



Systematic Literature Review on Determinants of Artificial Intelligence Implementation in Audit Firm

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ABSTRACT

This paper systematically reviews the determinants influencing the implementation of Artificial Intelligence (AI) in audit firms, emphasizing the integration of key factors into the Technology-Organization-Environment (TOE) paradigm for better prediction capabilities. Additionally, it tries to pinpoint important factors to incorporate into the technology-organization-environment (TOE) paradigm for implementing AI in businesses. The goal of this integration is to increase the final model's capacity for prediction. The study analyzed journal articles published between 2010 and 2023, focusing on the (TOE) framework to identify determinants critical for implementing AI in auditing. The study highlights the explanatory power of the TOE framework in understanding the determinants for implementing AI in audit firms, providing an overview of technological, organizational, and environmental factors impacting adoption. Further, the study has advocated TEO framework explanatory power of the variables that are determinants in implementing AI in audit firm and the overall management process. This Systematic Literature Review (SLR) conducted through previous literature review hence the results can further be verified through quantitative research.

Keywords: Auditing, Accounting, Artificial Intelligence, Technology-Organization-Environment (TOE) Framework, Digital Transformation, Machine Learning.

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INTRODUCTION

The audit profession is undergoing a transformative phase due to advancements in Artificial Intelligence (AI). With increasing digitization, businesses have integrated AI technologies to innovate and optimize processes. In the context of auditing, AI offers significant advantages, such as enhancing audit quality, efficiency, and decision-making accuracy. However, the adoption of AI in auditing faces challenges, including regulatory concerns, data security, and organizational readiness. The pervasive impact of technological challenges, along with their associated outcomes, has made its presence felt across every facet of life, and it is noteworthy that auditing, too, stands as a domain not immune to these widespread effects. By digitizing business systems, businesses are now able to use new technologies to accelerate operations and innovate through the transformation of business (Hinings, Gegenhuber & Greenwood, 2018). In the world of information businesses have more and more access to powerful computers and huge databases (De Sousa *et al.*, 2019). Luca Pacioli was first established accounting as a business language (Coate & Mitschow, 2018) and the core goal is to calculate organizational economic health and communicate those financial information to its potential stockholder like management, creditor, government. Recently, the corporate world has become more global, particularly the accounting profession, as a result of technological advancements and digitization that's why corporate must need to understanding how digitization and technology are affecting the accounting and auditing professions is crucial (Gungor & Adiloglu, 2019).

A study conducted by British Broadcasting Corporation (BBC), Having an elimination rate of 96%, accountants rank 21st out of 366 jobs that are expected to be abolished as a result of the arrival of artificial intelligence (Stancheva-Todorova, 2018). Nearly half of the internal auditors surveyed during the 2016

and 2017 by the Information Technology division of one of the biggest accounting firms, Klynveld Peat Marwick Goerdeler (KPMG) - Internal Audit conferences acknowledged that their companies employ AI, at least somewhat and simultaneously same polls also show that 70% of respondents said they were unsure of how their auditing procedures would be impacted, and 80% expressed little trust in the governance surrounding the usage of new technologies (Zhang *et al.*, 2020). Numerous projects are being tested around the globe (Seethamraju & Hecimovic, 2020). For example, KPMG has begun assessing bank credit files for commercial mortgage loan portfolios using IBM Watson's deep learning algorithms. Similarly, Deloitte is reviewing contracts, leases, and invoices using AI in cooperation with Kiva Systems (Sun & Vasarhelyi, 2017). In response to requests for larger assessments and more in-depth theme evaluations, we conduct a systematic analysis of 12 years of entrepreneurial AI literature on accounting and audit firms (2010-2013).

To identify the present state of research and its deficiencies, as well as to update past evaluations, we concentrate specifically on recent research that has developed in a variety of ways. However, existing research lacks a consolidated understanding of the determinants influencing AI adoption in auditing, leading to fragmented insights.

This review addresses the literature gap by posing the following research question.

Research question:

RQ: What are the determinants influencing the implementation of AI in audit functions of audit management?

METHODOLOGY

Only peer-reviewed journal articles were included to ensure research quality,

eliminating sources such as non-reviewed reports and blog publications. The researchers carried out an SLR for this research. Systematic literature review uses an open, transparent, scientific, and repeatable methodology. Systematic literature review has some advantage compared to traditional narrative review (Danese, Manfè & Romano, 2018). The review procedure and the result is way higher quality than narrative review (Leonidou et al., 2020) also the processes used in the review process can be replicated, the method has greater legitimacy (Wang & Chugh, 2014). Systematic literature review provides scholars and practitioners with a framework that incorporates our current understanding (Dada, 2018). This study determined organizational, technological, and environmental elements within the Technology-Organization-Environment (TOE) framework that would decide the variables of AI deployment in functions of auditing by a methodical analysis of the available literature.

The present study employed the review methodology, which starts with a manual screening of a list of pertinent publications sourced from reputable scholarly journals. Subsequently, a systematic search of pertinent literature is conducted using keywords associated with the subject. The study employs in 6 steps. In this methodology firstly the researchers define the research objective and the research question. Then, in the second step, they define the search and selection keys in the database.

