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Transforming Audit with AI: Navigating the Inevitability and Challenges of Accounting Digitalisation

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***Abstract*—Digital transformation in the accounting and auditing profession has been encouraged by the adoption of artificial intelligence (AI) technology. The integration of AI in the audit process provides an opportunity to increase the efficiency, accuracy and depth of financial data analysis. However, implementing AI also presents challenges such as data security, accountability, risk of bias, changing organizational culture, and regulatory compliance. This research explores the impact of AI on the audit process, its potential benefits in terms of efficiency and deeper data analysis, and the main challenges in AI implementation. Using a qualitative approach, this research analyzes the perspectives of auditors, regulators and other stakeholders. The results show that AI has the potential to transform the audit process, but efforts are needed to address challenges such as data security, accountability, human resource training, and regulatory compliance. This research provides valuable insights for organizations and audit professionals in utilizing AI effectively and responsibly, and identifies priority areas of policy and best practice development in the future.**

***Keywords*—Accounting; Audit; Digital Transformation; Artificial Intelligence (AI).**

I. INTRODUCTION (Heading 1)

The digital revolution has had a significant impact on various industries, including accounting and auditing (Pajunen et al., 2020). The emergence of technology and the widespread use of digital tools has brought about a transformation in the way these two professions operate. The term of "digital transformation" refers to the integration of digital technologies into various aspects of business operations to increase efficiency, effectiveness and competitiveness (Baidybekova et al., 2021a). The emergence of technology and the widespread use of digital tools has brought about a transformation in the way these two professions operate. The term of "digital transformation" refers to the integration of digital technologies into various aspects of business operations to increase efficiency, effectiveness and competitiveness (Baidybekova et al., 2021a). In the context of accounting and auditing, digital transformation includes the adoption of innovative digital tools, such as cloud computing, data analysis, artificial intelligence, and blockchain to streamline processes and improve decision making.

The digitalization of accounting and auditing processes has revolutionized the way financial information is collected, analyzed and reported (Saltanat K. Baidybekova et al., 2021). Traditional manual methods are being replaced by automated systems which are not only save time, but also reduce the possibility of errors (Antonini, 2024). For example, cloud-based accounting software allows businesses to manage their financial records in real-time, facilitating accurate and up-to-date financial reporting.

Additionally, the use of data analytics in accounting and auditing has increasingly become common (Antonini, 2024). Advanced analytical tools enable professionals to analyze large amounts of financial data quickly and effectively, identifying patterns, trends, and anomalies that might otherwise go unnoticed (Tettamanzi et al., 2023). This matter not only improves the accuracy of financial reporting, but also allows auditors to provide valuable insights and recommendations to their clients.

The integration of artificial intelligence (AI) in the audit process has become increasingly common in recent years, revolutionizing the way audits are conducted (Olomskaya et al., 2021). With advances in technology, auditors can now utilize AI tools and algorithms to analyze large amounts of data quickly and accurately, resulting in more efficient and effective audits. This shift towards automation and machine learning has allowed auditors to focus on higher-level tasks and make more strategic decisions, ultimately improving overall audit quality (Korobeynikova et al., 2021).

The digital transformation of accounting and auditing has several implications for professionals, organizations and stakeholders (Weshah, 2024). First, this causes a shift in the skills needed by accountants and auditors. As digital tools become increasingly integrated into their work, professionals need to develop competencies in data analysis, information technology, and cybersecurity (Pudeyan et al., 2020). The ability to interpret and utilize digital information is critical to providing high-quality services.

In addition, digital transformation has the potential to increase the efficiency and effectiveness of accounting and audit processes (Wu, 2022). By automating routine tasks and utilising data analysis, professionals can allocate more time to strategic decision making, risk assessment, and client consulting services (AlNasrallah & Saleem, 2022). This shift

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in focus allows organizations to give more value to their clients and stakeholders.

Apart from that, digital transformation also has implications for the audit profession. Auditors can utilize advanced technology to conduct more comprehensive and efficient audits (Ergeshova et al., 2023). For example, data analysis tools can analyze large data sets to identify potential risks or areas of concern, thereby allowing auditors to adjust their procedures. This aspect will improve the overall quality and effectiveness of the audit process (Ergeshova et al., 2023).

By harnessing the power of AI, auditors can now detect patterns and anomalies in data that may have gone unnoticed in the past, helping to identify potential risks and fraud more effectively (Arfaoui & Kammoun, 2023). In addition, the use of AI in the audit process has also increased the overall transparency and accountability of audits, as it provides a clear and objective way to analyze and report financial information (Ruggeri et al., 2023). As technology develops, the integration of AI in the audit process is expected to become increasingly common, thereby enhancing the profession and ensuring the accuracy and reliability of audit results. Although digital transformation presents many opportunities, it also brings various challenges that need to be overcome (Pargmann et al., 2023). One of the main challenges is the need for organizations to adapt to rapid technological advances. The dynamic nature of digital tools requires professionals to continuously update their skills and knowledge to remain relevant in the industry (Chyzhevska et al., 2021). This circumstance requires ongoing training and professional development initiatives.

