitive science. The beginnings of research related to artificial intelligence date back to the 1940s, with the circulation, spread, and use of computers. In the early 1950s, research interest focused on neural networks. Then, in the 1960s, research activity turned to knowledge-based systems, which continued to be worked on until the end of the 1970s. In the early 1980s, the announcement of the Japanese project, which adopted the fifth generation of computers, marked a significant leap in the field of artificial intelligence research (Al-Samarrai & Al- Shuraida, 2020). Artificial intelligence is a science that works on researching how to make computers perform tasks and activities that humans perform, but in a way that takes less time and effort (Abdul Majeed, 2009).

The use of information technology in managing the business matrices of banks is not a new matter, such as the current use of computers in financial transactions, which has been in use for a long time and continues to this day. However, the introduction of advanced information technologies such as artificial intelligence and the increase in the quantity and volume of data are important factors that have made those responsible for bank management focus on the benefits and gains from their use of information technologies in the process of improving the efficiency and quality of bank performance, which has become a modern trend towards that changing world of auditing (Samahdan& Salmo, 2021).

CONCEPT OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is an application on computers that works to build programs capable of studying and applying the repetitive tasks and activities performed by humans (Anbar,2015). It has also been defined as giving the computer the ability to think independently and through external data provided to machines, enabling them to learn, interpret, and develop themselves (Isaca,2018). Furthermore, it has been described as a machine that applies tasks

through algorithms as its basis and in an intelligent manner through the machine's ability to receive data and information as inputs in a rapid manner (Aneta, 2019), process these inputs. Accordingly, artificial intelligence is a set of cutting-edge programming approaches and strategies for accounting systems that can be utilised to create and expand a system that mimics aspects of human intelligence and enables the user to carry out an inferential procedure based on the rules and information kept in the computer's memory. This enables the computer to reason and solve issues in a way that is more precise and well-structured than human reasoning.

TYPES OF ARTIFICIAL INTELLIGENCE

There are several types of artificial intelligence that can be used in banking operations, as follows:

a. Assisted Artificial Intelligence: This refers to machines that perform simple tasks, duties, and operations through the availability of computing power and big data, which helps in the decision-making process. This type of intelligence is characterized by its use in accomplishing main tasks and duties, thus freeing the auditor from performing the more complex and intricate duties (Helmy, 2022).

b. Augmented Artificial Intelligence: This type of intelligence allows institutions and those in charge of banks to do things they cannot do by supporting human decision- making, rather than by simulating autonomous intelligence. Augmented intelligence can make some decisions on its own, but these are not completely independent decisions. Consequently, this type of intelligence poses a risk to management independence if the management is new and inexperienced in dealing with artificial intelligence and its application.

c. Autonomous Artificial Intelligence: This type of intelligence is more advanced and complex than its predecessors. It refers to machines and systems that perform activities and operations on their own, regardless of human intervention, and perform duties and tasks that were unsafe or impossible for management to carry out. This type is considered risky due to its independent operation, which leads to management's inability to see how the system makes decisions. This represents a risk to the efficiency of overall performance execution for banking activities (Uglum, 2021).

Therefore, management must be aware and knowledgeable of these types and how to benefit from each type before using any of them, to avoid any risks that may result from such use.

ARTIFICIAL INTELLIGENCE TECHNIQUES

Artificial intelligence includes several techniques, which are:

1. Neural Network Technology: This is a technology through which the process of integrating cognitive sciences and computing is carried out to perform specific duties and tasks by simulating the work of the brain's nervous system. This means it integrates artificial intelligence and neuroscience to solve many complex tasks (Madahi, 2022). The emergence of this technology is necessary to teach the computer how to think like human thinking. It allows the computer to simulate and imitate the human brain more closely, while still being more accurate, faster, and less biased. A neural network is a computer system designed to categorize and classify data and information in the same way the human brain or thinking does. It can look at images, distinguish their contents, and classify them according to what has been presented. It uses data that the user can access and make a decision (Jarrah, 2019).