In the third stage from the defined the search and selection keys we search of articles in the database. In the fourth and fifth step we select most appropriate information through reading the title, keyword, abstract, introduction, publication and combine the information source in Mendeley. In the step six Analysis of the articles for the purpose.

Table 1 demonstrates the inclusion criteria and the exclusion criteria of the research. In that table the authors include selection of year of publish report between 2010 to 2023 an inclusion criterion and also consider Technology-Organization-Environment (TOE) framework and article that are relevant to AI technology in audit and accounting. On the other hand, in the research we eliminated date that was publish in newspaper or journal and not collect information that are not relevant on the topic of AI technology in audit and accounting.

Table 1: *Keyword in search of papers*

- “Systematic Literature review on AI implementation in Audit firm”,
- “Organizational factors of AI in audit firm”,
- “TOE Frameworks on the determinants of AI implementation in Audit firm”,
- “Technological Factor of AI in audit firm”
- Technological factors of AI in Audit firm”
- Adoption of AI”,
- “Data security of AI in audit firm”,
- “Environment Factor of AI in Audit firm”,
- “Government support of AI in Audit firm”,
- “Perceived benefits of AI in audit firm”,
- “Complexity of AI in audit firm”
- “Compatibility of AI in audit firm”
- “Organizational readiness of AI in Audit Firm”,
- “Top management support of AI in Audit firm”,

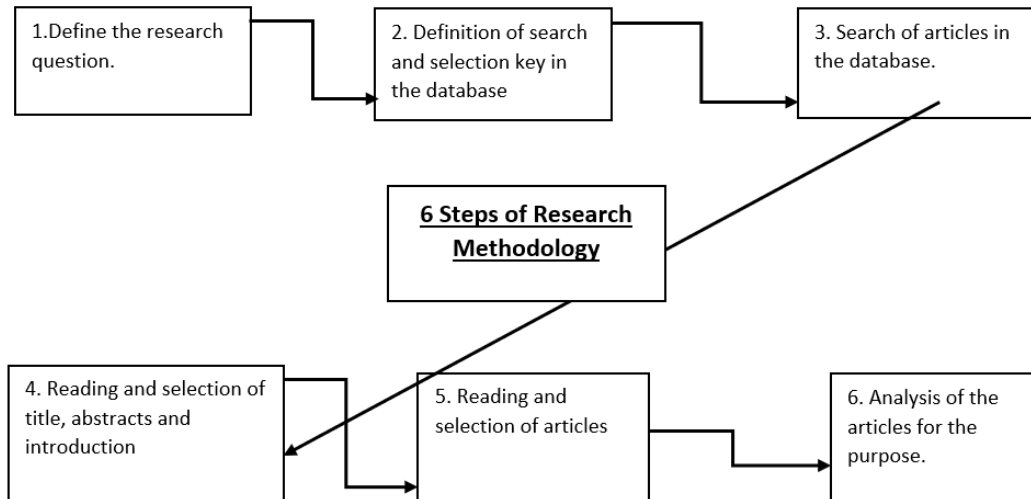


Figure 1: 6 steps of research methodology

Inclusion and Exclusion Criteria

The study included journal articles published between 2010 and 2023, focusing on peer-reviewed literature relevant to AI in auditing and the Technology-Organization-Environment (TOE) framework. Excluded materials consisted of non-peer-reviewed sources, conference papers, and articles not directly addressing AI implementation. The decision to focus on journal articles ensures the inclusion of rigorously reviewed high-quality research relevant to AI in auditing. This enhances the validity and reliability of the findings.

Table 2: *Inclusion and exclusion criteria*

Inclusion	Exclusion
Research framework included	Non-peer-reviewed journals
Must be published between 2010-2023	No information was collected from the newspaper or journal.
Most of the papers will be based on AI	Topics not related to our subject matter

technology factor influence to implement in accounting and audit function, TOE and SLR.	
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LITERATURE REVIEW

This section introduces the concept of AI-driven auditing and traces its evolution from basic automation to complex decision-making frameworks. The field of artificial intelligence (AI) is experiencing rapid growth, marked by an escalating expansion in capabilities and applications. As a result, an increasing number of companies are turning their attention to AI, creating opportunities for the development of new applications and services, as well as the enhancement of existing systems. The impact of AI implementation in audit firms has been the subject of several studies and articles. A literature review paper investigated how AI applications affected the auditing industry.

