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The Effect of Activating Artificial Intelligence techniques on Enhancing Internal Auditing Activities
" Field Study "

Abstract

New challenges in internal auditing are the digitization of all activities of the company. These challenges force internal audit to increasingly adopt data–driven processes. Auditing is increasingly using artificial intelligence methods such as neural networks to overcome these challenges. Auditors need to understand the fundamentals of artificial intelligence, identify the roles they need to play, identify AI risks and opportunities, prepare for change, recast their role, and adapt to process automation. Accounting firms report the use of artificial intelligence (AI) in their audit and advisory functions, citing benefits such as time savings, faster data analysis, greater accuracy, deeper insights into business processes, and improved accuracy. AI a new technology designed to mimic human cognitive skills and judgment, promises users competitive advantages. As a result, all of the Big 4 companies report their use and their plans to continue this innovation in areas such as risk assessments for audit planning, transaction testing, analysis, and creation of audit working papers, among others.

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Purpose–examining the relationship between artificial intelligence techniques and internal auditing activities

The study hypothesis states that: **–** The first hypothesis there is no statistically significant relationship between artificial intelligence techniques and internal auditing activities. The second hypothesis: – there is statistically significant relationship between artificial intelligence techniques and internal auditing activities

Design/methodology/approach–The methodology adopted was survey method to collect primary data using a structured questionnaire. A total of 100 copies of questionnaire were distributed with 66 answered correctly and fully retrieved. Data was analyzed using statistical package for social science (SPSS) was used to measure the influence of digital transformation on internal audit quality and its influence on the financial reporting quality at 95% confidence level.

The study results and statistical show that the artificial intelligence techniques improve the activities of internal auditing. The Study recommended that using of artificial intelligence applications in remote audit, where its measure works for providing additional information to users of financial statements, reducing costs and save time,   using artificial intelligence in all corporate activities for reducing the costs and continuous revision of mechanisms of artificial intelligence and their use in remote internal auditing in light of epidemics.

Keywords: Internal Audit, Internal Audit Attributes, Artificial Intelligence (IA)

أثر تفعيل تقنيات الذكاء الإصطناعي علي تعزيز أنشطة المراجعة الداخلية "دراسة ميدانية"

ملخص البحث

التحديات الجديدة في المراجعة الداخلية هي رقمنة جميع أنشطة الشركة ،هذه التحديات تجبر المراجعة الداخلية على اعتماد عمليات قائمة على البيانات بشكل متزايد. تستخدم المراجعة بشكل متزايد أساليب الذكاء الاصطناعي مثل الشبكات العصبية للتغلب على هذه التحديات. كما يحتاج المراجعون إلى فهم أساسيات الذكاء الاصطناعي ، وتحديد الأدوار التي يحتاجون إليها ، وتحديد مخاطر الذكاء الاصطناعي والفرص والتحديات ، والاستعداد للتغيير ، وإعادة صياغة دورهم ، والتكيف مع أتمتة العمليات. صرحت معظم شركات المحاسبة عن استخدام الذكاء في وظائف المراجعة والاستشارات ، مستشهدة بفوائد استخدام الذكاء الاصطناعي مثل توفير الوقت ، وتحليل أسرع للبيانات ، ودقة أكبر ، ورؤى أعمق في العمليات التجارية ، وتحسين الدقة.يعتبر الذكاء الاصطناعي تقنية جديدة مصممة لتقليد المهارات المعرفية البشرية وأحكامها ، تعد المستخدمين بمزايا تنافسية. نتيجة لذلك ، أبلغت جميع الشركات الأربع الكبرى عن استخدامها وخططها لمواصلة هذا الابتكار في مجالات مثل تقييمات المخاطر للتخطيط للمراجعة ، واختبار المعاملات ، والتحليل ، وإنشاء أوراق عمل خاصة بالمراجعة .

هدف الدراسة: دراسة العلاقة بين تقنيات الذكاء الاصطناعي وأنشطة المراجعة الداخلية

تنص فروض الدراسة على ما يلي: الفرضية الأولى لا توجد علاقة ذات دلالة إحصائية بين تقنيات الذكاء الاصطناعي وأنشطة المراجعة الداخلية. الفرضية الثانية: – توجد علاقة ذات دلالة إحصائية بين تقنيات الذكاء الاصطناعي وأنشطة التدقيق الداخلي

التصميم / المنهجية / المنهج – كانت المنهجية المتبعة هي طريقة المسح لجمع البيانات الأولية باستخدام استبيان منظم. تم توزيع 100 نسخة من الاستبيان علي عينة من المراجعيين والمحاسبين وأعضاء هيئة التدريس المدراء الماليين وتم تحليل البيانات باستخدام البرنامج الاحصائي عند مستوي ثقة 95%.

تظهر نتائج الدراسة والإحصاءات أن تقنيات الذكاء الاصطناعي تعمل على تحسين أنشطة المراجعة الداخلية. وأوصت الدراسة بأن استخدام تطبيقات الذكاء الاصطناعي في المراجعة عن بعد حيث يعمل مقياسه على توفير معلومات إضافية لمستخدمي البيانات المالية وتقليل التكاليف وتوفير الوقت واستخدام الذكاء الاصطناعي في جميع أنشطة الشركات لتقليل التكاليف والمراجعة المستمرة لآليات المصطنعة. الذكاء واستخدامها في المراجعة الداخلية عن بعد في ظل الأوبئة.

الكلمات المفتاحية: المراجعة الداخلية، سمات المراجع الداخلي ، الذكاء الاصطناعي

A- Introduction

Many researchers believe that the auditing profession will be transformed by data analytics technologies and artificial intelligence (AI) (Gepp, A., et al, 2018; Issa, H., et al, 2016). They predict that new technologies will have a huge impact on the auditing profession through automation, greater audit scope, shortened processing times and, consequently, improved audit quality (Nonnenmacher, J., et al, 2021). These new technologies are also used to re-spond to changes that companies have made to their business processes (Chiu, V., et al., 2018). These changed business processes generate large amounts of data, making some manual auditing methods obsolete or even impossible. This makes auditing an ideal area for AI with the big four accounting firms investing in it (Sun, T., et al, 2018) and already using some AI functionality for external auditing (Sun, T., et al, 2018)

AI is a technology that is programmed to mimic human judgment and cognitive skills and can be designed to take environmental cues. Based on these clues, AI systems can assess risks to make decisions, forecasts or measures. Unlike other software, AI systems "learn" from data and can self-monitor over time due to exposure to new data, without being explicitly pro-grammed by a human (Shaw 2019) . The Big Four audit firms have made and continue to make significant investments in AI for consulting and assurance practices (Munoko, I., et al. 2020). In insurance practice, artificial intelligence is used to perform auditing and accounting procedures, such as reviewing general ledgers, tax compliance, preparing working papers, analyzing data, spend compliance, fraud detection and decision making. Artificial intelligence promises to examine unstructured data in real time and provide concise analy-sis of numerical, textual and visual data. In the face of big data (relevant and irrelevant), intelligent systems can effectively direct a listener to higher risk areas (Munoko, I., et al. 2020).