Additionally, the integration of digital technology poses cybersecurity risks. As financial information becomes increasingly digitalized, organizations need to ensure the security and integrity of their data (Sytnik et al., 2022). Cyberattacks and data breaches can have severe consequences, including financial loss, reputational damage, and legal implications. Therefore, strong cybersecurity measures and protocols are critical to mitigating these risks.

Another challenge is the potential displacement of certain job roles due to automation. As digital tools take over routine tasks, professionals may need to adapt to new roles that require high levels of skills (Jabor & Hamdan, 2023). This condition requires a proactive approach to reskilling and upskilling the workforce to ensure a smooth transition and minimize negative impacts on employment.

Despite these challenges, digital transformation also presents significant opportunities for the accounting and auditing profession. This allows professionals to provide more accurate, timely and insightful financial information to support decision making (Meiryani et al., 2022). Additionally, digital tools can improve collaboration and communication among stakeholders and facilitating more effective business relationships.

relationship.

As technology develops, the use of artificial intelligence AI in the audit process is becoming increasingly common (Esmeray & Esmeray, 2020). Although AI offers many benefits such as increased accuracy, efficiency, and risk assessment, it also presents challenges in terms of data privacy, ethical considerations, and the need to upskill auditors to utilize these tools effectively (Jans et al., 2023). To fully exploit the opportunities presented by AI in auditing, organizations must carefully consider these challenges and proactively address them in their implementation strategies.

By overcoming these challenges head-on, organizations can ensure that they maximize the potential benefits of AI in their audit processes (Ratmono et al., 2023). This can be done by implementing strong data security measures, establishing clear ethical guidelines for the use of AI, and investing in training programs to improve auditor capabilities (Thuan et al., 2022). By taking these steps, organizations can position themselves to remain at the forefront of leveraging AI technology to improve their audit practices and drive greater value for their clients. Ultimately, embracing AI in auditing will not only improve audit quality and efficiency, but also allow auditors to focus on more strategic and value-added tasks (Thottoli, 2021).

Although the application of AI in the audit process may have benefits, there are potential risks such as job displacement for auditors and increased reliance on technology that could lead to oversight of important issues (Pajunen et al., 2020). Additionally, the costs associated with implementing and maintaining AI systems may outweigh the potential benefits for some organizations (Akhmetova et al., 2019). AI plays an important role in the audit process by automating repetitive tasks such as data collection, analysis, and risk assessment.

By utilising machine learning algorithms, AI can quickly identify patterns and anomalies in financial data, thereby helping auditors detect potential fraud or errors more efficiently (Agostino et al., 2022). AI can also improve audit quality by providing real-time insights and predictive analytics to auditors, so they can make more informed decisions and recommendations to clients. Overall, AI in auditing is transforming the profession by enabling auditors to work smarter, faster and more effectively.

The disruption which is caused by AI in auditing has significant implications for the fields of accounting and finance (O'Leary, 2023). Apart from that, this disruption also presents opportunities for the accounting and finance industry to increase efficiency and accuracy in their processes (Knudsen, 2020). Additionally, the implementation of new technologies and digital platforms can further enhance these improvements, enabling greater efficiency and cost savings for businesses in the accounting and finance industry (Ionescu-Feleagă et al., 2022).

Previous research has explored the potential benefits and challenges of using AI in auditing. Additionally, these studies have highlighted the need for auditors to not only understand the capabilities and limitations of AI, but also develop new skills and strategies to effectively integrate AI into their workflows (Duff et al., 2020). Additionally, it is important for auditors to stay abreast of the latest developments in AI technology and continuously assess their proficiency in using AI tools to ensure that they can exploit its potential benefits and minimize its limitations (Fraser & Sheehy, 2020).

Although existing literature has not addressed the specifics of how AI is disrupting the audit profession and its long-term implications, it is critical to explore and understand these issues. Therefore, future research should examine the effects of AI on the audit process and identify strategies for auditors to adapt to these changes. Additionally, the ethical

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implications of AI in auditing, including potential bias, must be taken into account in order to develop guidelines and best practices for its responsible use.

Utilising AI in audits will provide valuable insights for auditors, regulators and business people, enabling them to utilize AI technology effectively and improve the quality and efficiency of the audit process. What impact will AI have on the audit profession, and what are the potential opportunities for the use of AI in auditing? Additionally, the use of AI in auditing can also improve the accuracy and efficiency of the audit process, leading to cost savings for businesses and organizations.

II. RESEARCH METHODS

This research uses a phenomenological interpretive method, which aims to gain depth about certain phenomena in life by focusing on the experiences of research participants. In addition, a deep understanding of phenomenological interpretation requires the researcher to actively develop a phenomenological attitude, which involves sensitivity to other people's lived experiences.

This research attempts to investigate job prospects in the field of finance amidst the rise of artificial intelligence. To collect information and explore further the problems discussed in this research, the author chose seven people to be participants consisted of senior auditors, accountants, and financial managers from various industries who have direct experience in implementing AI in the audit field. In-depth semi-structured interviews will be conducted to explore respondents' views and experiences regarding the use of AI in auditing, as well as the challenges and opportunities faced.