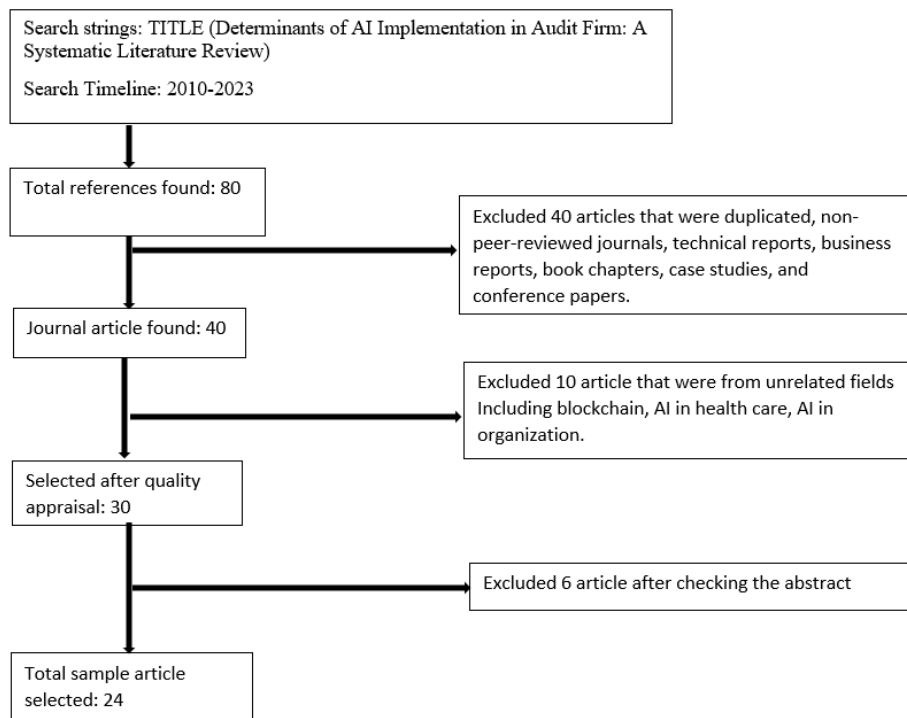


Figure 2: The systematic literature review process

The article covered the main AI applications in the auditing industry, their advantages, important factors to take into account before implementing AI applications, and possible implications for recruiting procedures and auditor positions as they currently exist (Almufadda & Almezeini, 2022). Research conducted on AI in accounting and audit function that discuss the possible advantages and difficulties of using AI in audit firms, as well as how it may affect job positions, audit quality, and the auditing profession as a whole. Artificial intelligence aligns with pertinent operational norms within financial accounting, leveraging standardization to formulate sophisticated tools and methodologies that mitigate the ambiguity associated with pertinent data and costs, thereby diminishing the inherent risks entailed in financial accounting processes (Li, 2020). The main focus of this thesis is on determinants AI implementation in audit firm and how the determinates factor

affects the implementation of Artificial Intelligence in audit profession.

Artificial intelligence (AI) has evolved from simple rule-based systems to advanced machine learning and big data analytics. In auditing, AI has progressed from automating repetitive tasks to providing deep insights into financial data and ensuring compliance with regulatory standards. The integration of AI requires addressing complexity, data security, and organizational challenges, which are central to this study. This study identified a substantial knowledge vacuum in the literature about the ways in which AI technology has impacted the Accounting and Audit professions to date as the ways in which these fields could be impacted by AI technologies in the future. Previous studies were constrained by the determinants of AI technology installation on auditing and accounting regulations (Hasan, 2022). The study did not address the precise factor that influences

favourably or adversely the application of Artificial Intelligence. To close the knowledge gap, comprehensive and up-to-date research methodologies and data collection techniques should be investigated further to provide insight into why this is not the case in current research on the impact of AI technology adoption on auditing and accounting practices.

AI can assist businesses in achieving three primary goals: automating operational processes, gaining insights through data analysis, and fostering connections with both consumers and employees. So, considering the audit profession, use of AI is thought to improve customer communication and service and boost audit productivity, according to a research involving 206 accounting and auditing professionals and students (Karmańska, 2022). AI is becoming more and more used in auditing since it can automate repetitive and time-consuming processes (Karmańska, 2022). AI might enhance an auditor's decision-making and judgment during an audit (Sun & Vasarhelyi, 2017). Decision-making and audit quality would both increase with the use of AI in auditing and this two factor encourages audit businesses to use AI because it enables them to develop the skills necessary to provide value-adding AI consulting services that generate higher profits than auditing done the old-fashioned way (Seethamraju & Hecimovic, 2020). AI's capacity to quickly and effectively evaluate vast amounts of data would allow auditors to complete their tasks more quickly and ensure that all financial statement data is audited (Issa, Sun & Vasarhelyi, 2016). Maintaining the integrity of audit procedures depends on AI usage complying with applicable rules and regulations, and this element influences the choice to employ AI in auditing operations (Alhumoudi & Abdulrahman Juayr, 2023).

Artificial Intelligence is helpful in auditing processes including risk and materiality assessment, control evaluation, audit planning, opinion selection, and reporting (Vasarhelyi & Kogan, 1998; Bierstaker, Janvrin & Lowe, 2014). The decision of auditors to use AI in accounting and audit work can be greatly influenced by the organization's support and promotion of AI adoption (Almufadda & Almezeini, 2021). professionals' attitudes and ideas about AI technology might have an impact on the uncertainty around its deployment in audit Firm (Goto, 2021).