Research also highlights the relevance of these technologies for internal auditing (Salijeni, G., et al., 2019). Internal auditing is an independent and objective assurance and consulting activity aimed at improving the operations

of an organization (Nonnenmacher, J., et al, 2021). To this end, verifications are carried out through defined verification engagements. During an internal audit engagement, drawing samples of transactions and comparing them with the guidelines is still an important component of gathering and evaluating information.

With the application of artificial intelligence technology and the expansion of the scope of internal audit functions and the growing importance of internal audit, the meaning of internal audit is constantly changing (Li, E., Xu, H., et al, 2020) The Institute of Internal Auditors (IIA) believes that internal auditing is an independent and objective assurance and consulting activity, and that it aims to add value to the organization and improve its operational efficiency. A systematic and standardized approach is needed to assess risk management, control and governance processes and improve their effectiveness to help achieve organizational objectives. It shows that the IIA is very concerned about the authenticity and legality of financial audits and specifies in detail the methods and procedures of fraud audits. Although the term "evaluate" is used to explain that internal audit is the primary function of internal audit (Steinbart, PJ, 2018), it is not hard to find that "evaluate" contains a strong sense of "oversight ". Originally, verification was economic supervision. Without supervision, verification would lose its essential characteristics. At the same time, the level of science and technology and marketing is constantly improving, and the functions of internal audit should also be continuously expanded (Li, E., Xu, H., et al, 2020).

B- Literature Review

Study of (**Luo**, **J**., **et al**., **2018**) Examine the Impact of Artificial Intelligence Application on the Development of Accounting Industry with the rapid development of information technology and the needs of business society, artificial intelligence has ushered in the golden age. The application of artificial intelligence technology in the field of accounting is an inevitable trend that will bring tremendous changes and developments to the accounting industry. The study found that artificial intelligence is moving from technology

research and development to industrial application, and has become a new driving force for global economic development. The accounting industry should also strengthen the main position of artificial intelligence application in the process of reform and innovation. For enterprises, making good use of the new information technology will be the key to capturing opportunities and upgrading in the new era. Undoubtedly, intelligent finance and accounting is the future development trend. In the process of promoting the application of artificial intelligence in the accounting field, it is necessary for the country, enterprises, universities, individuals and other parties to work together, and how to effectively solve the problems arising in the process of application will be the key.

Study of (**Munoko**, **I**., **et al**., **2020**) aimed to investigate about the ethical implications of using artificial intelligence in auditing. Accounting firms report the use of artificial intelligence (AI) in their audit and consulting functions, citing benefits such as time savings, faster data analysis, increased levels of accuracy, deeper insight into business processes and improved customer service. AI, an emerging technology that aims to mimic the cognitive skills and judgment of humans, promises competitive advantages to the adopter. The study concluded that all of the Big Four companies report on their use and plans to continue this innovation in areas such as audit planning risk assessments, transaction testing, analysis and verification work, among other uses. As the uses and benefits of AI continue to emerge within the auditing profession, it is gradually being realized that unintended consequences can also arise. Thus, we answer the call of many researchers to explore not only the benefits of AI, but also the ethical implications of using this emerging technology. By combining two futuristic ethical frameworks, we foresee the ethical implications of using AI in auditing, given its inherent characteristics, nature, and intended functions. We provide a conceptual analysis of practical ethical and social issues surrounding AI, using previous studies as well as our inferences based on the reported use of the technology by audit firms. Beyond

exploring these questions, we also discuss the responsibility for policy and governance of emerging technologies.

Study of (**Singh**, **K**.**S**.**D**., **2021**) aimed to examine the antecedents and internal audit quality implications of internal audit effectiveness this paper examines factors associated with internal audit effectiveness, acknowledging the growing importance of internal control as a corporate governance mechanism in organizations. In addition, this paper also examines the relationship between internal audit effectiveness and internal audit quality. The study found that independence, objectivity and competence (the three building blocks of internal audit effectiveness) are also related to the quality of internal audit. The study contributes to agency theory by highlighting the factors associated with the effectiveness of internal audits and quality assurance findings in protecting the best interests of clients while complying with corporate governance. The study confirmed the importance of interagency coordination and audited support and acceptance of internal audit effectiveness, investigation of which remains limited in the current literature.

Study of (**Puthukulam**, **G**., **et al**, **2021**) aimed to Auditors' Perception on the Impact of Artificial Intelligence on Professional Skepticism and Judgment in Oman Technology is an unavoidable part of business and human lives. The study found it has produced substantial changes in the way businesses and operations are conducted. A business organization has to conduct an audit which involves analyzing and testing a large volume of financial transactions. In manual auditing, it is not possible to test and analyze all transactions in a business. The use of artificial intelligence (AI) and machine learning (ML) not only makes it possible to test all financial transactions in a business, but also helps improve audit efficiency. The study found that Audit efficiency is related to the professional skepticism and professional judgment demonstrated by the auditors. The main objective of the research is to understand auditors' perception of the impact of such technologies on professional skepticism and internal auditors' judgment in improving audit efficiency. To understand the impact of AI and ML, several factors influencing AI and ML

usage and challenges were considered. Data was collected from 169 respond–ents from all sectors of Oman using a structured questionnaire. The collected data was analyzed by correlation to determine the relationship between AI and ML assisted audit practices and professional skepticism and professional judgment. The results indicate that AI and ML assisted audit practices have a strong positive relationship with professional skepticism and professional judgment. This shows that AI and ML have an impact on professional skepti–cism and professional judgment. In addition, it helps to improve the detection of errors and material inaccuracies. Although the benefits of AI and ML out–weigh manual auditing, the complete replacement of humans with AI and ML should be viewed with caution. Therefore, the audit must be carried out with the help of AI and ML, along with human intervention to improve the efficiency of the audit.

study of (**Fedyk**, **A**.,**et al**, **2021**) aimed to examine is artificial intelli–gence making audit firms more efficient how does artificial intelligence (ai) impact audit quality and efficiency? We explore this question by leveraging a unique dataset of more than 310,000 detailed individual resumes for the 36 largest audit firms to identify audit firms' employment of AI workers. We provide a first look into the AI workforce within the auditing sector. AI workers tend to be male, relatively young, and hold mostly but not exclusive–ly technical degrees.

