**Jurnal Bina Akuntansi**
Volume 12, Number 2, 2025 pp. 72-82
ISSN: 2338-1132 E-ISSN : 2656-9515
Open Access: https://jurnal.wym.ac.id/JBA

# ARTIFICIAL INTELLIGENCE (AI): HELPING OR THREATENING AUDITORS? (CASE IN INDONESIA)

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**INFO ARTIKEL**
***Riwayat Artikel:***
Pengajuan : 25/03/2025
Revisi : 28/04/2025
Penerimaan : 02/05/2025

***Kata Kunci:***
*Kecerdasan Buatan, Audit, Akuntansi, Analisis SWOT*

***Keywords:***
*Artificial Intelligence, Auditing, Accounting, SWOT Analysis*

**DOI:**
10.52859/jba.v12i2.752

**A B S T R A K**

Ketika segala sesuatunya berkembang dengan cepat, setiap pekerjaan dituntut untuk dapat mengikuti perkembangan yang ada, termasuk para auditor. Salah satu contohnya adalah perkembangan *Artificial Intelligence* (AI). *Artificial Intelligence* (AI) merupakan teknologi yang dirancang menyerupai kecerdasan manusia sehingga di masa depan dapat membantu manusia dalam melakukan hal-hal yang bersifat rutin. Penelitian ini bertujuan untuk mengetahui apakah peran auditor akan tergantikan dengan adanya *Artificial Intelligence* (AI). Metode yang digunakan dalam penelitian ini adalah analisis deskriptif kualitatif dengan pendekatan studi literatur yang berfokus pada analisis SWOT. Data penelitian diambil dari jurnal, berita dan artikel dari tahun 2020 sampai dengan 2024 yang akan dianalisis secara sistematis. Hasil dari penelitian ini adalah secanggih apapun teknologi yang ada, keberadaan auditor tidak dapat digantikan oleh AI. AI dapat menjadi alat untuk membantu auditor dalam melakukan kegiatan audit. Diharapkan penelitian ini dapat memberikan kontribusi kepada peneliti selanjutnya dalam penelitian kualitatif yang berkaitan dengan AI di bidang akuntansi, khususnya di bidang pengauditan.

**A B S T R A C T**

When things develop rapidly, every job is required to be able to keep up with existing developments, including auditors. One example is the development of Artificial Intelligence (AI). Artificial Intelligence (AI) is a technology designed to resemble human intelligence so that in the future it can help humans do routine things. This research aims to find out whether the role of auditors will be replaced by the existence of Artificial Intelligence (AI). The method used in this research is qualitative descriptive analysis with a literature review approach that focuses on SWOT analysis. Research data is taken from journals, news and articles from 2020 to 2024 which will be analyzed systematically. The results of this research are that no matter how sophisticated the technology is, the existence of auditors cannot be replaced by AI. AI can be a tool to assist auditors in carrying out audit activities. It is hoped that this research can contribute to future researchers in qualitative research related to AI in the accounting field, especially in the auditing field.

## Introduction

As time goes by, everything is developing more rapidly, including the fields of technology and information, which means that people are required to continue to develop their skills so they can work quickly and precisely (Amelia *et al.*, 2024; Ernis & Pirdaus, 2022; Kumar, 2023; Rakhmanto & Rosnani, 2023; Rumahorbo & Dewayanto, 2023). The rapid development of technology means that people have to follow the flow of digitalization and become familiar with new terms that they may be hearing for the first time, one of which is Artificial Intelligence (AI). AI is considered a new thing because it was expressed in the Industrial Revolution 4.0 where all work was required to use technology (BINUS, 2020; Hasan, 2022; Rakhmanto & Rosnani, 2023). Industrial Revolution 4.0 is a player in industry that allows computers to connect and communicate with each other to make decisions without human intervention. The development of the Industrial Revolution 4.0 in Indonesia is currently supported by the Ministry of Industry of the Republic of Indonesia which states that Indonesia must follow trends in order to compete with other countries in the industrial sector.