Some of the newer areas in data security include threat detection, identity and access management, permissions management, data categorization, and security analytics this are some confidential AI subcritical factor that mostly influence Audit profession in adoption of AI in audit function (Priya et al., 2023) because audit information are highly confidential. According to statistics from a KPMG report, the majority of top senior executives are skeptical of the use of AI technology by businesses to protect the validity of data and data its own as they make significant business choices based on data and its analytics. (Islam & Nahid, 2024) Nonetheless, artificial intelligence is growing as an efficient tool for ensuring the confidentiality and safety of data (Priya et al., 2023). In order to offer AI-based safety assurances for smart contracts, new programming languages like Scilla are being created to increase the practical viability of independent audits and formal verification of deployed code (Sergey et al., 2019). Investing in technology by the small firm to keep up with current trends have been highlighted, along with the impact of individual intentions on the adoption of technology in small audit firms and the significance of commitment and readiness to provide infrastructure and training for audit firms

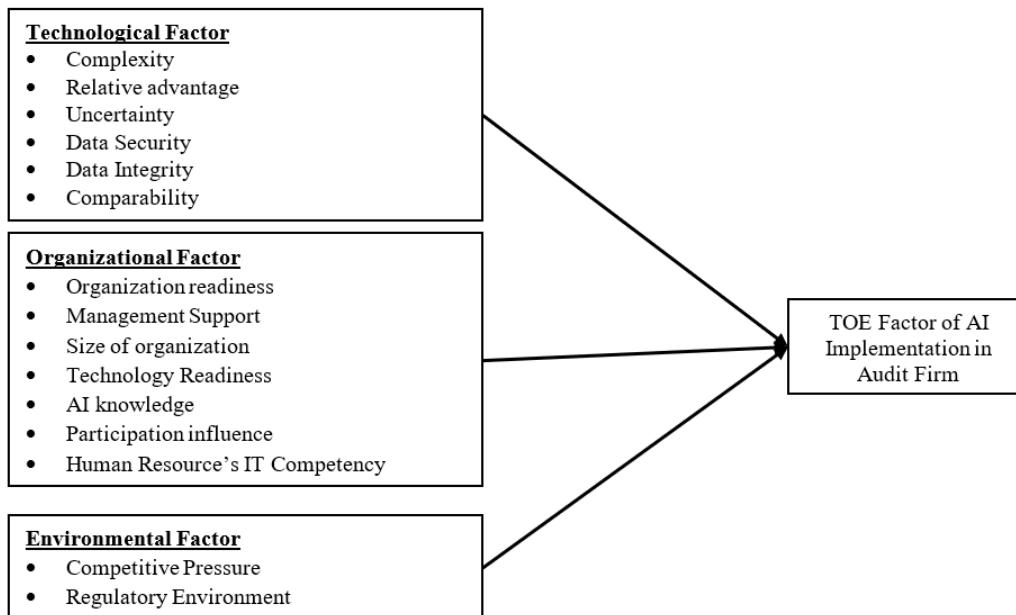


Figure 3: Significant AI adoption factors for Auditing

to adopt AI technology (Ahmadu & Taimin, 2023).

Furthermore research on “adoption of audit technology in audit firm” firm size affected the degree of audit technology adoption, with bigger businesses having a greater level of adoption (Rosli, Yeow & Siew, 2013). AI knowledge among auditors can lead to an enhanced understanding of AI systems and their potential impact on the audit process and also the AI technology

understanding can contribute to building trust in AI technologies, which is essential for auditor successful implementation in audit firms (Naja et al., 2022). Artificial intelligence aligns with pertinent operational norms within financial accounting, leveraging standardization to formulate sophisticated tools and methodologies that mitigate the ambiguity associated with pertinent data and costs, thereby diminishing the inherent risks entailed in financial accounting processes (Li, 2020). According to Butcher &

Beridze, the range of strategies, instruments, and controls that affect the advancement and use of AI may be categorized as AI governance (Laine, 2021). Each factor in Figure 3 was assessed based on empirical findings to ensure alignment with AI adoption realities in audit firms.

Technology-Organization-Environment (TOE) framework for Determinants of AI Implementation

The Technology-Organization-Environment (TOE) framework elucidates the intricate interplay among technological factors, organizational structures, and environmental influences, collectively shaping the intricate process of embracing and implementing technological innovations within organizational contexts. Tornatzky introduced the Technology-Organization-Environment (TOE) model (Rawashdeh, Bakhit and Abaalkhail, 2023), and current research attests to its versatility in elucidating phenomena across diverse

Table 3: *Source, Method and Study focus & key findings*

Source	Metho(s)	Study Focus & Key Finings
Lee (2021)	A quantitative study, using online survey of 206 candidates	The study's goal is to conduct evaluation of the available literature on the use of artificial intelligence (AI) in companies. This research seeks to examine the many approaches, problems, advantages, and results connected with the adoption and integration of AI in the corporate environments.
Almufadda & Almezeini, (2021).	A study that reviews a chosen bibliography of works published mostly between 2016 and 2020, concentrating on the TOE framework	The study is about looking at how AI technologies are being used to improve audit procedures, increase efficiency, and solve new difficulties in the auditing area. It also highlights the crucial internal variables that must be considered before deploying AI technologies in auditing operations.

Table 4: *Research gap, research question and contribution*

Research Gap	RQ of the review	Contribution of the review
There is a scarcity of extensive research on its systematic deployment across several settings. A thorough literature study is required to uncover common themes, trends, difficulties, and best practices for AI application in enterprises. This will be useful information for practitioners and researchers looking to maximize AI deployment tactics in corporate contexts.	Why do organizations implement AI? How do organizations implement AI? How does AI implementation affect the organizations?	The implementation AI in organizations is influenced by various factors, including organizational readiness, technological infrastructure, leadership support, employee training, data governance, and regulatory considerations. However, challenges such as data quality, integration with existing systems, ethical concerns, cultural resistance, and the need for specialized skills among employees can pose significant challenges, necessitating a comprehensive understanding of these factors to ensure successful AI adoption and integration.