The study concluded that AI is a centralized function within the firm, with workers concentrating in a handful of teams and geographic locations. Our results show that investing in AI helps improve audit quality, reduces fees, and ultimately displaces human auditors, although the effect on labor takes several years to materialize. Specifically, a one standard–deviation change in recent AI investments is associated with a 5.0% reduction in the likelihood of an audit restatement, a 0.009 drop in log per client fees, and a reduction in the number of accounting employees that reaches 3.6% after three years and 7.1% after four years.

After reviewing all previous studies, researcher concluded that:–

–They are related to the research topic including artificial intelligence techniques and internal auditing activities. This study is one of the first studies that addressed The Impact of activating artificial intelligence techniques on enhancing internal auditing activities.

–The scarcity of researches conducted in developing countries regarding The Impact of activating the artificial intelligence techniques on enhancing internal auditing activities.

– There are projections that 30% of corporate audits will be performed by AI by 2025 interviewed accounting firms, including the Big 4 firms, and observed that technology is indeed reshaping the role of auditors. They found that continuous auditing and AI were some of the technologies that were anticipated to gain more prominence within the profession.

–Artificial intelligence refers to cognitive abilities to perform augmenting or simulating human thinking and is more and more present in daily life of people.

–Through The previous studies the researcher concluded that there are deficiencies in the quality of internal auditing activities resulting from the weakness of internal audit and the failure to use artificial intelligence techniques and delaying in issuing the financial reports that misled investors and other consumers of financial information in making their decisions.

–A common theme among audit firms' AI investments is increasing staff productivity and reducing the manual footprint, potentially signaling the value of AI in enabling audit firms to streamline their workforce. For example, associates refer to "automating [in] manual accounting processes" and "adopting solutions to reduce our manual footprint, increase quality, and expedite delivery time"

C- Study problems

Technology is an inevitable part of businesses and human lives has caused substantial changes in the way business and operations are carried out. A business organization has to audit that involves analyzing and testing a large volume of financial transactions. In the manual audit,

Testing and analyzing all transactions in a business are not possible the use of artificial intelligence (AI) and Machine Learning (ML) not only allows testing the complete financial transactions in a business, but also helps improve audit efficiency. The efficiency of the audit is related to the professional skepticism and professional judgment proven by the auditors. (Puthukulam et al.,2021)

Internal audit tasks within large organizations are slowed by the volume of documentation. Slow audit response time, sampling-based audit planning, and reliance on keyword searches are all indicators that automation is required to accelerate internal audit tasks. Audit quality also suffers when relevant gaps or risks are not disclosed to stakeholders in a timely manner. This work outlines a workflow automation solution called AuditMap.ai. The solution contains several artificial intelligence models that read in thousands of audit reports in various languages to continuously identify and organize the relevant text within. Rather than replacing the auditor, AuditMap.ai assists in the human-centered audit planning and execution process.

From the above discussion, **the main problem can be formulated as follows**:

There are deficiencies in the quality of internal auditing activities resulting from the weakness of internal audit and the failure to use artificial intelligence techniques and delaying in issuing the financial reports that misled investors and other consumers of financial information in making their decisions. **The research problem can be summarized on the following question**: **Does artificial intelligence techniques effect on the quality of internal auditing activities?**

D- Hypotheses

To achieve the goals of this study the following hypotheses will be tested:

The first hypothesis: – there is no statistically significant relationship between artificial intelligence techniques and internal auditing activities…

The second hypothesis: – there is statistically significant relationship between artificial intelligence techniques and internal auditing activities.

E- Study Objectives

The main objective of this research is examining the relationship between artificial intelligence techniques and internal auditing activities.

F- Methodology

An Analytical Study: –through the analysis of what was mentioned in books and periodicals, which deals with measures are analytical and that helps for obtaining information and evidence sufficient to enable him to carry out an analytical study for digital transformation , the quality of internal auditing and the quality of financial reporting?

An Empirical study: – adopted was survey method to collect primary data using a structured questionnaire. A total of 100 copies of questionnaire were distributed with 66 answered correctly and fully retrieved. Data was analyzed using percentage, tables and spearman rank order correlation techniques and with statistical package for social science (SPSS) was used to test the regression analysis was employed to measure the influence of digital transformation on internal audit quality and its influence on the financial reporting quality at 95% confidence level.

G- Research Structure

Introductory section: introduce introduction, the literature review the study problem, the   study objectives, the hypotheses, methodology and the research structure.

The first section deals with the Theoretical background

The second section deals with the empirical study.

The third section deals with conclusions, findings, recommendations and future studies

1- The first section: -Theoretical background
1-1 Artificial Intelligence

Pascal A. Bizarro and Margaret Dorian (2017) pointed out that artificial intelligence (AI) was born in 1948, when William Gray Walter created two small robots, called "Elmer" and "Elsie", capable of recognizing stimuli and to respond to them by encountering obstacles. (Bizarro, P.A., et al, 2017) In 1956, the Dartmouth workshop proposed the term "artificial intelligence", marking the birth of AI as a discipline (Huang, Z. 2018). Since then, the phenomenon of AI has received considerable attention in various fields. According to the 41st "China Internet Development Statistical Report" released in 2017 by China Internet Network Information Center (CNNIC), there are 2542 AI enterprises in the world, including 1078 in the United States (42, 4%) and 592 in China (23.3%) (CNNIC, 2018) Familiar AI products include Apple's Siri, self-driving cars and head-mounted virtual reality displays. In the field of taxation, this ever-evolving technology can improve the efficiency of automated tax auditing and decision-making, and play a vital role in government oversight and monitoring.

Artificial intelligence is a combination of hardware and software that functions like the human brain and can assess, decide, and execute complex judgment processes based on available data (Puthukulam, G., et al., 2021). AI-powered software systems can improve performance and make life easier for human beings by performing routine transactions.