2. Machine Learning Technology: This is a set of programming techniques that allow the computer to adapt its behavior to its environment without human intervention. From a technical standpoint, it is defined as an algorithm designed to make decisions independently without prior programming (Al-Ta'i, 2023). This technology relies on a fundamental principle:

that the computer receives data and information and learns on its own without any intervention (B., 2019). This technology is promising within the realm of artificial intelligence techniques, and training and knowledge can be implemented very quickly through a large dataset for speech recognition, face recognition and distinction, recognition of the required translation, and recognition of other things. This is in contrast to manual intervention of a programmed software with limited instructions to complete a specific task (Reese, 2017).

3. Deep Learning Technology: This is one of the artificial intelligence techniques that involves human intervention in creating a simulation of human thinking and is used to process data and information and assist in making decisions (Taher & Ahmed, 2022). It is also a machine learning method, but it is broader and more fundamental, enabling high-precision use for auditing data and information and then drawing conclusions.With this technology, it has become possible for the computer to detect aspects that need to be noted among a dataset, which are called features or characteristics. The computer automatically acquires features that are difficult to explain logically and linguistically, such as classifying image data through programming. It is necessary for humans to input and define quantities of features (Jarrah, 2019). In addition to the main techniques mentioned, there are other technical tools that can be included within artificial intelligence techniques, including expert systems, training and experience, and technical knowledge.

2.3 Integration of Bank Management with Electronic Auditing for All Banking Business Management Matrices

2.3.1 Concept of Electronic Auditing: Electronic auditing is a process that involves collecting, estimating, and evaluating information to determine whether the use of computers contributes to and protects the institution's assets, verifies the integrity and accuracy of its financial data, and achieves objectives with the required effectiveness and efficient use of resources (Barzan, 2015). It has also been defined as the application of a computer system using information technologies to assist the auditor in planning, control, and documenting the audit process (Abu Aqlah & Othman, 2021).Furthermore, it has been described as the process of auditing through information technology, which helps auditors in various stages of the audit process, including planning, control, risk identification, and risk assessment (Mohsen&Al-Saqqa, 2022). Accordingly, electronic auditing is the process of applying modern computer technology, such as advanced artificial intelligence techniques, which will assist the auditor in performing the assigned audit task in its various stages and completing the audit process with high efficiency, accuracy, and speed that surpasses traditional auditing.

The use of artificial intelligence techniques enhances and significantly supports the electronic auditing process. The work will be characterized by efficiency, accuracy, good organization, and systematic approach through this intelligent machine that can do everything on its own automatically. The Italian philosopher Machiavelli mentioned that there are three types of intelligence: the first is excellent, which understands the details of things on its own; the second is good, which appreciates what others know; and the third is useless, as it does not understand things on its own (Abu Al-Qasim, 2012).

2.3.2 Electronic Auditing Procedures: There are procedures and duties that bank management must follow when implementing electronic auditing, which are as follows:

a. Skills and Competence: Bank management must possess sufficient knowledge in using the systems implemented by the computer in its work to plan the assigned audit process and supervise the workflow. Management must also verify whether a set of specialized skills in these technical systems is required during the audit process. The objectives of following and using these skills are as follows (Barzan, 2015):

- To understand adequately the accounting system and the control system affected by the use of technologies and systems on the computer.
- To determine the impact of this environment on risks and on overall risk assessments.
- To design and conduct appropriate control tests and substantive key procedures.

b. Planning the Audit Process: This is done through understanding the accounting system and the internal control system, which enables bank management to plan the assigned audit process and develop and envision an effective approach to its completion. When planning a part of the audit task affected by the computer information systems used, (bank management) must understand the complexity and importance of the activities and operations of those computer systems (Omoteso, 2012).

c. Risk Assessment: This involves identifying the risk factors that impede the achievement of the audit process objectives. It is a crucial stage of the initial key stages in evaluating, assessing, and studying the internal control system, which will determine and establish the foundations and procedures that will be followed to correct and address any expected threats or negative impacts (Yassin et al., 2020). Bank management should assess the inherent risks and control risks in the operation and environment of computer systems and technologies, and the overall impact and the impact on a specific account in the event of potentially incorrect key data or information (Al-Matarna, 2013).

Thus, the electronic auditing followed by bank management using artificial intelligence techniques, including computer programs and systems, electronic data, and information, is considered a set of procedures that fall within the audit process to record and process incoming data and information related to audit significance within the institution's information system in general and for banks in particular.