III. DISCUSSION

A. The Impact of AI on the Audit Process as Digital Transformation in Accounting

Artificial Intelligence (AI) has revolutionized various industries, including accounting. In the audit field, AI technology has given significantly impact to the traditional audit process, leading to increased efficiency and accuracy (X. Zhang, 2022). One of the main ways in which AI has changed the audit process is through the use of machine learning algorithms (Tulakhodjaeva & Khodjaeva, 2021). These algorithms are capable of analyzing large amounts of data at a much faster rate than human auditors, allowing for quicker identification of potential errors or inconsistencies. In addition, AI technology can also be used to automate repetitive tasks such as data entry and reconciliation, so that auditors can focus on more strategic and analytical aspects of auditing (M. Zhang et al., 2022). Overall, the integration of AI in accounting has the potential to revolutionize the way audits are conducted, ultimately leading to more reliable financial reporting and decision making.

By utilising AI technology, auditors can improve their ability to detect fraudulent activities and identify patterns that may indicate potential risks (Kokina et al., 2021). This thing can provide a more comprehensive and accurate assessment of the organization's financial health, which ultimately increases stakeholders' trust and confidence in the audit process (R.I. Andreassen, 2020). As AI advances and develops, the possibilities for its applications in accounting and auditing become endless, paving the way for a more efficient and effective audit experience.

For example, auditors can use AI algorithms to analyze large sets of financial data and quickly identify anomalies or inconsistencies that may signal fraudulent behavior (K. & Samri Juliati Nasution, 2024). Additionally, AI can be used to perform predictive analysis on historical financial data to forecast potential risks and opportunities for organizations, thereby helping stakeholders to make more informed decisions (Kusumawardhani et al., 2024).

The Diffusion of Innovation Theory which was introduced by Everett Rogers explains how, why, and at what rate technological innovation spreads in a population. In the accounting context, this theory can help explain the adoption of AI and other digital technologies among companies and accounting practitioners (Yeyouomo & Asongu, 2023). According to this theory, the adoption of new technologies such as AI follows an adoption curve which consisting of five categories: innovators, early adopters, early majority, late majority, and laggards. Understanding where a company or individual falls on this curve can help in planning technology adoption strategies and understanding the barriers they may face (Issa et al., 2022).

The Diffusion of Innovation Theory which was introduced by Everett Rogers provides a comprehensive framework for understanding how, why, and at what rate technological innovation spreads in a population (Marioara et al., 2022). In the accounting context, this theory is very relevant to explain the adoption of AI and other digital technologies among companies and accounting practitioners (Anh et al., 2024). This theory identifies five categories of technology adoption such as: innovators, early adopters, early majority, late majority, and laggards. Each category represents a different stage of adoption, ranging from companies which are the first to try a new technology to those that are the slowest to adopt it.

There are several companies in Indonesia which have started to adopt AI technology in their audit processes to improve efficiency, accuracy and audit quality. Leading Public Accounting Firms (LPA) such as PwC, Deloitte, EY, and KPMG have utilized AI for various aspects of the audit process, including risk assessment, substantive testing, and creating faster and more accurate audit reports (Suryani et al., 2021). Among the companies that have integrated AI in their audit processes are Bank Central Asia (BCA) and telecommunications companies such as Telkom Indonesia. BCA uses AI to assist in the transaction verification process and risk analysis, while Telkom Indonesia uses AI to optimize operational efficiency and internal supervision (Susilo, 2023).

Apart from that, the accounting sector in Indonesia is also experiencing digital transformation with more and more companies collaborating with technology providers to implement AI-based solutions (Thottoli, 2021). This implementation not only helps in speeding up the audit process, but also increases accuracy by reducing human errors and allowing auditors to focus on deeper and strategic analysis (Jans et al., 2022). The use of AI in auditing in Indonesia is still growing, but this trend shows great potential in changing the way auditors work and increasing the transparency and

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reliability of company financial reports (Antonini, 2024). This is in line with the industry's need to adapt to the era of industrial revolution 4.0 which demands the use of advanced technology to compete globally (Sytnik et al., 2022).

In the application of AI in the accounting field, innovators are companies that dare to take risks and are the first to adopt this technology (Jabor & Hamdan, 2023). They often have the resources and strategic vision to integrate AI into their audit processes, although they may face initial challenges such as high costs and the need for specialized training. Early adopters, who follow innovators, are usually companies that see the potential of AI and invest in the technology after seeing initial evidence of its success (Meiryani et al., 2022).They help spread innovation further by becoming a successful example for other companies.

After early adopters, the early majority and late majority categories adopt AI technology when the technology has been proven to be effective and more accessible (Ratmono et al., 2023). The early majority is a more cautious group, waiting for concrete evidence of benefits and risk reduction before adopting. The late majority are more skeptical and are often forced to adopt technology due to competitive pressures or the need to remain relevant (Thuan et al., 2022). Finally, laggards are the last to adopt technology, often due to resistance to change or limited resources. Understanding where a company or individual is on this adoption curve is critical to planning effective implementation strategies and identifying barriers that may be encountered during the digital transformation process in accounting (Agostino et al., 2022).