Artificial Intelligence (AI) itself was created by John McCarthy who collaborated with other researchers, namely, Marvin L. Minsky, Nataniel Rochester, and Claude E. Shannon at *the Dartmouth*

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*Summer Research Project* in 1995. They described AI as research centered on computer science . which aims to build intelligent machines that are capable of carrying out tasks using their intelligence (Ernis & Pirdaus, 2022; Hasan, 2022; Joshi, 2021; Rumahorbo & Dewayanto, 2023). AI itself is a branch of computer science that shows a form of human artificial intelligence (Amelia *et al*., 2024; Ernis & Pirdaus, 2022; Rachmawati *et al*., 2023; Rakhmanto & Rosnani, 2023). There is AI itself has become important in every work profession. The rapid development of technology and digitalization requires all professions to keep up with developments so as not to become outdated and achieve goals effectively and efficiently. Likewise with the accounting profession, especially auditors. Auditors are independent professionals who carry out audit activities on the Company's financial reports and provide opinions based on the reports that have been presented (Fukas *et al*., 2021; Martinus & Kurniawati, 2023; Muawanah *et al*., 2022). In the era of revolution 4.0, accountants and auditors are required to use developing technology in data collection (Nisaa *et al*., 2024; Rakhmanto & Rosnani, 2023). The presence of AI, especially in the audit field, has grown rapidly over the last two decades. AI is a new technology in auditing that can be assigned to replace routine auditor tasks which are usually carried out manually and towards cognitive technology, where AI can work on par with human capabilities, and allows auditors to focus on more critical work (KPMG, 2023a; Pradani *et al*., 2021; Rakhmanto & Rosnani, 2023).

The large number of frauds and frauds in the accounting field in recent years have had a detrimental impact on several parties such as investors, creditors, the government, auditors and public accounting firms and have created a crisis of confidence (Fransisca & Setiawan, 2023; Nisaa *et al*., 2024; Rachmawati *et al*., 2023; Widiasa & Julianto, 2021). One of the Big Four companies, PwC, says as much as $1 Trillion is paid annually in bribes alone and $2 Trillion is lost due to acts of corruption. This can be prevented if there are developments in the audit field, especially in detecting fraud or manipulation of financial reports, one way is by developing Artificial Intelligence (AI). in the audit field (Rachmawati *et al*., 2023).

Supporting this statement, many companies are investing in the field of AI with the aim of increasing technological innovation and improving audit quality (Fedyk *et al*., 2022; IIA, 2023; Li *et al*., 2020; Mahmud, 2024; Shamaya *et al*., 2023). Likewise, *Big Four companies* , namely Deloitte, PwC, EY, and KPMG, are investing in AI, namely by launching audit applications with the hope of increasing efficiency and effectiveness in carrying out audit processes (Alghafiqi & Munajat, 2022; Deloitte, 2022; KPMG, 2023b ; PwC, 2022). According to experts, every year, *Big Four companies spend* $250 million to develop AI (Albawwat & Frijat, 2021; Han *et al*., 2023; Seethamraju & Hecimovic, 2020). launched a financial robot that can read data automatically, enter invoices and create financial reports.

In Indonesia, the Financial Audit Agency (BPK) is the only external government auditor that has utilized technology, especially *big data,* in carrying out its audit process (Rakhmanto & Rosnani, 2023). AI helps BPK to improve the efficiency of business processes, for example by presenting a list of anomalies in the procurement of goods and services, as well as checking the level of similarity of contracts (BPK, 2024).

The rapid development of AI in the audit field means that auditors are required to work side by side with technology during the audit process. No matter how sophisticated the existing technology is, technology cannot run without human intervention, both as users and developers. The application of AI in the accounting field still raises pros and cons, due to the lack of adequate information regarding the application of AI in the accounting field (Amelia *et al*., 2024; Ernis & Pirdaus, 2022; IIA, 2023).

Because there are still many pros and cons that make the use of AI in the accounting field, especially auditing, not optimal, it is necessary to carry out a SWOT analysis, because it cannot be denied that humans are currently in an era where the use of technology is something that humans must understand

and humans are required to master AI to make activities easier. This research aims to provide an overview of the auditor's role in AI and the role of AI in the audit itself.

Researchers hope that, through this research, it can provide benefits for academics as a reference for AI research, especially in the field of auditing which is still very limited in relation to widespread phenomena, thereby increasing the urgency of research; For practice, this research can be used as a reference for creating company policies related to the use of AI in accounting, especially in the audit field.