The Oxford English Dictionary defines artificial intelligence as "the ability of computers or other machines to show or simulate intelligent behavior" (OED Online 2019), (Munoko, I., et al 2020) describes four levels of intelligence that artificial intelligence systems can exhibit. Although AI is not a new technology, given its conceptualization in the 1940s (Copeland 2004), it is still considered an emerging technology as the techniques used to implement it are in radical evolution (Stahl et al., 2017). Additionally, companies are currently investing significant resources in the development and proliferation of AI. (Stahl et al., 2017) observe that AI techniques are "currently undergoing

major developments that will dramatically increase their social impact." One of the Big 4 audit firms predicts that ongoing investments in AI by businesses will result in increased global earnings productivity to the tune of $ 6.6 trillion by 2030. In their report, PwC (2017) describes three types of AI artifacts that will generate these financial gains. The first type assisted artificial intelligence systems, support the human in decision making or taking action. AI systems show mechanical intelligence, which allows artificial intelligence to perform routine and repetitive tasks. Humans who use these systems retain decision-making responsibilities. These AI-assisted artifacts are usually applied to existing procedures. For example, a Microsoft research team has published their development of an AI application that could transcribe speech into text better than a human (Munoko, I., et al, 2020). This application can help companies transcribe customer calls to gain a better understanding of customer needs and evaluate the performance of support agents (Microsoft 2019). The second type is augmented AI systems that integrate human decision making and increasingly learn from their human and environmental interactions (PwC 2017), and therefore, exhibit the analytical intelligence that allows AI to learn from data and process information for problem solving. In this context, humans and artificial intelligence are co-decision makers.

Finally, the third type represents Autonomous AI systems that can adapt to different situations and thus act independently without human assistance. In this environment, people are starting to delegate decision making to AI. Autonomous AI systems exhibit both intuitive and empathetic intelligence. Intuitive intelligence enables AI to adapt creatively and effectively to new situations, and empathetic intelligence enables AI to understand human emotions, respond to and influence people appropriately. Autonomous AI that works without human intervention requires advanced heuristics to deal with new situations, and perhaps even more advanced empathetic intelligence to enable AI to interact effectively with humans. (Huang, M. H. & Rust, R. T., 2018) Give several examples of autonomous AI applications in the service industry, including chatbots that provide direct customer support. As AI artifacts move

from assisted to autonomous, the advantages and cost savings of these systems become more apparent (Munoko, I., et al, 2020).

Artificial Intelligence is a technology programmed to mimic human judgment and cognitive skills and designed to receive environmental cues. Based on these clues, AI systems can assess risks to make decisions, make predictions or take action. Unlike other software, AI systems "learn" from data and, due to exposure to new data, can self-improve over time without being explicitly programmed by the human (Shaw 2019). Big 4 audit firms are making significant investments in artificial intelligence for both consulting and assurance applications (Munoko, I., et al, 2020). Within the warranty application, AI is used to perform auditing and accounting procedures such as general ledger review, tax compliance, and preparation of business documents, data analysis, and expense compliance. Fraud detection and decision making. Artificial Intelligence promises the ability to examine unstructured data in real time and provide a concise analysis of numerical, text and visual data. In the face of big data (relevant and irrelevant), intelligent systems can effectively direct the auditor to high-risk areas (Munoko, I., et al, 2020). However, as companies and auditors increasingly rely on AI, there are a few key assumptions it can make. One of the assumptions that these systems are always correct is that AI systems will always behave within desired constraints; a third assumption is that deviation from desired constraints will be detectable and correctable. These assumptions are not always valid and this has ethical, legal and economic implications.

1-1-1 Artificial Intelligence Applications

The 1980s saw rapid growth in the development of expert systems to simulate the behavior of human experts trying to solve complex problems in a given field. Many expert systems have been developed for a variety of business applications. Despite the significant advances in expert systems, it was developed with the aim of establishing a real commercial application series in the field of robotics, computer vision, natural languages and expert systems. However, human-induced efforts to build truly intelligent expert systems that

approach sensory abilities have not been very satisfactory. True, progress has been made in developing expert systems in new areas where traditional computer applications were previously limited. However, there are still some decisions that are not fully supported by expert systems because they contain fuzzy data and incomplete information (Tafti, M. H.A., et al, 1993).

In the late 1980s, a new approach emerged to emulate the human brain. This new form of AI, which uses a brain-like processing approach to mimic human learning, is called neural networks (also known as neural networks, artificial neural networks, and neurocognitive computing). Unlike expert systems that rely on elaborate computer programs to sort through recorded rules and facts to finalize a decision, neural networks can be exposed to large volumes of unstructured data to recognize patterns. The application of neural networks has brought with it a new generation of computing applications where traditional data processing and even expert systems have fallen short of providing truly useful support information (Tafti, M. H.A., et al, 1993).

1-1-2 Expert systems (ESs)

Expert systems (ESS) are a sense in which it shares and distributes information obtained directly or indirectly from domain experts of different scientific fields (Hendriks, 1999; Saibene, A., et al 2021). They not only help users with a certain knowledge gap, but also offer support.

Expert systems are designed to iterate the decision process in which a human expert is often involved in solving specific problems. According to (Barr, A, et al, 1982) there are two classes of specialist knowledge, facts and heuristics. Facts make up an information system, Expert systems are generally designed to be user-friendly, interactive, and provide an explanation of the decision outcome based on facts and rules.

1-1-3 Neural Network

Neural networks contain a new AI technology that simulates the human brain on a computer. These systems are based on parallel, distributed processing and deviate significantly from algorithmic computing. Parallel design allows neural networks to become particularly specialized at analyzing prob-

lems with many variables. These systems differ from expert systems in that they learn directly from examples (learning). Instead of an information engineer, the user can provide training by showing examples of inputs to be matched with the output he has submitted to the system. The system learns the relationship between the input and output examples and not only repeats these examples, it can also develop the relationships of the inputs and outputs that are not used in the training phase. This process is a close repetition of the human learning process that includes neuron and sensory inputs (Tafti, M. H.A., et al, 1993).

1-2 internal audit activities

The International Professional Practices Framework defined an internal audit as an autonomous, unbiased assessment that improves an organization's operational efficiency. It helps an organization achieve its objectives by bringing a systematic and disciplined approach to evaluate and improve the effectiveness of risk management and control (IPPF, 2017). Internal audits evaluate the effectiveness of the organization's activities to ensure compliance with established regulations (Cular et al., 2020). An internal auditor is usually an employee in the internal audit department of the organization responsible for performing the internal audit function (IPPF, 2017). Internal audit has become an important function in organizations (Jiang et al., 2020). With the establishment of the Institute of Internal Auditors in the USA in 1941, the world underwent an extraordinary change (Anderson and Al., 2017; Mahyoro, A.K., and al, 2021). Emphasizing the interests of the internal audit function has evolved from traditional auditing to a value-adding role to assist management in achieving its strategic goals (Mahyoro, A.K., et al, 2021).