The application of artificial intelligence (AI) technology in the audit process has brought significant changes, especially in terms of increasing efficiency and accuracy (O'Leary, 2023). One of the main contributions of AI is the ability to automate routine tasks that previously required large amounts of time and effort (Knudsen, 2020). For example, checking transactions and reconciling accounts can be carried out by AI systems automatically and in a much shorter time than if carried out by human auditors (Ionescu-Feleagă et al., 2022). This automation not only speeds up the audit process, but also allows auditors to focus on more complex and strategic aspects of their work.

Additionally, AI has extraordinary capabilities in detecting anomalies and irregularities in financial data which may not be detected by human auditors (Duff et al., 2020). Machine learning algorithms which are used by AI systems can be trained to recognize suspicious transaction patterns, such as spending that does not match the usual pattern or transactions that appear unusual (Fraser & Sheehy, 2020). With this automatic detection, auditors can more quickly find potential errors or fraud, thereby strengthening the integrity of financial reports.

AI also enables deeper and more comprehensive data analysis. In an increasingly complex modern business environment, the volume of data that auditors must analyze continues to grow (X. Zhang, 2022). AI is able to process and analyze big data with high efficiency, providing deeper and more accurate insight into a company's financial condition (Tulakhodjaeva & Khodjaeva, 2021). This deeper data analysis helps auditors identify trends and risks which may not be visible from traditional data analysis, so they can provide better recommendations to their clients.

The use of AI in auditing also contributes to reducing human errors. Manual processes carried out by humans are often prone to errors, either due to fatigue, inaccuracy, or other factors (M. Zhang et al., 2022a). With AI, many audit tasks can be performed with a very high and consistent level of accuracy (Kokina et al., 2021). AI system does not experience fatigue or bias, so the results produced are more reliable and free from errors that generally occur in manual processes.

Finally, digital transformation through the application of AI not only increases efficiency and accuracy, but also provides added value to the auditor profession itself (R.-I. Andreassen, 2020). With many routine tasks being automated, auditors can focus more on in-depth analysis and strategic decision making (Yeyouomo & Asongu, 2024). This aspect allows them to provide greater added value to the organization, such as providing better insight into financial risks and growth opportunities. Apart from that, auditors are also encouraged to continue learning and developing new skills relevant to the latest technology, making them more adaptive and competent in facing future challenges (Shivram, 2024).

B. Benefits Of Applying Ai In Audit Transformation

One of the main benefits of implementing AI in accounting is a significant increase in efficiency. AI can automate many tasks and processes that were previously carried out manually by accountants (Adeola Olusola Ajayi-Nifise et al., 2024). For example, AI can be used to process and categorize financial transactions, create journal entries, and prepare financial reports quickly and accurately (El-Mousawi et al., 2023). This matter can save accountants significant time and effort, so they can focus on more complex and value-adding tasks.

Interestingly, although AI increases efficiency, it also presents challenges, including ethical considerations and the need to upskill the workforce (Arquam, 2024). Additionally, small businesses may face difficulties in adopting AI due to limited resources, but the potential benefits suggest that overcoming these challenges can result in competitive advantage (Alnasrallah & Saleem, 2022). In short, the integration of AI into accounting practices offers substantial efficiency improvements by automating repetitive tasks and increasing data reliability. However, this transition requires addressing ethical issues, investing in employee training, and considering the unique challenges faced by small businesses. The overall consensus across the literature underscores the transformative impact of AI on the accounting profession, with efficiency as a key benefit (Temitayo Oluwaseun Jejeniwa et al., 2024)

Another benefit of AI in accounting is increased accuracy in data processing and financial reporting (Adeola Olusola Ajayi-Nifise et al., 2024). AI can be programmed to apply accounting rules and standards consistently, as well as automatically validate and cross-check data. This matter reduces the risk of human error and ensures accuracy in financial reporting. Data accuracy is key to making the right business decisions, so AI can make a significant contribution in this regard.

The integration of AI in accounting has been indeed associated with increased accuracy in data processing and financial reporting. The studies reviewed consistently highlight AI's

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ability to automate routine tasks, which reduces the risk of human error and leads to more accurate financial data management (Muh. Fathir Maulid Yusuf et al., 2023). Machine Learning (ML) algorithms, a subset of AI, are highly adept at analyzing large data sets, identifying patterns, and improving the accuracy of financial predictions and trends(Temitayo Oluwaseun Jejeniwa et al., 2024). However, despite the clear benefits, there are also challenges and risks associated with AI implementation, such as data security issues and potential misinterpretation of AI-generated data (Korol & Romashko, 2024). Additionally, reliance on AI for accuracy must be balanced with professional skepticism, as AI systems lack the emotional intelligence and contextual understanding that human judgment provides. In short, the role of AI in accounting significantly contributes to the accuracy of data processing and financial reporting. The automation of repetitive tasks and advanced analytical capabilities of AI systems improve the precision and reliability of financial information. However, it is critical to address the associated risks and maintain a level of human oversight to ensure the responsible use of AI in accounting.