## Literature Review

### Attribution theory

Fritz Heider (1958), who is the creator of attribution theory, explains a person's behavior. This theory explains how a person's behavior can be influenced by internal and external factors. Internal factors are factors that come from within a person, while external factors are factors that come from outside. Attribution theory explains how organizations behave in managing human resources, and can be analyzed by comparing the knowledge and motivation of each human. This theory is used because it is motivated by human actions and behavior, so auditors must understand how to behave correctly when carrying out the audit process to provide an understanding of auditor behavior and performance (Pradani *et al*., 2021; Sari & Kurniawati, 2021).

Attribution theory can be utilized by auditors to assess the performance of Artificial Intelligence (AI). When auditors use AI in the audit process and produce accurate data, they can attribute the success to the capabilities and reliability of the AI's performance. In addition, attribution theory can also help understand the level of auditor skepticism. If auditors tend to blame AI errors on external factors that can be corrected, such as errors in data input, they will be more likely to rely on and adopt AI more in the long term.

In general, the use of AI in auditing combined with attribution theory can help auditors identify patterns and anomalies that may not be visible manually. Attribution theory can also help auditors explain pattern findings and anomalies to clients, such as whether the anomalies found are caused by internal factors or external factors (Ernis & Pirdaus, 2022; Fedyk *et al*., 2022; Li *et al*., 2020; Mahmud, 2024).

### Artificial Intelligence (AI)

Artificial Intelligence (AI) is a technical science that resembles human intelligence to develop research that can produce theories, methodologies, technologies and application systems (Pradani *et al*., 2021). Rachmawati *et al*., (2023) define Artificial Intelligence (AI) as engineering and science that aims to create programs that can think like humans and are not limited only to biological observations.

Artificial Intelligence (AI) is intelligence that is incorporated into technology by humans and developed by humans for their own purposes (Rumahorbo & Dewayanto, 2023). In other words, Artificial Intelligence (AI) is a development of science and technology that creates technology that can imitate humans, so that the technology can carry out work that humans normally do that requires intelligence, such as problem solving solutions or operational performance efficiency (IIA, 2023; Shamaya *et al*., 2023).

### Development of Artificial Intelligence (AI) in Indonesia

Indonesia is expected to lead the implementation of AI in ASEAN by 2030 and become a developed country by 2045 (CNN, 2023). Mahmud, (2024) It is impressive that Indonesia leads the Southeast Asia Region in AI contributions with a contribution of $366 billion to National GDP 1 and as many as 62% of local companies have invested in creating pilot programs in their companies. Based on research

conducted, 23% of companies in finance and manufacturing focus on utilizing AI capabilities and 62% of companies choose to simplify use cases, such as increasing data security when using AI, virtual assistants, dashboards, translation. As many as 47% of companies in Indonesia are having difficulty addressing the digital skills gap, especially in managing teams, leveraging specialized skills, and encouraging communication. Lack of internal data governance can cause objective data targets not to be achieved because data is scattered across systems such as ERP, warehouse management.

Many efforts have been made by the government and higher education institutions to make Indonesia's digital competitiveness on par with Singapore and Malaysia. The university works as base for generation next one is ready compete. If a student own knowledge and skills about technology intelligence artificial intelligence (AI) in college high, expected they will know How technology relate with all profession moment This. Most of the college universities in Indonesia offer study programs major accountancy Because interest tall to profession This. However, research show that AI will challenge accountant at college tall. Universities are important because they provide students with deeper knowledge of accounting, taxes, and auditing through their curriculum.

## Method

This research is a qualitative descriptive study with a literature review approach that examines SWOT analysis in depth. A qualitative approach is research that is used to solve the problem being studied by describing the condition of the subject and object being studied based on the phenomena that occur (Dhania & Setiawan, 2023; Ernis & Pirdaus, 2022; Komalasari *et al*., 2023) *SWOT analysis* is an analysis technique data to identify strengths, weaknesses, opportunities and threats in economic activities. This research uses data sources in the form of journals, articles and news from trusted sources.