1-2-1 Quality of internal audit and effectiveness of internal audit services

Internal audit quality refers to the way in which internal auditors carry out their activities and evaluate processes according to procedures and standards (Mahyoro, A. K., et al, 2021). Audit quality is a function of the level of competence of staff, the extent of the services provided and the extent to which audits are properly planned, performed and reported (Mansor, 2018). States

that the quality of internal audit minimizes risks, improves control, reduces external monitoring costs, and mitigates fraud and other opportunistic behaviors within an organization. In this study, audit quality refers to the scope of audit services, effective audit planning, fieldwork and effective control and communication.

The role of AI in corporate governance stems from the fact that internal audit establishes the truth, integrity and reliability of operational and financial information for decision making at all levels of governance (Singh, KSD, et al, 2021). Likewise, the Institute of Internal Auditors (IIA) reiterates that internal audit can help organizations achieve their objectives through a systematic and disciplined approach to assess the effectiveness of risk management, control and governance processes (IIA, 2020).

There is no agreed definition of audit quality in the internal or external audit literature. Regardless of whether it is internal or external, the quality of the audit was defined as the ability to make and report anomalies and violations; the latter is the most evident indicator of audit quality (Singh, K. S. D., et al, 2021; Butcher et al., 2013). The degree of quality in determining and reporting anomalies and violations depends on the competence, independence and objectivity of the AI. On a different note, hopes for a proper VI function include checking the efficiency and effectiveness of operations, the degree of compliance in internal regulations and procedures, the reliability of financial reporting, and the retention of assets. (Hayes et al., 2015), AI quality should include the level of compliance with IIA standards, the ability to plan the audit, execute audit results and communicate them.

Regulators such as the Association of Chartered Accountants (ACCA) and the IIA have repeatedly stressed the need for the audit function to be independent and objective to ensure that audits are carried out effectively to achieve quality audit results. Such is their meaning that the very definition of an internal audit by the IIA states that an internal audit is an independent and objective assurance and advice practice aimed at adding value and improving the operations of organizations (AII, 2020). Both the ACCA and the IIA also

stressed that internal auditors must have the skills (knowledge and skills) necessary to effectively perform their role. The proficiency levels of the internal auditors will give both principals and agents the confidence that internal auditors can perform their duties effectively and professionally (Singh, K. S. D., et al, 2021).

(Turetken et al.,2019) in their synthesis of relevant IA literature argued that compliance with the IIA's International Standards for the Professional Practice of Internal Auditing (ISPPIA) could serve as a guide to measure the effectiveness of IA and proposed objectivity and empowerment of the internal auditor as essential dimensions of IA effectiveness (IIA, 2020).
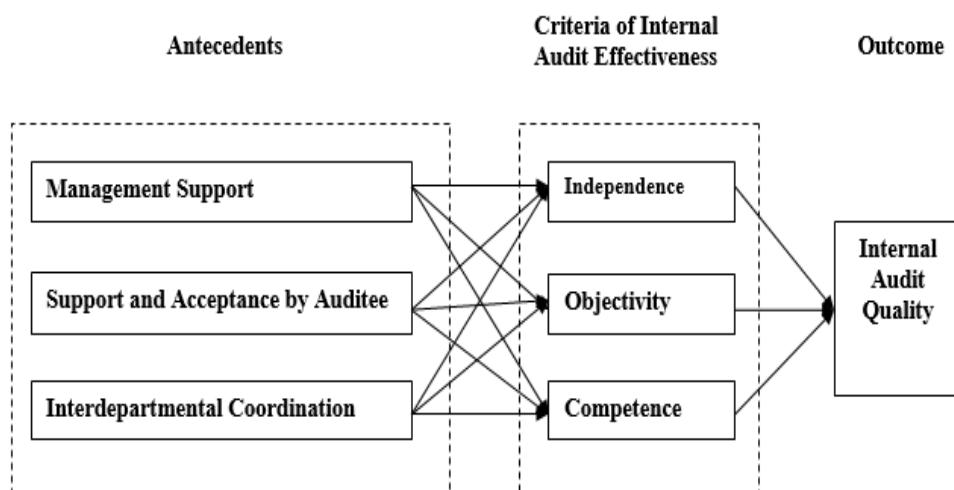
Karpal Singh Dara Singh, Sajitha Ravindran, Yuvaraj Ganesan, Ghazanfar Ali Abbasi and Hasnah Haronxcve

1-3 Current and Future Applications of AI in IA activities

The accounting and auditing profession embraced artificial intelligence in the early 1980s. At the time, there was a much simpler version of AI than those using it today. Predecessor AI systems, such as expert systems, support professionals in the decision-making process. These consisted of a rich knowledge base of rules and facts provided by experts within the field. Professionals can query these expert systems, which can provide recommendations for specific scenarios (Vasarhelyi 1989)

The development of new technologies such as Artificial Intelligence and ML allows the auditor to gain a deeper perspective on the company's operations, enabling him to understand and assess the risk potential in each audit area (Puthukulam, G., et al, 2021) the auditor uses this new advanced and updated technology to increase audit efficiency. Should know the technology and this technology.

Artificial Intelligence can bring great advantages to audits such as cost reduction, the ability to handle and process huge volumes of data efficiently, resulting in increased audit efficiency (Puthukulam, G., et al, 2021). Prior to the introduction of AI, auditors had to randomly manually test data to find out the factors that needed to be examined. It is less effective compared to Artificial Intelligence. Indicates whether certain transactions need further examination. It also helps the inspector classify trends and patterns in datasets, which is much faster than doing it manually (Andrew Struthers & Kyle Nesgood, 2020)

The core subset of Artificial Intelligence is Machine Learning, which enables the system to automatically learn from and get better from experience without requiring any human intervention (Dickey, G., et al, 2019). The computer acts like a human brain for machine learning. This technology will change every industry and profession and Audit will no longer be an exception (Puthukulam, G., et al, 2021).

Machine Learning not only provides remarkable inspection quality and inspection speed, but also minimizes risk (Dickey, G., et al, 2019). Auditors can analyze all data instead of checking samples. Although many studies have examined the importance and scope of the use of Information Technology in Audit practices,

The implementation of AI and ML for auditing is still in its early stages. However, auditors can use AI and ML to increase the effectiveness of audit procedures in economic ways (Jooman, S., 2019). According to AICPA Canada, technology is constantly changing, and adopting automation, artificial intelligence and ML in the audit field improves overall audit efficiency. Audi-

tors cannot be replaced by automation, but a paradigm shift in the auditor's role and how they perform audits after using AI and ML in auditing (AICPA, 2020)

AI and ML help auditors focus more on critical areas such as forecasting; Evaluation of risk potentials identifies abnormalities rather than focusing on routine and repetitive procedures (Puthukulam, G., et al, 2021).