Apart from that, AI can also be used to carry out more in-depth and complex data analysis. With machine learning capabilities, AI can identify patterns and trends in financial data that may not be visible to humans. This allows accountants to gain better insight into a company's financial performance, identify opportunities and risks, and make more informed decisions based on accurate data analysis.

Artificial intelligence AI and machine learning are very important in carrying out in-depth and complex data analysis. This technology increases the ability to identify patterns, make predictions, and derive insights from large data sets AI/ML algorithms, through their advanced analytical capabilities, are significantly improving the precision of diagnosis and optimizing treatment regimens in healthcare, as well as increasing efficiency and accuracy in regulatory reporting across industries (Mullankandy, 2024). Interestingly, while AI/ML has played an important role in advancing cancer research and predictive analytics, there has also been an emphasis on the ethical use and interpretability of AI models. Additionally, the integration of AI/ML in business analytics has been proven to improve productivity and decision-making processes (Ramachandran et al., 2022). However, it is important to address the under representation of pediatric-focused devices and geographic limitations of clinical trials to ensure the benefits of AI/ML are universally accessible (Challa et al., 2022). In short, AI and ML are transformative in performing deep and complex data analysis across domains, from healthcare to business and beyond. The ability of this technology to process large amounts of data and provide actionable insights is invaluable. However, it is critical to continue to pay attention to ethical considerations and broaden the inclusivity of AI/ML applications to maximize their potential benefits (AnandKumar Chennupati, 2024).

C. Challenges in Implementing AI on Audit

One of the main challenges in implementing AI for the financial audit process is ensuring data security and privacy of sensitive financial information (Arquam, 2024). The audit process involves access to the company's highly confidential and private financial data. The use of AI in analyzing this data raises the risk of leakage or misuse of information by unauthorized parties. Therefore, strict security measures are required to protect data from threats such as hacking, data theft or unauthorized access.

- Data Security and Privacy in Using AI to Analyze Financial Data

The issue of data security and privacy is one of the main challenges in implementing AI to analyze sensitive financial data (Liu, 2021). Company financial data contains confidential and private information, so strict security measures are needed to protect it from threats such as hacking, data theft, or unauthorized access (Azman et al., 2021). One strategy to overcome this challenge is to implement strong data encryption and advanced security protocols.

Data encryption is the process of converting information into code which cannot be read without the appropriate decryption key (Muh. Fathir Maulid Yusuf et al., 2023). By encrypting financial data before it is analyzed by AI, the risk of information leakage can be minimized (Korol & Romashko, 2024). Additionally, strict security protocols are required, such as multi-factor authentication, firewalls, and ongoing security monitoring to prevent unauthorized access to sensitive data. In addition to encryption and technical security, it is also important to ensure that only authorized parties can access financial data for audit purposes (Ramachandran et al., 2022a). This matter can be achieved by implementing strict access controls and a clear privacy policy. Every access to data must be authorized, audited and limited to legitimate and permitted purposes only.

To solve privacy issues, privacy protection techniques such as anonymization and privacy differentiation can be applied to financial data before it is analyzed by AI (Mullankandy, 2024). Anonymization involves removing or replacing information that could identify a particular individual or entity, while privacy differentiation involves adding noise or interference to data to protect privacy without sacrificing too much accuracy (Challa et al., 2022).

It is important to build trust and transparency with stakeholders regarding the use of AI in analyzing financial data (Byrapu Reddy et al., 2024). Companies must clearly communicate how data will be used, who will have access, and what security measures are taken to protect privacy (AnandKumar Chennupati, 2024). Open engagement and communication with regulators, auditors and other stakeholders can also help ensure compliance with relevant data privacy regulations and standards (Challa et al., 2022). By implementing a combination of technical security measures such as encryption, strict access controls, privacy protection techniques, and building trust through transparent communications, data security and privacy issues in using AI to analyze sensitive financial data can be addressed more effectively.

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- Accountability and Transparency in Decision Making Processes Involving AI in Audits

Another related challenge is the issue of trust and transparency in decision-making processes involving AI (M. Zhang et al., 2022). Most of AI algorithms are complex and lack transparency, making it difficult to understand how decisions or recommendations are made. This can raise concerns about the quality and objectivity of audit results, especially if there is uncertainty or error in the AI's decision-making process. Therefore, efforts are needed to increase transparency and accountability in the use of AI for audits.

Ensuring accountability and transparency in decision-making processes involving AI for financial audits is an important challenge that must be overcome (Praveenraj et al., 2023). Most AI algorithms are complex and lack transparency, making it difficult to understand how decisions or recommendations are made (Hasan et al., 2023a). This matter can raise concerns about the quality and objectivity of audit results, especially if there is uncertainty or error in the AI's decision-making process.

One strategy to increase accountability and transparency is to develop explainable AI models (Owolabi et al., 2024). Explainable AI models are designed to provide human-understandable reasoning and explanations for how decisions or recommendations are made. This allows auditors to verify AI decisions, understand the logic behind them, and ensure that they comply with standards and best practices in auditing.