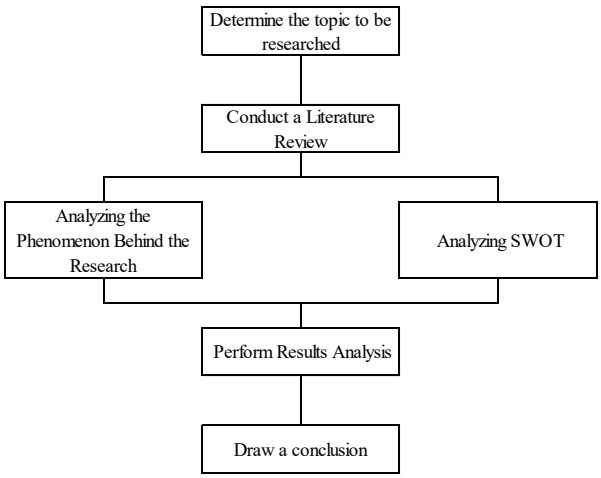


**Figure 1. Data Analysis Method**
Source: Processed by Researchers (2024)

The stages in this research are explained in Figure 1. The first step is for the researcher to determine the topic to be researched. The topic studied is AI Challenges on the accounting profession, especially auditors, with the aim of answering whether the auditor profession will be replaced by AI. Then determine the research period that will be used as a data source, namely the 2020-2024 period. And look for articles and news according to the topic being researched.

The second step, researchers will conduct a literature review by searching for journals with the keyword "Artificial Intelligence in auditing" on *Google Scholar*. Researchers will study the articles and news that have been collected and conduct a literature review to analyze the strengths, weaknesses,

opportunities and threats of AI in auditing. This stage is important to gain insight from all research results regarding AI in auditing.

The third step, researchers look for any phenomena that influence and encourage these problems AI will threaten the work of auditors published in articles and news that have been collected. This analysis aims to answer research problems. The fourth step, researchers looked for articles and news related to SWOT analysis of Artificial Intelligence (AI) in the audit field. Researchers summarize the articles and news collected to analyze SWOT and create a SWOT matrix which will be explained in Table 1. In the final step, the researcher will combine the information that has been analyzed and analyze the results. After that, the researcher interprets the results of the data that has been carried out and draws conclusions.

## Result and Discussion

In collecting the data and information needed in this research, library research is carried out, where the author will look for theories that have been previously developed, and collect data and analyze the data according to the research carried out. In this library research, researchers use relevant reference books to help find information about this research, and researchers also quote and use articles that have been previously published in national and international journals. These journals are as follows:

**Table 1. List of Article Sources**

| No | Article Source |
|---|---|
| 1 | Advances in Economics, Business and Management Research |
| 2 | Association for Information Systems AIS Electronic Library (AISeL) |
| 3 | Berkala Akuntansi dan Keuangan Indonesia |
| 4 | Cakrawala - Repositori IMWI |
| 5 | EKOMA : Jurnal Ekonomi, Manajemen, Akuntansi |
| 6 | Growing Science Accounting |
| 7 | International Journal of Accounting Information Systems |
| 8 | JIMAT (Jurnal Ilmiah Mahasiswa Akuntansi) Universitas Pendidikan Ganesha |
| 9 | Journal of Accounting for Sustainability Society (JASS) |
| 10 | Journal of Economic Education and Entrepreneurship Studies (JE3S) |
| 11 | Journal of Economics, Business, and Accountancy Ventura |
| 12 | Journal of Law, Administration, and Social Science |
| 13 | Journal of Trends Economics and Accounting Research |
| 14 | Jurnal Akuntansi dan Keuangan Indonesia (JAKI) |
| 15 | Jurnal Akuntansi dan Keuangan Kontemporer (JAKK) |
| 16 | Jurnal Akuntansi dan Teknologi Informasi (JATI) |
| 17 | Jurnal Akuntansi Kompetif |
| 18 | Jurnal Aplikasi Akuntansi (JAA) |
| 19 | Jurnal Ekonomi, Manajemen, Akuntansi (Jurnal Equity) |
| 20 | Jurnal Ekonomi |
| 21 | Jurnal Fair Value |
| 22 | Jurnal Revenue |
| 23 | Open Journal of Business and Management |
| 24 | Owner : Riset & Jurnal Akuntansi |
| 25 | Perspektif : Jurnal Ekonomi & Manajemen Universitas Bina Sarana Informatika |
| 26 | Saudi Journal of Business and Management Studies |
| 27 | Springer - Review of Accounting Studies |
| 28 | ULTIMA Accounting |

Source: Google.com (2025)

Apart from that, the author also looks for news sources or articles from *Google* from trusted websites, such as detik.com. The author uses journals on Google Scholar with the keyword "Artificial Intelligence in auditing" within the previous 5 years (2020-2024). Based on previous research

explanations, as well as analysis of articles and news, it is clear that AI makes the highest contribution in the audit field (Albawwat & Frijat, 2021). Although there are still many pros and cons, it cannot be denied that the existence of AI can increase efficiency and effectiveness so that auditors can focus more on more complex problems (Amelia *et al*., 2024; Nisaa *et al*., 2024; Romanti, 2023). However, there is still a lack of rules and regulations governing usage management AI also makes people worry if data is leaked and misused by irresponsible parties (BPPT, 2020; IIA, 2023; Shamaya *et al*., 2023).