2.3.3 Role of Artificial Intelligence in Implementing Electronic Auditing and Achieving Quality Performance for the Auditor: Because the auditor only looks at a sample of data and information, the application of artificial intelligence may assist lower the risks associated with the audit process, which center on the failure to identify significant and material flaws in financial data and information or in the internal system. Because of its significance and exceptional capacity to thoroughly analyze the financial data and information that is being audited, artificial intelligence tools have thus become indispensable. This helps auditors and enables them to identify suspicious and unusual transactions. In the presence of artificial intelligence techniques and their use in the institution, they will help in applying electronic auditing through speed in making decisions by providing the required data and information, shortening the completion of the audit process, and assisting in examining and evaluating data and information with high accuracy and a low margin of error during the application of the audit process. Thus, electronic auditing is applied using artificial intelligence.

Artificial intelligence will also assist bank management in performing its tasks of examination and evaluation using advanced programs and systems contained in artificial intelligence techniques to detect any potential violations or errors to be recorded in its report. This leads to increased audit efficiency in all aspects of bank transactions. These advanced technologies will qualify it to reach the highest levels of performance with less effort and less time spent, without spending long hours auditing financial data and information. Artificial intelligence techniques perform the audit process in an ideal and standard time, which will help shorten the completion time for the bank, thereby achieving quality professional performance. (Tikrit Journal of Administrative and Economic Sciences, Vol. 19, No. Special Issue, Part (1): 159-182)

CONCLUSIONS

The Role of Artificial Intelligence in Developing Banking Systems: Artificial intelligence is a set of advanced methods and techniques used to program accounting systems in banks, enabling the development of intelligent systems that mimic human abilities in reasoning and decision-making. By analyzing financial data and deriving solutions based on stored rules and standards, these systems can improve the accuracy and efficiency of banking operations, thereby enhancing their integration with sustainable regional planning by supporting economic and development projects. Electronic Auditing in Banks and Its Role in Regional Planning: Electronic auditing is an essential part of modern banking management, relying on artificial intelligence techniques in all stages of auditing, starting from planning, through monitoring, risk assessment, and up to corrective actions. This development contributes to improving banking governance, positively impacting the quality of financial resource management in urban and regional projects, and ensuring efficient investment in infrastructure and economic development. Banking Performance Quality and Its Reflection on Regional Planning: The quality of banking performance is measured by the bank's adherence to international auditing standards, ensuring the accuracy and transparency of financial processes. Furthermore, detecting potential errors and breaches in the accounting system enhances trust in banking institutions, a crucial factor in supporting large projects and sustainable regional planning by providing a stable financial environment that attracts investments. The Importance of Artificial Intelligence in Achieving Banking Efficiency: Artificial intelligence significantly contributes to the efficient application of electronic financial auditing programs, making financial and administrative auditing processes more accurate and effective. Additionally, improving the quality of banking services and increasing security and trust in financial operations enhances banks' ability to support urban initiatives, especially when appropriate staff training is provided on using these technologies. Enhancing Banking Management Efficiency through Artificial Intelligence Technologies: Relying on intelligent systems and software helps banks improve their ability to detect financial violations and prepare accurate reports, which improves administrative performance and strengthens the role of banks in supporting regional and urban projects by providing more advanced and sustainable financial solutions. Research Results on the Impact of Artificial Intelligence on Banking Management: The research findings revealed that artificial intelligence techniques contribute to accelerating the implementation of banking management plans and effectively applying electronic auditing programs. This feature ranked first with a relative importance of 14.19. Providing skills and capabilities to employees ranked second with 12.28, while these techniques helped overcome deficiencies in banking management, placing them third with 12.13. Together, these factors enhance the role of banks in financing and organizing regional and urban projects effectively, ensuring sustainable development according to the best financial and planning practices.