Auditors find that the supported AI system is of great help in auditing to contribute to the improvement of audit quality compared to augmented AI systems. It has been found that the autonomous monitoring system is less used compared to other AI systems (Albawwat, I., & Frijat, Y., 2021)

Other key challenges in implementing AI and ML in audits are the high cost of implementation and the need to train internal auditors in AI and ML in audits. Continuous updating of AI and ML according to the latest devel-opments and appropriate training of auditors means additional expenses for the company. This will present a major challenge to organizations struggling with limited financial situations (Puthukulam, G., et al, 2021) given the mod-ern challenges never faced before in auditing. AI and ML applications need to be implemented with a solid implementation plan.

Despite the growth of AI in auditing (Munoko, I., et al, 2020), it has ob-served that its use may be limited when it comes to complex decisions that require professional skepticism. An example of such a complex audit task is the evaluation of management estimates. However, they leave open the pos-sibility that AI advances may one day make it possible to automate complex tasks. As future-oriented AI technology matures, routine low-level audit tasks are likely to become AI functions. An example of such a low-level audit task is the requests for evidence from audit clients and the documentation of that evidence. Most of the existing functions performed by staff-level auditors will be handled by Augmented AI, whose results will be reviewed by the auditor. At the end of the audit client, the evidence requested by the auditor's AI can be generated by the client's assisted or Augmented AI. After the technology matures, the controller and client-side AI systems can communicate directly.

After using a few cycles, the need for human review may decrease and this usage can be shifted from the Augmented level to a more Autonomous level.

Advances in technology, data analytics and artificial intelligence in verification will be more significant in the coming years. AI requires the use of big data and powerful processing. The impact of artificial intelligence on auditing is particularly evident in the area of data acquisition, verification of transaction processing and reporting (Kokina, J., and Davenport, T. H, 2017).

By using big data, companies can create processes and analyze complicated and inconsistent data into meaningful information. AI and BA promote easy, accurate, and comprehensive auditing that improves accountability and credibility of financial reporting, ensures audit quality, and helps stakeholders make reliable decisions (Hu, KH, et al., 2021)

Artificial intelligence can identify and process relevant information for the auditor's analysis and decision-making. It can also extract valuable insights from digital documents that improve the decision-making ability of auditors (Puthukulam, G., et al., 2021). AI is beneficial and smart, saving auditor's time and effort, increasing the level of accuracy, and speeding up data analysis. Currently, auditors use artificial intelligence and self-control in the field of transaction testing, preparation of audit work in documents, analysis and analysis. Risk assessment (Yoon, S., 2020).

Researcher suggests that using artificial intelligence systems help to improve the quality of audit to remedy certain human shortcomings in the work of the internal auditor, enhancing the practice of professional judgment and recognize the importance of risk; also it forces internal auditors to rely on modern systems.

2– The second section:–An Empirical Study

The previous sections dealt with the theoretical background of the study by referring to the various literatures. This section covers the field study, which includes a description of the study methodology and the study popula-

tion and sample, as well as the study used the methods of preparation and the validity and reliability tool. This section includes a description of the procedures carried out by a researcher at the codifying of the study, implementing, and finally statistical treatments adopted by the researcher in analysis the empirical study and Showing the results.

2-1 Objectives of the field study

This study aims to examine the association between artificial intelligence techniques and its influence on enhancing internal auditing activities

2-2 Study Hypotheses

The hypotheses are based on the theoretical part of the study as follows:

The first hypothesis: there is no statistically significant relationship between artificial intelligence techniques and enhancing internal auditing activities.

The second hypothesis: there is statistically significant relationship between artificial intelligence techniques and enhancing internal auditing activities.

2-3 Study Population and Determination of Sample Size

The type of data used in this study is the primary data source; the technique of collecting data is by distributing a questionnaire statement and received   responses. In this study, the questionnaire was filled with: internal auditors, external auditors, accountants, university professors and financial manager.

2-3-1 Determine The Population size & selecting the sampling

The difficulty countless study sample either: internal auditors, external auditors, accountants, university professors and financial manager, so it was determined the sample number as one hundred respondents were used the following formula used to calculate the sample size to get proper estimates and to estimate the allowable error, namely

$$n = \frac{z^2(p(1-p))}{e^2} = \frac{(1.96)^2(0.50)(0.50)}{e^2} = \frac{(1.96)^2(0.50)(0.50)}{(0.01)} = 100$$

Whereas:

N: Refers to The sample size;

E: Refers to The amount of allowable error;

Z: Refers to Standard degree with 95% Confidence;

P: Refers to Availability Population assumes that 50% of the community.

It is the formula the researcher finds that the size of the sample that was used, one hundred respondents lead to get the correct estimates are consistent with rates in the community 95% confidence level with a margin of error in the range of 10%.

2-4 Analyzing Characteristics of the Sample

It can clarify the classification of the sample in the light of the valid responses for statistical analysis, which has been obtained; the researcher has the characterization of the sample which is to Job title variables, the number of years of experience, and educational level. This is also evident from the following figures and tables as following:–

Table 1: Distribution of sample items by Career are illustrated by the following table

Statement	Number of Distributed and valid questionnaires questionnaires	Percentage of Number of valid Questionnaires
Internal auditors	11	16.7%
External auditors	6	9.1%
Accountants	12	18.2 %
University Professors	30	45.5%
Financial managers	7	10.6%
The Total	66	100%

Source: Prepared by the researcher.
Source: Prepared by the researcher Source: relying on SPSS program outputs.

Through the above figure is study sample consisted of 100 respondents that which represents the questionnaires that have been distributed to the study sample; but what has been recovered from these questionnaires is 66 questionnaires which represent almost 60% of the number of questionnaires, it has

been discussing what was in it from Information about the study sample were processed and analyzed and enter data into the statistical program in order to complete the study and in the light of the above table also shows that good lists rate for statistical analysis of each category of the study groups is the appropriate rate, which can be relied upon to test the research hypotheses

Table 2: Distribution of sample items by The Scientific Qualification

Statement	Number of Distributed and valid questionnaires questionnaires	Percentage of Number of valid Questionnaires
Bachelor	12	18.2%
Diploma	4	6.1%
Master	28	42.4 %
PHD	21	31.8%
Professional Certifcates	1	1.5%
The Total	66	100%

Source: prepared by the researcher relying on SPSS program Outputs.