Looking at the phenomenon above, a SWOT analysis can be made, where there are factors that are related to each other. SWOT analysis is classified as a strengths strategy, weakness, opportunities and threat. This strategic analysis is based on logic and trusted sources regarding AI in the audit field which can maximize strengths and opportunities and minimize weaknesses and threats that hinder the development of AI, and the SWOT analysis can be described as follows:

**Table 2. SWOT Matrix**

| Internal Factors / External Factors | **STRENGHT (S)** | **WEAKNESS (W)** |
|---|---|---|
| | 1. Efficient and effective<br>2. Detect and prevent risk<br>3. Automation routine work | 1. Lack of source Powerman<br>2. No regulations yet adequate<br>3. Limited Human Control |
| **OPPORTUNITY (O)** | **Strenghts-Opportunities (SO)** | **Weakness-Opportunity (WO)** |
| 1. Reduce cycle data processing<br>2. Minimize potency human error<br>3. Usng robots that can work every moment | 1. Reduce regular audit cycle so can increase effciency as well as effectiveness and reduce cost<br>2. Automation detection risk using robots and minimizing happpen human error | 1. Conduct seminars on Artificial Intelligence (AI) in particular in audit field<br>2. Push government formalize standard about utilization Artificial Intelligence (AI)<br>3. Encourage auditors to collaborate with Artificial Intelligence (AI) in the audit process |
| **THREATS (T)** | **Strenghts-Threats (ST)** | **Weakness-Threats (WT)** |
| 1. Lack of transparency<br>2. Disappearance field work<br>3. Data leaks (cyber security) | 1. Create a training program for increasing auditor's spirit<br>2. Create a workshop about development of Artificial Intelligence (AI) used in audit field | 1. Carrying out the recruitment process in accordance with field skill<br>2. Do encryption of cloud data storage |

Source: Processed by Researchers (2024)

**SWOT Matrix Analysis for Strengths-Opportunities (SO) Strategy**

Using AI to detect risks and reduce human error is an important strategy to improve audit accuracy and reliability. AI has the ability to analyze large amounts of data at high speed, looking for patterns, trends and anomalies that may indicate risks or errors. Technologies such as machine learning and predictive analysis allow AI to continuously learn and adapt to new data, improving its ability to detect risks more accurately over time, making the audit process more efficient and effective and requiring lower costs (Al-Sayyed *et al.* , 2021; Amelia *et al*., 2024; Rumahorbo & Dewayanto, 2023).

Using AI to speed up routine audits aims to improve operational efficiency and significantly reduce costs. In traditional audits, many tasks are manual and repetitive, such as data collection, document checking, and transaction verification. Auditors can focus more on working on more complex tasks that

require the auditor's reasoning and judgment abilities (Fedyk *et al*., 2022; Han *et al*., 2023; IIA, 2023; Joshi, 2021; Komalasari *et al*., 2023; Maufik *et al*., 2024; Shamaya *et al*., 2023). And of course auditors will be greatly helped because AI can also naturally read and access large data anytime and anywhere (Martaseli & Maragita, 2023; Pratama *et al*., 2023).

**SWOT Matrix Analysis for Weakness-Opportunity (WO)**

From the weaknesses and opportunities in using Artificial Intelligence (AI), strategies can be created to minimize existing weaknesses. Encouraging governments to set standards for the use of AI in audits is a strategic step to ensure that AI implementation is safe and effective. These standards will include technical and ethical guidelines, ensuring that AI technology is used in a transparent and accountable manner. This standard can also help prevent misuse of technology and provide protection for sensitive data used in the audit process. By having clear standards, organizations will have concrete guidelines for implementing AI in audits, thereby minimizing risks and increasing public trust in audit results produced by AI (Ernis & Pirdaus, 2022; IIA, 2023; Shamaya *et al*., 2023).