RECOMMENDATIONS

1. **The Role of Artificial Intelligence in Developing Banking Systems and Supporting Regional Planning:** Artificial intelligence is an integrated system of advanced methods and techniques that contributes to programming accounting and management systems within banks. It enables the development of intelligent solutions that mimic human abilities in analysis, reasoning, and decision-making. By processing financial data according to precise standards, artificial intelligence helps improve the efficiency of banking operations, which enhances the role of banks in supporting economic and developmental projects. It enables them to perform a strategic role in sustainable regional planning by providing accurate and advanced financial tools.
2. **Electronic Auditing as a Pillar in Banking Management and Urban Planning:** Electronic auditing is a key element in the modern development of banking management, relying on artificial intelligence technologies throughout all stages, from planning and evaluation to monitoring, risk management, and taking necessary corrective actions. This modern approach ensures a high level of transparency and efficiency in the banking system, which contributes to improving the management of financial resources allocated to urban and regional projects. It also enhances the ability of governments and the private sector to fund infrastructure and development projects sustainably.
3. The Quality of Banking Performance and Its Role in Achieving Stability in Regional Planning: Adherence to international auditing standards is a key factor in achieving banking performance quality, as these standards ensure the accuracy of financial processes, detect potential violations, and enhance the reliability of banking systems. By developing auditing mechanisms supported by artificial intelligence, a more stable financial environment can be achieved, which supports the implementation of major regional projects and contributes to economic sustainability by efficiently managing financial resources.
4. Artificial Intelligence as a Tool to Enhance Financial and Administrative Auditing Efficiency: Artificial intelligence directly contributes to improving the accuracy and effectiveness of financial and administrative auditing processes within banks. This leads to the development of more efficient procedures in financial data analysis, reducing human errors, and enhancing security and trust in the banking system. This, in turn, helps improve the sustainability of urban and regional projects by providing reliable funding sources and reducing financial risks that may affect regional planning processes.
5. **Improving Banking Management Efficiency through Smart Technologies:** By relying on artificial intelligence technologies, banks enhance their ability to detect financial violations and produce accurate and objective reports, improving administrative performance. This efficiency positively reflects on regional planning, as it allows financial institutions to offer more sustainable financing solutions and assists in developing financial policies that align with long-term developmental goals.
6. Research Findings on the Impact of Artificial Intelligence on Banking Performance and Regional Planning:The research findings showed that artificial intelligence technologies significantly contribute to accelerating the implementation of banking

management plans and the efficient application of electronic auditing programs. This benefit ranked first with a relative importance of 14.19. Furthermore, improving the skills and capabilities of employees ranked second with 12.28, while these technologies helped overcome administrative deficiencies by 12.13. These results confirm that the effective integration of artificial intelligence with banking management contributes to financial stability and enhances the banks' ability to support and finance regional and urban projects, ensuring sustainable development according to the best financial and planning practices.

REFERENCES

Abdul-Majid, Qutayba Mazen (2009), "Using Artificial Intelligence in Electrical Engineering Applications (Study and Comparison)," Unpublished Master's Thesis, Arab Academy in Denmark.

Abu Al-Qasim, Mohamed (2012), "Artificial Intelligence and Expert Systems," Libya.

Abu Aqleh, Moataz Yusuf Ahmed and Othman, Afra Al-Fadl Mohamed (2021), "The Importance of Developing the Electronic Auditing Profession Through Artificial Intelligence Technology to Achieve Performance Quality," [link].

Al-Huwaidi, Ali Mahmoud Mustafa (2015), "The Impact of Joint Auditing on the Quality of Financial Reports: An Applied Study on Egyptian Banks Listed on the Stock Exchange," *Journal of the Faculty of Commerce for Scientific Research*, Faculty of Commerce, Alexandria University.

Al-Matarneh, Ghassan Falah (2013), "Introduction to Contemporary Auditing," Zamzam Publishers, 1st Edition, Amman, Jordan.

Al-Samarraie, Ammar Essam and Al-Shureida, Nadia Abdel-Jabbar (2020), "The Role of Artificial Intelligence Techniques Using Digital Auditing in Achieving Auditing Quality and Supporting Its Strategy from the Perspective of Auditors: A Field Study in Audit Firms in the Kingdom of Bahrain," *International Journal of Economics and Business*, University of Applied Sciences, Kingdom of Bahrain.