There is few research on the adoption and usefulness of AI technology in auditing, with a lack of case studies and practical evidence. These studies provide little practical insight into issues such as data quality, system integration, user acceptability, and data privacy and security.	What are the present and future uses of AI in the auditing, and how do they affect audit procedures, efficiency, and effectiveness?	The paper gives a thorough overview of the current state of AI applications in the auditing profession. It evaluates the effects of AI on audit procedures, efficiency, and effectiveness, highlighting both the imminent benefits and limitations of incorporating AI into auditing techniques.
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technical, industrial, and national/cultural domains. This model finds application in delineating the adoption dynamics of inter-organizational systems, showcasing its adaptability and efficacy in diverse contexts. The Technology-Organization-Environment (TOE) model has demonstrated its efficacy not only in European, American, and Asian settings but also in both developed and developing nations. Like many models and theories, comprehensive research has expanded the framework to effectively accomplish its objectives. In the pursuit of the objectives outlined in this study, the Technology-Organization-Environment (TOE) framework offers a versatile approach and a nuanced understanding of technological elements.

Numerous studies assert that the triad of technology, organizational dynamics, and environmental factors significantly influences how a company gauges the necessity for new technology, initiates the search for it, and subsequently incorporates it into their operations. Various empirical studies exploring the Technology-Organization-Environment (TOE) framework have, however, employed slightly distinct technological, organizational, and environmental factors. Essentially, while researchers concur with Tornatzky regarding the overarching impact of the three Technology-Organization-Environment (TOE) contexts on adoption, they posit that each

technology or specific setting under examination possesses its unique array of

factors or metrics. The figure-2 shows the Technology-Organization-Environment (TOE) factor that influences Artificial Intelligence implementation in Audit firm. Table-6 summarizes research on Artificial Intelligence in audit firms, highlighting major technological, organizational, and environmental elements that impact AI application in audit firms and the profession. Table 6 was generated as a result of a comprehensive literature research. In addition to greatly extending cumulative culture, an efficient literature review "creates a firm foundation for advancing knowledge." Our objective was to give a thorough understanding of AI implementation by extensively describing, evaluating, and comparing a wide range of literature on the subject—something the Audit sector currently lacks. The first part of the literature review entailed examining academic databases and manual sources for relevant research materials. Using this mapping method, it was ensured that no relevant content that may have been categorized under other regions was overlooked. In order to construct a research resource collection that appropriately represented the status of AI implementation research, a thorough search of seven famous databases—PubMed, JSTOR, EBSCOhost, Google Scholar, Scopus, ProQuest and Web of Knowledge were carried out for Stage 1.

Table 5: *Significant Factor of AI implementation in Audit firm*

No	Author	Technological factor	Organizational Factor	Environmental Factor
1	(Bierstaker, Janvrin and Lowe, 2014)	Complexity	Organization Readiness, Top Management support	
2	(Chen <i>et al.</i> , 2022)	Complexity, Relative advantage, data integrity		
3	(Heye, 2021)	Relative advantage, Complexity and Data Security,	Organization Readiness, Top Management Support, Technology Readiness, AI knowledge, Participation Influence	Competitive Pressure,
4	(Shulenbayeva, Amankeldi and Serikbayeva, 2023)	Relative Advantage, Complexity, Uncertainty, Data Security, Comparability,	Organizational readiness, Top Management Support, Organization Size, Technology Readiness, Participation Influence, Human Resource's IT Competency	Competitive Pressure, Regulatory Environment, vendor support
5	(Rawashdeh, Bakhit and Abaalkhail, 2023)	Comparability	Technology Readiness, AI knowledge,	
6	(Rosli, Yeow and Siew, 2013)		Top Management Support, Organization Size,	Competitive Pressure, Regulatory Environment
7	(Hasan, 2021)	Relative Advantage	Technology Readiness, Top Management support, Organization Size, AI knowledge,	
8	(Yang, Blount and Amrollahi, 2021)		Technology Readiness, AI knowledge, Participation Influence, Human Resource's IT Competency,	Competitive Pressure, Regulatory Environment, vendor support
9	(Rawashdeh, Bakhit and Abaalkhail, 2023)	Comparability	AI Knowledge,	
10	(Seethamraju and Hecimovic, 2020)			Regulatory Environment, vendor support,