Although AI has been widely used in various fields, AI in auditing is still in its infancy. One of the main reasons is because audits are activities that are subject to regulations and must be carried out in accordance with applicable directives. Regulations regarding the use of AI in audits have not been explained in detail so they still raise questions among users (Fukas *et al*., 2021; Shamaya *et al*., 2023).

AI can be used as supporting technology in audit activities. Like the Big Four companies that have invested in AI and created applications with the aim of helping auditors' work and improving audit quality. For example, Deloitte developed a voice analytics application called BEAT to monitor and analyze voice interactions. The BEAT application can analyze more than 30 languages and can be customized according to company needs (Alghafiqi, 2022; Alghafiqi & Munajat, 2022).

In addition, holding seminars to increase understanding of AI in auditing aims to address the existing skills shortage among auditors. With this seminar, auditors can get the latest knowledge about how AI technology can be applied in the audit process. This includes understanding the algorithms used, how to analyze data automatically, as well as how AI can help in detecting anomalies and fraud. With this increased knowledge, auditors can be more confident and prepared to use AI in their daily work, thereby increasing the efficiency and effectiveness of the audit process.

**SWOT Matrix Analysis for Strength-Threat (ST) Strategy**

The presence of AI means that every auditor must be able to adapt and improve their skills and knowledge. If the auditor has good knowledge and skills regarding technology, it is not difficult for the auditor to adjust to working with AI (Amelia *et al*., 2024; Ernis & Pirdaus, 2022; Rakhmanto & Rosnani, 2023).

One way for auditors to increase their knowledge about AI is by attending seminars and workshops. The goal of training programs that focus on the use of AI in auditing is to improve the morale and skills of auditors. The program will provide technical training on how to use AI software as well as strategies for leveraging AI in various aspects of auditing, such as data collection, analysis and reporting. With comprehensive training, auditors will eventually feel more comfortable and able to use AI. By presenting AI experts and auditors who are experienced in using this technology, this workshop can be an effective platform for sharing knowledge and best practices, as well as building a community that supports the adoption of AI in auditing. Practical demonstrations of the use of AI in real audit scenarios can also be included in this workshop.

**SWOT Matrix Analysis for Weakness-Threat (WT) Strategy.**

One of the things that is a priority in AI development is data security. Data security and data privacy are important factors in the audit process. Auditors must ensure that the data they access and analyze meets established security and privacy standards (Fariah, 2023; Sumadi *et al*., 2022).

Users of audit services have high expectations regarding the ethics and security of the data they access. The development of policies and regulations is very necessary to maintain the integrity of the audit process. With clear regulations, audit service users' concerns about the threat of data hacking will be reduced (Mukhtar *et al*., 2023; Silaen & Dewayanto, 2024).

Auditors must play an active role in risk analysis and evaluation of financial statements. And auditors must avoid data security threats such as hacking. Implementing strong data encryption for cloud storage is an important step to improve data security and reduce the risk of leaks. This ensures that sensitive information stored in the cloud can only be accessed by authorized parties, creating trust among clients and other interested parties. With guaranteed data security, organizations can be more relaxed about using AI technology and cloud storage in the audit process (Shamaya *et al*., 2023).

Recruiting workers with specific skills in the fields of AI and auditing is an important step to overcome the existing skills shortage. Recruiting a workforce that has a deep understanding of these topics can help organizations implement AI technology more effectively and efficiently. This workforce recruitment can also bring new and innovative perspectives to the audit team, enhancing the organization's ability to meet AI challenges and threats.

## Conclusion

Auditors need a lot of time in the audit process, from preparing the audit plan to providing the audit report to the client. Of course this requires a lot of time, energy and quite a lot of money. Auditors must work as hard as possible to prevent errors in the audit process so as to produce a transparent audit report. As technology continues to develop, it cannot be denied that AI will replace the audit process with automation to improve audit quality. However, there are some tasks that cannot be replaced by AI, such as judgment an auditor. Therefore, auditors are expected to collaborate with Artificial Intelligence (AI) to continue to improve the quality of transparent and accountable audits according to the data obtained. Through more accurate risk detection and reduced human error, AI has great potential to improve the efficiency and effectiveness of the audit process. This technology can handle larger volumes of data, speeding up routine audits, and allowing auditors to focus on more complex tasks. However, there are several challenges when using AI in audits, such as no clear regulations, concerns about data security, and auditors who do not have enough skills. To maximize the benefits of AI in auditing, clear usage standards, investment in data security, and recruitment of employees skilled in AI and auditing are required.

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