Additionally, it is important to establish a clear and detailed audit trail in decision-making processes involving AI (Owolabi et al., 2024). This audit trail should record every step in the process, including the input data, parameters, and assumptions used by the AI model, as well as the final results produced (Robinson, 2020). With a transparent audit trail, auditors and other stakeholders can review the decision-making process and ensure that the decision was made correctly and can be accounted for.

In addition, efforts are needed to involve human auditors in decision-making processes involving AI (de Fine Licht & de Fine Licht, 2020). Although AI can provide recommendations or insights, the final decision must still be made by a human auditor who has professional understanding and judgment. Human auditors must verify and critically evaluate AI decisions, and ensure that they comply with auditing standards and best practices.

It is important to establish strong governance and frameworks for the use of AI in auditing (Korol & Romashko, 2024). This governance must include clear policies, procedures and controls to ensure accountability and transparency in the decision-making process (Muh. Fathir Maulid Yusuf et al., 2023). In addition, adequate training is needed for auditors and other stakeholders to understand how AI is used in audits, as well as how to interpret and evaluate the results of AI models.

By combining explainable AI models, transparent audit trails, human auditor involvement, and strong governance and training, accountability and transparency in decision-making processes involving AI for financial audits can be significantly improved (de Fine Licht & de Fine Licht, 2020). This matter will help build confidence in the use of AI in audits and ensure that the audit process remains objective, reliable and in line with applicable standards.

- Risk of Bias and Errors that May Occur in Using AI for Auditing

Apart from that, another challenge faced is the issue of bias and errors in AI models used for audits. If the training data or AI algorithm has bias or errors, then the resulting audit results can also be biased or wrong. This can have a significant impact on the quality and reliability of the audit process (Pajunen et al., 2020). Therefore, ongoing efforts are needed to ensure that the AI models used are free from bias and error, and are rigorously tested before being implemented in a production environment (Antonini, 2024).

If the training data or AI algorithm has bias or errors, then the resulting audit results can also be biased or wrong (Shivram, 2024). This case can have a significant impact on the quality and reliability of the audit process, and can potentially lead to incorrect decision making (Rhea et al., 2022). Bias can occur in training data if the data is not representative enough or there are undesirable systematic patterns. For example, if the training data comes mostly from large, established companies, the resulting AI model may be biased towards small companies or certain industries (Jans et al., 2022). The problem solving of this issue requires efforts to ensure that the training data used to build AI models is diverse, representative, and free from systematic bias.

In addition, errors can also occur in the AI algorithm itself (Challa et al., 2022). These errors can be caused by various factors, such as inappropriate assumptions, errors in coding, or excessive complexity in AI model (Ramachandran et al., 2022). To address these risks, rigorous testing and validation of AI models is required before implementation in a production environment. This matter can be done by using test data separate from training data and rigorously evaluating the performance of the AI model.

In detecting and solving bias and errors in AI models used for audits, techniques such as model interpretability and continuous monitoring can be used (Mullankandy, 2024). Model interpretability involves efforts to understand how an AI model makes decisions and identify factors that contribute to bias or error. Meanwhile, continuous monitoring involves monitoring the performance of an AI model in a production environment and detecting any deviations or anomalies that could indicate bias or error (Korol & Romashko, 2024).

It is needed a way to involve trained and experienced human auditors in evaluating and verifying the results of the AI model (Butkė & Dagilienė, 2022). Although AI can provide insights and recommendations, the final decision must still be made by a human auditor who has professional judgment and can critically assess whether the results from the AI are reasonable and free from significant bias or error (Awuah et al., 2021). With a combination of appropriate use of AI, rigorous validation, continuous monitoring, and the involvement of human auditors, the risk of bias and error in the use of AI for auditing can be minimized.

- Changes in Organizational Culture and Resistance of Human Auditors in Adopting AI Technology

Another challenge which needs to be considered is changes in organizational culture and resistance from human auditors in adopting AI technology (Kamilah & Samri Juliati Nasution, 2024). Some auditors may feel threatened or worried that AI will replace their role (Baidybekova et al., 2021). Therefore,

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efforts are needed to build understanding and trust in AI, as well as provide adequate training to auditors so that they can work effectively with this new technology.

There are many auditors who have become accustomed to traditional methods may feel threatened or worried that AI will replace their role (Issa et al., 2022). Additionally, major changes in work processes and the way audits are conducted can create discomfort and resistance to change (Liao et al., 2024). To overcome this challenge, an important first step is to build understanding and trust in AI among human auditors (R. I. Andreassen, 2020). This circumstance can be achieved by providing adequate training on how AI works, the benefits it offers, and the limitations and risks involved. This training should emphasize that AI is not to replace human auditors, but rather to assist and improve the efficiency of the audit process.

Besides that, it is important to involve human auditors in AI development and implementation process from the start. By being involved in this process, human auditors will feel more valued and have a sense of ownership of the new technology. They can provide input on real needs and challenges in the audit process, and ensure that AI is designed to meet those needs (Tulakhodjaeva & Khodjaeva, 2021).