11	(Sergey <i>et al.</i> , 2019)	Data Security, Data Integrity		
12	(Fedyk <i>et al.</i> , 2022)	Relative advantage		Vendor support,
13	(Hussin, Salleh and Ahmad, 2022)	Relative advantage		
14	(Goto, 2021)	Uncertainty		
15	(Ahmadu and Taimin, 2023)		Organization readiness, organization Size	
16	(Mihai, 2023)		Top Management Support	
17	(Fukas <i>et al.</i> , 2021)		Top Management Support	
18	Priya et al., 2023	Data Security		
19	(Tornatzky and Fleischer, 1990)			Regulatory Environment, vendor support
20	(Alhumoudi and Abdulrahman Juayr, 2023)	Relative Advantage		
21	(Almufadda & Almezeini, 2021).	Relative Advantage	Organization Readiness, Top Management Support, Technology Readiness, AI knowledge, Participation Influence	
22	(Li, 2020)	Complexity, Relative advantage	AI Knowledge	
23	(Zhang <i>et al.</i> , 2020a)	Complexity, Relative Advantage, Data security, Data Integrity	Organization Readiness, Top Management support,	
24	(Krishnan, Meservy and Gadh, 1986)	Complexity, Relative Advantage, Uncertainty, Data Security, Comparability, data integrity	Organizational Readiness, Top Management Support, Participation influence	

The researchers took into account both theoretical and empirical research and identified important variables that

affected the use of AI in audit firms. Each and every study resource was put straight into an EndNote database. Seventy

duplicates were eliminated using EndNote's "find duplication" function. More screening was done on the research sources that remained. Choosing which pertinent research publications to include or omit from the data extraction procedure was part of the selection process. The researchers now go into more detail about

these three particular criteria in the section that follows in table: 7. The researchers go over the literature that has already been written about each element from the broad determinants factor of AI deployment in Audit Firm viewpoints and offer a definition that we utilized for our own research.

Table 6: *The factors of influence*

Framework	Factors	Refers to
Technological factor	Complexity	According to a study published in the Journal of Accounting Research, utilizing AI can improve audit quality, but it also can make audits more challenging and require more auditor training (Krishnan, Meservy and Gadh, 1986). Use of AI may also make the audit more complex and need more resources, according to an additional research paper published in the Journal of Information Systems.(Chen <i>et al.</i> , 2022).
	Relative advantage	The integration of artificial intelligence (AI) with audit businesses presents a number of advantageous outcomes, such as expanded analytical skills, increased audit quality, and increased efficiency(Fedyk <i>et al.</i> , 2022). AI may improve audit efficiency and accuracy by assisting auditors in evaluating internal accounting controls and modeling accounting systems (Krishnan, Meservy and Gadh, 1986). Furthermore, by providing auditors with deeper insight into the audited companies and minimizing the influence of financial reporting complexity on audit time, artificial intelligence (AI) can help decrease audit delay caused by accounting complexity(Chen <i>et al.</i> , 2022). Furthermore, the application of AI can maximize auditors' reporting transparency by emphasizing the most critical audit matters and improving the disclosure of key audit matters (KAM) in audit reports (Hussin, Salleh and Ahmad, 2022)
	Uncertainty	According to a qualitative study done on a Big Four audit company in Japan, professionals' perspectives about artificial intelligence (AI) and how it would affect their careers might have an impact on their digitalization initiatives(Goto, 2021) and also In order to cope with extreme uncertainty, the study discovered a unique way of looking at the future that acknowledges it will always change. This suggests that professionals' attitudes and ideas about AI technology might have an impact on the uncertainty around its deployment in audit businesses.
	Data Security	AI data security is essential for audit companies to maintain the accuracy, completeness, and security of sensitive financial data. Artificial intelligence (AI)

		technologies can improve data security and integrity by offering strong, impermeable methods to address these problems(Priya <i>et al.</i> , 2023).
	Smart contract coding	The desire for innovative assurance services powered by AI technology is demonstrated by the rise of new technical audit companies in the smart contract audit sector(Bourveau, Brendel and Schoenfeld, 2023). In order to offer robust safety assurances for smart contracts, new programming languages like Scilla are being created. This will increase the practical viability of independent audit and formal verification of deployed code(Sergey <i>et al.</i> , 2019).
Organization Factor	Organization readiness	Information technology (IT) is becoming more and more used in business, and small audit firms need to invest in technology to stay up to date with current trends. People's intentions have an impact on how small audit firms adopt technology, and commitment and readiness to provide infrastructure and training are important factors in determining how small audit firms adopt technology (Ahmadu and Taimin, 2023).
	Top Management Support	(Mihai, 2023) discovered that senior management support has a significant impact on the financial industry's adoption of AI solutions."A-AIMM," or the Artificial Intelligence Maturity Model for Auditing, emphasizes the need of senior management support in assisting audit organizations in becoming AI-enabled businesses (Fukas <i>et al.</i> , 2021). Low mean scores on measures of audit technology adoption suggest that senior management support is a key component in the use of audit technologies, according to (Rosli, Yeow and Siew, 2013).
	Organization size	According to the (Rosli, Yeow and Siew, 2013), firm size had an impact on the adoption of audit technology, with larger companies adopting it at a higher rate.
	AI knowledge	The KASS is a knowledge-based system designed to assist auditors in evaluating internal accounting controls. It utilizes a logic-based language called AL, which provides a declarative approach to modeling accounting systems and explicitly describing authority structures used to enforce internal controls(Krishnan, Meservy and Gadh, 1986)
	Human Resource's IT Competency	According to the TOE framework, a company needs a knowledgeable and competent workforce to effectively embrace a technology(Tornatzky and Fleischer, 1990). The IT competence of human resources pertains to the proficiency and capability in IT/IS held by employees within the audit firm. Research in the field of IS Adoption indicates that the extent of employees' knowledge in Information Systems can influence the decisions of the firm's leaders to adopt such systems(Thong, 1999).