Distributed sample study on the respondents in terms of professional qualification where the researcher finds that the largest proportion recorded was Obtaining from master degree and their number were 28 respondents, equivalent to the proportion of 42.4%, and followed by doctorate with a total 21 per person equivalent to the proportion of 31.8%, followed by bachelor total number of members of the 12 respondents the equivalent ratio of 18.2%, followed by diploma total number of members of the 4 respondents the equivalent ratio of 6.1%, and finally professional certifications, which represented the number of 1 respondents, equivalent to 1.5%, due this difference to the diversity found in the sample of the study in terms of academic certificates.

Table 3: Distribution of sample items by Years of experience

Statement	Number of Distributed and valid questionnaires	Percentage of Number of valid Questionnaires
less than 5 years	13	19.7%
from 5 to 10 years	28	42.4%
More than 10 years	25	37.9 %
The Total	66	100%

Source: prepared by the researcher by relying on SPSS program outputs.

The study sample and the degree of experience of the sample have differed as shown in the previous table, which shows that the largest proportion of experienced registered for the class ranging experience from 5 to 10 years, the equivalent ratio of 42.4%, and then followed by the category experience more than 10 years 37.9%, then followed by a category ranging experience less than 5 years and represents a 19.7% ratio.

After reviewing the survey forms, the data encoding, and enter their answers on a computer using Statistical Package for Social Sciences program Version23 (SPSS). In order to make a statistical analysis of the field study data, and it was also rely on the Excel program. The researcher used the following statistical methods:

2-4 Statistics Reliability

It is the methods that are interested in the extent of the reliability of the results of the survey based data analysis, in the sense of how homogeneous the respondents answers between them and the possibility of circulating the results to the community, through the reliability coefficient tests and coefficient of honesty. It was relying on the Cronbach's alpha coefficient (Cronbach Alpha) and the more factories increased from 0.5 indicates that the stability of coefficient in the community and the possibility of circulating the results to the community.

2-4-1 Validity

In order to verify the Validity of the apparent scale submitting it to the re-search supervisor intent to modify or cancel some paragraphs within the ques-tionnaire, making the questionnaire more accurate and objectively measure-ment.

2-4-2 Stability

In order to make sure of the reliability of study tool, Cronbach's alpha test (Reliability Analysis) was used.

The researcher based on Cronbach's alpha coefficient, one of the reliabil-ity Statistics methods that are interested in the extent of the reliability of the results list data survey analysis of the sense of the extent of the homogeneity of the answers between the respondents of them and the possibility of circulating the results to the community, through consistency and Validity coefficient tests. The results of coefficient as follows:

Table 4: Summary results of Cronbach's coefficient alpha for study sample

the dimension	Number of Questions	Cronbach's Alpha
includes statements measuring the effect of activating artificial intelligence tech-niques on enhancing internal auditing activities	12	.922
The Total	12	.922

Source: prepared by the researcher by relying on SPSS program outputs.

Consequently, the researcher finds that the Cronbach's Alpha coefficient results about (.922) which indicates the relative validity of most of the answers to the hypothesis of the laboratory use.

The following is a presentation of the results of the descriptive statistical analysis of the data, which is the value of the arithmetic means, the standard deviations, the arithmetic relative importance of all dimensions of the study

and the paragraphs constituting each dimension, taking into account that the scale used in the study should be included as follows:–table(5)

Strongly Agree	Agree	Neutral	dis Agree	Strongly dis Agree
5	4	3	2	1

Based on this, the values of the arithmetic averages reached by the study will be dealt with to interpret the data as follows table (6)

High	Medium	Low
More than 3.5	2.5 – 3.49	1– 2.49

Accordingly, if the arithmetic mean value of the items is greater than 3.5, then the level of perceptions is high, and this means that the sample members agree on the item. But if the value of the arithmetic mean is 2.5–3.49, then the level of perceptions is medium, and if the arithmetic mean is less than 2.49, then the level perceptions is low (Hawamdeh 2006)

2-5 Analysis and testing of data related to the study hypothesis

Ho: there is no statistically significant relationship between artificial intelligence techniques and its influence on enhancing internal auditing activities.
H1: there is statistically significant relationship between artificial intelligence techniques and its influence on enhancing internal auditing activities.

To accept the null hypothesis or alternative hypothesis, the researcher used to means, standard deviations, and the importance of the paragraph, as shown in the following table :–

The dimension includes statements measuring the effect of activating artificial intelligence techniques on enhancing internal auditing activities

Table 7: the dimension includes statements measuring the effect of activating artificial intelligence techniques on enhancing internal auditing activities

Serial	The dimension includes statements measuring the effect of activating artificial intelligence techniques on enhancing internal auditing activities	Mean	Std. Deviation	Arranging Materiality of Paragraph	Materiality
1	using artificial intelligence techniques in internal audit activities works to support the professional competence of the internal auditor, through the speed of addressing problems by revealing new ways to search, analyze problems and propose solutions	4.31	.68	6	High
2	Continuous monitoring of the newly developed technology systems contributes to expanding the scope of application of the regulatory audit to include the changes that have occurred in the control environment of the facility.	4.31	.74	6	High
3	using digital technology in internal audit requires periodic training for internal auditors, which affects their professional competence and experience	4.36	.85	4	High
4	using digital technologies in internal audit activities works to support the independence of the internal auditor	4.07	.88	10	High
5	Application of artificial intelligence efficiently and effectively helps the internal auditor to conduct a financial audit, link multiple data sources, and provide a unified and integrated view of the company's business.	4.29	.78	8	High

6	The techniques of artificial intelligence helps the internal audit to provide advisory and assurance services to help management achieve the company's goals	4.34	.74	5	High
7	Applying artificial intelligence mechanisms to internal audit activities that improve com-munication and oversight by providing writ-ten channels, consistent plans and structured procedures	4.31	.68	6	High
8	The application of artificial intelligence mechanisms in the operational audit works to increase the efficiency and effectiveness of operations within the company	4.30	.72	7	High
9	Using digital technology within the scope of the management of internal audit activities works to protect information and keep back-up copies for use when needed.	4.44	.76	2	High
10	Digital security contributes to the implemen-tation of control measures related to internal audit activities to protect information and the confidentiality of its circulation, as well as to prevent intrusion and unauthorized access	4.37	.77	3	High
11	The application of digital technologies in operational audit activities contributes to providing information to decision makers within the company	4.45	.61	1	High
12	Artificial intelligence techniques have chan-nels of communication between the internal audit, the board of directors and stakeholders to coordinate work between them and ex-amine internal and external communication protocols.	4.16	.83	9	High
the mean of the arithmetic mean of the total questions		3.94			

Source: prepared by the researcher by relying on SPSS program outputs.