Open and transparent communication is also very important in managing organizational culture change. Organizational leaders must clearly communicate the reasons behind AI adoption, the expected benefits, and how these changes will impact the roles and responsibilities of human auditors. With good communication, uncertainty and worry can be minimized, as well as build support and commitment from human auditors (X. Zhang, 2022).

Organizations should consider incentives and career development opportunities for human auditors who adopt and make good use of AI (Duff et al., 2020). This may include additional training, certification, or promotional opportunities for auditors who successfully adapt to new technologies (Knudsen, 2020). By providing the right incentives, organizations can encourage human auditors to be more open to change and improve their skills in using AI effectively.

By combining adequate training, early involvement of human auditors, open communication, and appropriate incentives and career development opportunities, organizations can more effectively manage cultural change and resistance to AI adoption in the audit process (Eulerich & Masli, 2019). This will help create an organizational culture that is open to innovation and ensure that human auditors and AI work collaboratively to improve the quality and efficiency of financial audits.

- Regulations and Legal Compliance Regarding the Use of AI in Audits, Especially in Various Jurisdictions

The last thing which is needed to know that regulatory and legal compliance challenges are also important considerations in implementing AI for financial audits (Betti & Sarens, 2021; Shivram, 2024). Different jurisdictions may have different regulations and requirements regarding the use of AI in finance and auditing (Awuah et al., 2021). Efforts are needed to ensure that the implementation of AI in audits complies with all applicable regulations and standards, as well as considering the legal and ethical implications of using this technology.

Each country or region may have different regulations and legal requirements regarding the use of AI technology, data protection, privacy, and responsibilities in the audit process (Rhea et al., 2022). One of the main challenges is complying with the various data protection and privacy laws and regulations that differ in each jurisdiction (Robinson, 2020). Some countries have strict regulations regarding how personal data and financial information can be processed and used by AI technology. Audit companies operating across borders must ensure that they comply with all of these regulations to avoid fines or lawsuits.

Besides that, there are also challenges in terms of accountability and legal responsibility regarding the use of AI in audits (Hasan et al., 2023). If an error or failure occurs in an audit process involving AI, the question of who is responsible becomes very important. Are AI developers, audit firms, or other entities responsible? This issue becomes more complex when multiple jurisdictions with different legal frameworks are involved.

To overcome these challenges, audit firms need to have a good understanding of the regulations and legal requirements that apply in each jurisdiction in which they operate. They must work closely with regulators, regulatory bodies and legal advisors to ensure compliance with all relevant regulations. In addition, efforts are needed to standardize and harmonize regulations regarding the use of AI in audits across jurisdictions, through initiatives such as global standards or international agreements (Praveenraj et al., 2023).

Audit firms must develop strict internal policies and procedures to ensure compliance with applicable regulations. This matter can include training staff on compliance, monitoring and internal audit, as well as developing a strong governance framework for the use of AI in audits. With consistent efforts and collaboration with regulators and other stakeholders, regulatory and legal compliance challenges related to the use of AI in audits can be addressed more effectively, even in complex cross-border environments.

- Reliability and Accuracy of AI in Identifying Risks, Anomalies and Fraud in Audits

Ensuring the reliability and accuracy of AI in identifying risks, anomalies and fraud in the financial audit process is very important (Kokina et al., 2021). If AI model used is not reliable or accurate, it can result in missing significant potential risks or fraud, or conversely, give rise to many inefficient false positives.

One of the key steps to ensure the reliability and accuracy of AI is using high-quality and representative training data. Training data should cover a wide range of scenarios, risks and fraud patterns that may occur in the real world. The more diverse and complete the training data, the better an AI model can be trained to accurately identify anomalies and fraud.

Additionally, rigorous testing and validation of AI models is required before they are implemented in a production environment (Thottoli, 2021). This way can be done by using test data separate from training data and rigorously evaluating the performance of the AI model (Ergeshova et al., 2023). Testing should cover a variety of scenarios and extreme conditions to ensure that AI model can perform reliably in different situations.

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Continuous monitoring of AI model performance is also critical. Over time, patterns and risks in the world of auditing can change (Pudeyan et al., 2020). Therefore, close monitoring is required to ensure that AI models remain accurate and can keep up with these changes. If there is a decrease in performance or an increase in errors, AI model must be updated and retrained with the latest data.

It is important to involve trained and experienced human auditors in evaluating and verifying the results of AI models (Korobeynikova et al., 2021). Although AI can provide insights and recommendations, the final decision must still be made by a human auditor who has professional judgment and can critically assess whether the results from AI are reasonable and consistent with applicable audit standards (M. Zhang et al., 2022). With a combination of well-trained AI models, rigorous testing, continuous monitoring, and the involvement of human auditors, the reliability and accuracy of AI in identifying risks, anomalies, and fraud in audits can be significantly improved.

- Integration of AI Systems with Legacy Systems and Existing IT Infrastructure in Audit Companies

Integrating AI systems with legacy systems and existing Information Technology (IT) infrastructure in audit companies is one of the main challenges in implementing AI for the financial audit process (Thottoli, 2021). There are many audit firms which have been operating for years use systems and software that are outdated or not fully compatible with the latest technologies such as AI.