		Because of this, we think that the adoption of audit technology will be positively impacted by the IT proficiency of human resources.
	Participation influence	Studies have indicated that the adoption of technology in small audit firms is strongly influenced by the goals of the individuals involved. The desire to participate in these firms is greatly influenced by the major audit partners' willingness and commitment to offer the infrastructure and training needed for the implementation of audit technology(Rosli, Yeow and Siew, 2013).
Environmental Factor	Competitive Pressure	The specialty premium is negatively impacted by competitive pressure in the audit industry of China. When under more competitive pressure, specialized auditors pass on reduced cost reductions from economies of scale to customers(Chen and Ma, 2014). A significant and adverse correlation between the competitive pressure and audit market competitiveness, as well as auditor narcissism(Mohammadi <i>et al.</i> , 2021).
	Regulatory Environment	The UK legislative framework for audit and corporate governance saw substantial modifications as a result of the Enron crisis, including an expansion of the function of audit committees and independent audit firm inspection. According to a research, the things that are thought to improve audit quality the most are the audit committee's operations and the auditor's risk considerations, such economic risk and the possibility of regulatory action. However, others believed that the audit inspection regime and International Standards on Auditing (ISAs), which are components of the "standards-surveillance-compliance" regulatory framework, were less successful.(Beattie, Fearnley and Hines, 2010).
	Vendor Support	Vendor services include all of the support that IT suppliers give to audit companies, such as advice, technology monitoring, training, and maintenance. The TOE framework states that a company's ability to access suppliers of technology-related services has an impact on the choice to adopt a technology(Tornatzky and Fleischer, 1990). As a result, we believe that vendor services will encourage the use of audit tools.

From the Technology-Organization-Environment (TOE) framework model, from every factor some significant determinates influence AI implementation in audit firm. Talking from technological perspective complexity of AI, influence audit firm to implement or not. According to research in the Journal of Accounting

Research, using AI in auditing can enhance audit quality, but it can also make audits more difficult and necessitate more training for auditors (Krishnan et al., 1986). From that point or view, AI is equally necessary for enhancing the audit quality, but the complexity falls to pretensioner and the audit firm. The

integration of artificial intelligence (AI) with audit businesses presents a number of advantageous outcomes, such as expanded analytical skills, increased audit quality, and increased efficiency (Fedyk et al., 2022) that relative advantage influence audit firm to implement AI technology for better performance.

Furthermore, by giving auditors greater insight into the audited organizations and by mitigating the impact of financial reporting complexity on audit delay, artificial intelligence (AI) can assist minimize audit delay linked to accounting complexity (C. Chen et al., 2022). AI data security is essential for audit companies to maintain the accuracy, completeness, and security of sensitive financial data. Artificial intelligence (AI) technologies can improve data security and integrity by offering strong, impermeable methods to address these problems (Priya et al., 2023).

ANALYSIS AND DISCUSSION

Descriptive Analysis

RQ: What are the determinants influencing the implementation of AI in audit functions of audit management?

Figure 2 shows the year wise paper published from 2010 to 2023 on determinants of AI implementation in Accounting and Audit firm. In the chart it shows very frustrating that in the first 3 year (2010, 2011, 2012) there was a single relevant article in the factor influencing of AI implementation in Audit and Accounting. But from 2013 to 2019 every single year 1 article was published according to the chart. The highest number of articles was published in 2021, and it was 6 papers. Then the second highest was in 2023, 5 papers were published in that year related to the topic. Furthermore, 3 papers were published in both 2020 and 2022. The auditing industry is not exempt from the transformational

power of artificial intelligence (AI). The way that cutting-edge technologies are incorporated into conventional auditing procedures is shaped by a number of factors, which also affect how AI is implemented in audit processes. Technology-Organization-Environment (TOE) framework identified the influencing determinants that are significant before implementing AI in Audit firm. Stringent regulatory requirements often drive audit firms to adopt AI solutions for enhanced compliance and accuracy in financial reporting. Compliance pressures can act as a catalyst for firms to invest in AI tools that can navigate complex regulatory landscapes efficiently.

An audit firm's current technology capabilities are a major factor in assessing whether implementing AI is feasible. Businesses that have a strong IT foundation are better equipped to incorporate AI into their audit procedures. The quality and availability of data have a major impact on how well AI performs audits. Businesses that have clean, accessible, and well-organized data sets are more likely to use AI for anomaly detection and data analysis. AI methods for spotting possible hazards and abnormalities in financial accounts are often adopted by audit firms that prioritize proactive risk management. Because AI can examine big information, auditors can find patterns that point to potential financial problems. Increasing client expectations for faster and more accurate audits drive audit firms to adopt AI solutions. AI's ability to automate routine tasks allows auditors to allocate more time to strategic analysis, meeting client demands for deeper insights. Here is how both the descriptive and thematic analysis was carried out: After all we selected 24 papers, and these 24 papers were systematically full text reviewed and coded to create table 8. We were able to extract certain variables from table 8 that were shown to be significant in at least one

Table 7: Summary of Significant Factor of AI implementation in Audit firm

Technological Factor	No of Articles	Organizational Factor	No of Articles	Environmental Factor	No of Articles
Complexity	7	Organization readiness	7	Competitive Pressure	4
Relative advantage	11	Top Management Support	10	Regulatory Environment	5
Uncertainty	3	Organization size	3	Vendor Support	5
Data Security	6	Technology Readiness	4		
Data Integrity	4	AI knowledge	7		
Comparability	4	Participation influence	5		

of the investigations, these variables are indicated by the number (variables-number).