The first dimension: includes statements measuring the effect of activating artificial intelligence mechanisms on enhancing internal auditing activities, ranging averages between it (4.07–4.45), compared to The arithmetic mean of all questions Where it reached (3.94), where paragraph which states" **The application of digital technologies in operational audit activities contributes to providing information to decision makers within the company**" came in first place with a mean (4.45) and a standard deviation was (.61) compared with the overall general average mean and general standard deviation. While paragraph "**The use of digital technologies in internal audit activities works to support the independence of the internal auditor**" got on final place with a mean (4.07) and a standard deviation was (.88) compared with the overall general average mean and general standard deviation.

The researcher finds that this is a clear indication of the respondents through sample survey responses that there is agreement between the respondents in the questionnaire that digital transformation improves the quality of the internal audit, because the arithmetic mean of the questionnaire questions in the first dimension is greater than 4, and also that the mean of the arithmetic mean of the total questions of the first dimension is equal to 3.94 is high **so researcher accepted the alternative hypothesis that there is statistically significant relationship between artificial intelligence techniques and enhancing internal auditing activities** and rejected the null hypothesis .

3- The third section deals with conclusions, findings, recommendations and future studies

After presenting the theoretical side of the study and according to the data collected through the previously analyzed questionnaire and after testing the hypotheses of the study, the researcher will present this section through the following point's conclusions, findings, recommendations and future studies.

3-1 Conclusions

Field study and its conclusions are consistent with the theoretical study that the artificial intelligence techniques can improve internal auditing activities efficiency, provide better understanding of business processes and create competitive advantages for adopters, agreeing with the study of (Nonnenmacher, J., et al, 2021) which concluded that "The digitization of all business areas creates new challenges for internal audit. These challenges are forcing internal audit to increasingly implement data-driven procedures. The results of the study show that the use of auto encoders can help auditors in the execution of the audit and in the planning stage of the audit process in order to improve the quality of the internal audit engagement.

Puthukulam, G., et el(2021) found that artificial intelligence techniques play an important role in improving the quality and reliability of information contained in financial statements and that they help to verify the complete data of an organization. This means that detecting errors and fraud in artificial intelligence assisted audits is easy and convenient and helped improve overall audit efficiency.

Studio Jumani, A. K. (2021). Artificial intelligence application gives numerous benefits, which even man is unknown to it. In the next few years, AI will experience will bring drastic change in teaching and training, real-time problem solving, predictive analytics, enabling the disabled, personalized textbooks and dynamic programming agreed with the study of (Giles, K. M., 2019)which concluded that technology is no longer a luxury but a necessity in today's business world. Technology and innovation have been a catalyst for the advancement and change in the business world we have today. Every profession must be equipped to adapt to technological changes and auditing is no exception Therefore, considering the contemporary challenges faced in auditing as never before, the implementation of AI and ML must be done with a solid implementation plan. A very positive correlation is observed between the application of artificial intelligence and machine learning in auditing and the improvement of audit quality and reliability. This means that artificial in-

telligence and assisted machine learning have improved the quality and reliability of the information provided in financial statements.

In the light of the previous analysis the alternative hypothesis is accepted: –"that there is statistically significant relationship between artificial intelligence techniques and enhancing internal auditing activities

3-2 Findings

After discussion of the theoretical and empirical aspects in this research, the researcher reached to important findings for both theoretical and practical fields as follows:–

1– The quality of internal auditing in light of the artificial intelligence contributes to creating value for the company and providing suggestions, advice and advice to make continuous improvements in governance systems, which improves the quality of financial reporting.

2– Using the artificial intelligence in auditing plays an important role in improving the quality and reliability of information in financial statements and helps verify the complete data of an organization.

3– The traditional manual systems used for internal audit activities not consistent with the continuous economic development in business environment; it must be based on artificial intelligence application.

4– Most of internal auditors agreed that artificial intelligence and machine learning play an important role in improving the quality, reliability, and overall efficiency of audits. It also helps in detecting errors and misstatements.

5– Using of artificial intelligence application helps the internal auditor to conduct a comprehensive evaluation and prepare periodic reports that include the most important observations, discuss them with the Board of Directors, and provide recommendations and appropriate corrective actions to improve the quality of financial reporting.

6– The application of digital technologies in operational audit activities contributes to providing information to decision makers within the company.

7– The mechanisms of artificial intelligence improving the activities of internal auditing.

8– AI algorithms help recognize trends and make predictions from large amounts of data, and verification is a standardized task that relies heavily on accurate predictions, putting it among the professions most exposed to news technologies, such as AI.

9– AI–investing companies are also streamlining their operations, with audit firms' AI investments predicting a significant headcount decline three to four years later, which is being accompanied

10– Areas of focus for AI applications include providing clients with AI–powered consulting services, streamlining the audit process and AI–powered internal operations improvements.

3-3 Recommendations

Based on the results of the study, the researcher suggests the following recommendations:–

1– Training programs should be design and implemented to qualify accountants on applying   the artificial intelligence and to keep up to deal with new developments.

2– Publishing new regulations and law to govern using the artificial intelligence on internal audit to secure and protect users.

3– Developing different artificial intelligence and internal audit courses to include all items studied and discussed in this study.

4– Using artificial intelligence in all corporate activities for reducing the costs.

5– Continuous revision of mechanisms of artificial intelligence and their use in remote internal auditing in light of epidemics.

6– Investments in AI by audit firms are associated with a substantial decrease in the incidence of restatements, including major restatements and restatements related to accruals and revenue recognition. These results are strong in controlling auditors' investments in other technologies and are driven specifically by auditors rather than their clients.

7– Additionally, with improving audit quality comes a trend towards a lean process: audit firms that invest in AI are able to reduce the fees they charge

while reducing their audit staff and demonstrating increased productivity, measured by total cost per employee.

8– Our results shed light on the positive impacts of AI on audit quality and efficiency, while highlighting the interaction between new technologies such as AI and human labor in service–oriented sectors. We hope our findings will help inform industry leaders and policy makers, and that our detailed enterprise–level AI investment and workforce datasets will open the door to insights. Other large–scale empirical research on the impact of new technologies in accounting and auditing. As well as other service industries.

3-4 Research Orientations and Future Studies

Based on the results and recommendations of this study, the researcher suggests the following   future studies:–

1– The effect of artificial intelligence on remote audit in the era of epidemics.

2– The impact of big data analytics on audit procedures

3– The impact of artificial intelligence in internal audit as a contribution to effective governance

4– A Comparative study between external audit activities and internal audit activities in the light of artificial intelligence.

5– The effect of artificial intelligence on external audit activities and its impact on corporate Governance.

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