One of the main challenges in integration is the issue of interoperability between AI systems and legacy systems (Baidybekova et al., 2021). Legacy systems often use different technologies, non-standard data formats, or communication protocols which are incompatible with modern AI systems. This case can cause difficulties in data exchange, collaboration between systems, and seamless process automation.

Besides that, the existing IT infrastructure at many audit firms may not be designed to support the intensive computing and large data storage requirements required by AI systems. Complex AI models require large computing power, extensive data storage, and reliable networks to function optimally (Oyekunle & Boohene, 2024).

To overcome these challenges, audit firms need to conduct a thorough assessment of their existing IT infrastructure and identify areas that require updates or improvements. This condition may involve investing in new hardware, large-scale data storage, high-speed networking, or even migrating to a more flexible and scalable cloud environment (Austin, 2022).

In addition, audit companies must also consider developing an interface or integration layer that allows AI systems and legacy systems to communicate and exchange data efficiently. This may involve the use of Application Programming Interfaces (API), middleware, or other integration tools which can translate and map data between different systems (Hu, 2024).

Integrating AI systems with existing IT infrastructure is indeed a complex challenge, but with careful planning, the right investment, and a solid integration strategy, this challenge can be solved (Radhakrishnan et al., 2022). By integrating AI into existing IT environments, audit firms can take full advantage of the potential of this technology to improve the efficiency, accuracy and quality of financial audit processes.

- Strategies Needed To Develop Human Resources Who Have Adequate Skills and Understanding of AI in Auditing

Developing human resources who have adequate skills and understanding of AI in financial auditing is an important aspect to ensure successful and effective implementation. Auditors and financial professionals need to have new knowledge and skills to work well with AI technology, as well as understand the implications and limitations of using AI in the audit process.

One of the key strategy is to provide comprehensive training and certification programs on AI in auditing (Issa et al., 2022).This training program should include an introduction to basic AI concepts, algorithms and techniques used, as well as practical applications of AI in the financial audit process (Anh et al., 2024). Training can be done through online courses, workshops, or special certification programs designed for auditors and financial professionals.

In addition to formal training, it is also important to encourage continuous learning and knowledge sharing within the organization. This aspect can be achieved by establishing communities of practice, knowledge sharing sessions or discussion forums where auditors can share experiences, best practices and insights on the use of AI in auditing. In this way, skills and understanding of AI can continue to develop over time (Liao et al., 2024).

Audit firms may also consider recruiting new talent who have a background in AI, data science, or related technologies (Rhea et al., 2022). By recruiting these individuals, they can bring new perspectives and specialized skills needed to effectively implement AI in auditing (Shivram, 2024). However, it is important to ensure that this new talent also has a solid understanding of audit principles and industry best practices.

Collaboration with academic institutions and research institutes can also help in developing human resources competent in AI for auditing (de Fine Licht & de Fine Licht, 2020). These partnerships may involve internship programs, joint research projects, or even the development of curricula relevant to the needs of the financial audit industry (Owolabi et al., 2024). By combining academic knowledge and industry practice, audit firms can ensure that they have the human resources ready to meet the challenges and opportunities which AI brings to the audit process. Developing human resources competent in AI for auditing requires long-term commitment, investment in training, recruitment of new talent, and collaboration with various parties (Hasan et al., 2023). However, with the right strategy, audit firms can ensure that they have a workforce ready to optimally harness the potential of AI and maintain a competitive edge in an ever-evolving industry.

IV. CONCLUSION

Digital transformation through the adoption of artificial intelligence (AI) in the accounting and auditing profession has brought about significant changes in the way audit processes are conducted. This research shows that the integration of AI in auditing has great potential to improve the efficiency,

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accuracy and quality of financial audits. With its ability to automate routine tasks, analyze large amounts of data, and detect anomalies quickly, AI can help auditors work smarter and more effectively.

However, the application of AI in auditing also presents a number of important challenges that must be overcome. First, the data security and privacy aspects of sensitive financial information must be strictly maintained. Measures such as data encryption, strict access controls, and strong security procedures are essential to protect data from threats such as hacking or leaks. Second, accountability and transparency in decision-making processes involving AI must be enhanced through explainable AI models, clear audit trails, and the involvement of human auditors.

Additionally, the risk of bias and error in AI models must be minimized through the use of quality training data, rigorous testing and validation, and ongoing monitoring. Changes in organizational culture and resistance from human auditors must also be managed well through training, engagement, open communication, and appropriate incentives.

Regulatory and legal compliance aspects related to the use of AI in audits in various jurisdictions are also challenges that must be faced. Efforts to standardize regulations and develop a strong governance framework are essential. Finally, developing human resources who have adequate skills and understanding of AI in auditing is key to successful implementation, through training, recruitment of new talent, and collaboration with academic institutions.

By overcoming effectively these challenges, organizations and audit professionals can harness the full potential of AI to improve the quality, efficiency and reliability of financial audit processes. Further research and development of best practices will continue to be needed to ensure that digital transformation in auditing is carried out in a responsible and sustainable manner.

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