Table 8 illustrates how seven organizational factors—organizational readiness (N-7), organizational size (N-3), top management support (N-10), Technological readiness (N-4), AI knowledge(N-7), Participation influence(N-5), and Human Resource’s IT Competency (N-2) —were identified as relevant in the Artificial Intelligence literature.

Our results corroborate the literature on the determinants of AI implementation in audit firms, which has shown that organizational characteristics like organizational size, organization readiness, top management support, Technological readiness, AI knowledge and Participation influence are frequently considered to be the most important determinants of AI implementation in audit firms. Also, in the technological and environmental factor it was shown that complexity, relative advantage, data security from technological and Competitive Pressure, Regulatory Environment and Vendor Support from environmental factor are frequently considered to be the most important

determinants of AI implementation in audit firms.

THEMATIC ANALYSIS

The thematic analysis delves deeper into the determinants influencing the implementation of artificial intelligence (AI) in audit firms, categorized into three key dimensions of the Technology-Organization-Environment (TOE) framework: technological, organizational, and environmental factors. Technological factors such as complexity, relative advantage, and data security play a pivotal role. While AI enhances audit quality and efficiency, its complexity necessitates significant training and resource allocation. Data security, a critical concern, influences decision-making due to the sensitivity of financial information handled by audit firms. Organizational factors include top management support, organizational readiness, and the technological competence of human resources. These factors underscore the importance of leadership commitment and a culture of innovation in successfully adopting AI systems. For instance, firms with robust management backing and skilled personnel exhibit a higher propensity to integrate AI effectively.

Environmental factors, including regulatory frameworks, competitive pressure, and vendor support, shape the external landscape for AI adoption. Regulatory compliance acts as both a motivator and a barrier, requiring audit firms to balance innovation with adherence to standards. Competitive pressure drives firms to adopt AI for enhanced efficiency, while vendor support facilitates smoother implementation through training and technical guidance. Together, these themes provide a holistic understanding of the determinants, offering insights into how firms can navigate challenges and leverage opportunities to optimize AI integration in auditing processes. The integration of AI in audit firms yields several noteworthy outcomes:

- **Increased Efficiency:** Routine duties are automated by AI, freeing auditors to concentrate on more intricate analysis and decision-making. Faster turnaround times result from more efficient audit operations.
- **Enhanced Accuracy:** AI algorithms excel at data analysis, reducing the likelihood of human errors in audits. Improved accuracy enhances the reliability of financial statements and audit reports.
- **Cost Reduction:** Automation of repetitive tasks reduces the need for extensive human involvement, resulting in cost savings for audit firms. The initial investment in AI technology is often offset by long-term operational efficiencies.
- **Advanced Risk Detection:** AI's data analysis capabilities enable auditors to identify patterns and anomalies that may signify potential risks. Proactive risk management becomes more feasible with the aid of AI tools.
- **Client Satisfaction:** Increased client satisfaction is partly attributable to faster and more accurate audits. Timely insights and a better comprehension of their financial

circumstances are advantageous to clients.

CONCLUSION

Technological determinants plays a pivotal character in driving AI implementation in audit firms. The studies reviewed consistently emphasize the importance of modern technologies, such as data analytics, machine learning and robot automation, in enhancing audit processes, improving accuracy, and providing valuable insights. As technological capabilities continue to evolve, audit firms must actively invest in and leverage these innovations to stay competitive and meet the growing demands of the industry.

Organizational determinants emerged as another critical factor influencing the AI adoption in audit firms. Organizational culture, leadership support, and the availability of skilled personnel are the factors that play crucial roles in shaping the readiness and willingness of firms to integrate AI into their audit practices. Fostering a culture of innovation and ensuring leadership commitment to AI adoption are essential components for a successful implementation strategy. Furthermore, environmental determinants, including regulatory frameworks, market pressures, and client expectations, exert significant influence on the decision-making process for AI implementation. Compliance with regulatory requirements and the need to meet evolving market demands create both challenges and opportunities for audit firms considering the adoption of AI. Successful implementation strategies must align with the external environment and consider the dynamic nature of the audit industry.

The review has highlighted the interplay between these determinants and the need for a holistic approach to AI

implementation in audit firms. Achieving successful integration requires a comprehensive understanding of the technological landscape, a commitment to fostering an innovative organizational culture, and an awareness of the external factors shaping the audit environment. As audit firms navigate this transformative journey, addressing these determinants will be crucial for maximizing the benefits of AI in enhancing audit quality, efficiency, and overall organizational performance. In summary, this systematic literature review contributes to the ongoing discourse on AI implementation in audit firms by consolidating existing knowledge and identifying key determinants. Future research should continue to explore emerging technologies, organizational dynamics, and environmental factors to provide further guidance for audit firms seeking to take in the full potential of artificial intelligence in the operations.

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