Al-Taai, Omar Zuhair Ezz El-Din (2023), "The Role of Artificial Intelligence in Improving the Quality of Internal Auditing: An Exploratory Study in Some Iraqi Banks," *Regional Studies Journal*, Year (17), Issue (55), Faculty of Administration and Economics, University of Mosul.

Anbar, Sami Jaber (2015), "Auditing Quality Based on Artificial Intelligence," PhD Thesis Submitted to the Council of the Higher Institute for Accounting and Financial Studies, University of Baghdad.

Aneta, Zemankova, (2019), Artificial intelligence in audit and accounting: development, current trends, opportunities and threats, international conference on control, artificial intelligence, robotics &optimization.

Barzan, Sabeha (2015), "The Impact of Electronic Auditing on Enhancing the Independence and Efficiency of the Internal Auditor," *Journal of Economic and Administrative Sciences*, Volume (32), Issue (4), College of Administrative Technical, Baghdad.

Bi, Q., Goodman, K.E., Kaminsky, J. and Lessler, J., (2019), What is machine learning? A primer for the epidemiologist, *American journal of epidemiology*, 188(12).

Helmy, Riham Mohamed Abdel Latif (2022), "The Impact of Artificial Intelligence on the Auditor's Role in the Auditing Process: A Field Study," Fifth Scientific Conference for

the Department of Accounting and Auditing "Challenges and Prospects for the Accounting and Auditing Profession in the 21st Century," Faculty of Commerce, Ain Shams University.

Isaca, (2018), Auditing artificial intelligence", www.isaca.org/auditing-Al.

Jarrah, Nada Badr (2019), "Artificial Intelligence Techniques for Developing Statistical Machine Learning," *Iraqi Journal of Information Technology*, Volume (9), Issue (3), College of Administration and Economics, University of Basra.

Medahi, Mohamed (2022), "Reflections of the Fourth Industrial Revolution Applications– Artificial Intelligence on the Economies of Arab Countries," *Tikrit Journal of Administrative and Economic Sciences*, Volume (18), No. (60), Faculty of Economic, Commercial, and Management Sciences, Akli Mohand Oulhadj University of Bouira, Algeria.

Mohsen, Imad Saadoun and Al-Saqa, Ziad Hashem Yahya (2022), "The Role of Electronic Internal Auditing in Increasing the Effectiveness of the Internal Control System: An Applied Study in the Ninawa Directorate of Water," *Tikrit Journal of Administrative and Economic Sciences*, Volume (18), No. (60), Faculty of Administration and Economics, University of Mosul.

Nguyen, H., (2019), Artificial intelligence and its impact on workforce, Business Management, Centria University of Applied Sciences.

Omoteso, K., (2012), The application of artificial intelligence in auditing: Looking back to the future. Expert Systems with Applications, 39(9).

Reese, H., (2017), Understanding the differences between Al, machine learning, and deep learning Uglum, Marcy Kim, (2021), Consideration of the ethical implications of artificial intelligence in the audit profession, www.scholarworks.uni.edu/hpt.

Rizk, Alaa Ahmed (2020), "The Contribution of Artificial Intelligence Techniques in Supporting the Quality of Professional Performance in Accounting and Auditing Firms in Egypt (An Applied Study on Large Accounting and Auditing Firms)," *Accounting Thought Journal*, Volume (24), Issue (2), Faculty of Commerce, University of Aswan.

Samehdan, Maha and Salemo, Tamara (2021), "Reflections of Artificial Intelligence on the Field of Auditing," Issue (15), Arab Monetary Fund

Taher, Shiya Rida and Ahmed Dalir, Musa (2022), "The Role of Artificial Intelligence Techniques in Improving the Quality of Accounting Information: An Analytical Study of the Opinions of Academics Specializing in the Kurdistan Region of Iraq," *Tikrit Journal of Administrative and Economic Sciences*, Volume (18), No. (60), Salahaddin University, Erbil.

Yaseen, Ali Taha, Aidan, Ahmed Kazem, and Barak, Jasim Aidan (2020), "The Reality of Electronic Auditing in Iraqi Commercial Banks from the Perspective of External

Auditors: An Exploratory Study of the Opinions of a Sample of External Auditors," *Journal of the Faculty of Administration and Economics for Economic, Administrative, and Financial Studies*, Volume (1), Issue (12