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Assessment Audit: How Artificial Intelligence Affected Audit Quality of Sustainability Report Based on Auditors Perspective

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Abstract: This study aims to analyze audit assessment and the effects of artificial intelligence on the audit quality sustainability reports from the standpoint of auditors who provide audit opinions on audits that are conducted of sustainable financial reports. Certain audit tasks can now be automated by the audit profession thanks to technology. Artificial intelligence (AI) and big data analytics can be used to analyze huge data, one of the technological innovations that need more study than conventional data. The number of 85 auditors of Accountant Public Firms in Medan completed questionnaires that were used in this study to gather data. Following the collection of data from respondents, quantitative descriptive methodologies were used to analyze the data. The audit profession may improve the quality of audits by promoting the use of AI and big data analytics and by supporting auditors in developing their skills to stay current with new technologies. AI can improve audit quality, reduce costs, and eventually replace human workers. People are still required in the audit process, though, as AI cannot make decisions when it comes to providing audit opinions on financial reports. As a result, its contribution to the audit process is minimal. Therefore, it is hoped that this study will shed light on the potential applications of AI in the auditing process.

Keywords: *Artificial Intelligence, Audit Quality, Sustainability Report, Auditors*

1. Introduction and Background

Sustainability reporting has become a mainstream practice in the communication of corporate commitment to and performance on sustainability issues (Fonseca et al., 2014; Hahn & Kühnen, 2013; Junior et al., 2014; Perego & Kolk, 2012). Based on data obtained from one of the Big 4 Public Accounting Firms, PwC stated that in Indonesia, sustainability reports have been mandatory for financial institutions and public companies since 2019 and listed companies since 2020. However, due to COVID-19, its implementation has been postponed to 2021 In the second year of implementation, 88% of listed companies in Indonesia have submitted sustainability reports for 2022. In 2022, 80% of companies studied (in Indonesia) use GRI Standards for sustainability reports (PwC, 2023).

However, there has been a lot of criticism in the research regarding the validity and dependability of sustainability reporting (Cho et al., 2015; Gray, 2010; Milne et al., 2006; Moneva et al., 2006). Increasingly, assurance providers—which might be accounting or consulting firms—are verifying reports to allay these concerns and restore trust in corporate reporting. Since independent auditors, also known as assurance providers, share their conclusions about the quality and reliability of the information disclosed, it is assumed that the assurance process shows that sustainability reports and the reporting practices that support them have been verified (Dando & Swift, 2003; King & Bartels, 2015; Rasche & Esser, 2006).

With the start of the fourth industrial revolution, information and technology have grown more quickly, altering several professional fields, including auditing. Certain audit tasks can now be automated by the audit profession thanks to technology. Big data, which may be analyzed using artificial intelligence (AI) and big data analytics, is one of the technological advances that need more study than ordinary data. The audit profession may improve the quality of audits by promoting the use of AI and big data analytics and by supporting auditors in developing their skills to stay current with new technologies. Artificial intelligence (AI) could eventually replace human workers while also improving audit quality and reducing costs.

This article presents an analysis, based on the content analysis of a large sample of auditors, of the perspective of auditors regarding the audit quality of sustainability reports towards the assessment audit works by using AI.

2. Literature Review

The literature on AI for sustainability tackles environmental challenges and spans a wide range of disciplines and areas. This research and analysis are grounded in several theories and frameworks. The goal of agency theory is to align the interests of principals, like shareholders, and agents, like management, by analyzing their connection. This idea can be applied to audit quality to investigate how AI technologies can lessen information asymmetry, eliminate agency conflicts, and improve management oversight and accountability. The elements influencing people's acceptance and adoption of new technologies are examined using the Technology Acceptance Model (TAM) (Hamza et al., 2023). It can be used to look at the opinions and attitudes of auditors on artificial intelligence as well as their readiness to incorporate new technology into audit processes. The idea of diffusion of innovations can be applied to auditing to better understand the factors influencing the uptake and dissemination of AI technologies among auditing companies, regulatory agencies, and other audit ecosystem stakeholders. Control theory is concerned with the systems and procedures that guarantee an organization meets its goals. This theory can be applied to examine how AI technologies offer improved controls, like automated inspections, real-time monitoring, and data integrity verification, in the context of audit quality and technology adoption. It can look at how these technologies increase audit quality and fortify the control environment (Aitkazinov, 2024). In general, the application of TAM to audit quality has improved knowledge of the dynamics of technology adoption in the auditing industry and offered light on how to effectively integrate technological advancements to improve audit procedures and outcomes.

The Benefit of Artificial Intelligence on Audit Quality

Artificial Intelligence (AI) refers to the ability of computers to solve problems and accomplish tasks. When new technology is introduced and made available for purchase, it is not considered innovative until the intended audience accepts and makes use of it (Mlekus et al., 2020). Target users must be persuaded that new technology will make their jobs easier to complete and produce higher-quality work before they accept and use it (Stancheva, 2018). To do this, businesses should find out how their staff members feel about the new technology's ease of use and utility and make sure that staff members can modify their working methods to accommodate the new technology (Mlekus et al., 2020). Perceived utility (PU) and ease of use (PEOU) of AI by the auditor can be gauged using the components of the Technology Acceptance Model (TAM). According to Janvrin & Bierstaker, (2015), TAM is widely used to forecast technological acceptance behaviors. According to Davis, (1989), two main beliefs influence the acceptance of new technologies: PEOU and PU. The degree to which a potential user believes that adopting new technology will be simple, easy, and user-friendly is known as PEOU. Conversely, PU refers to the user's belief that new technology would improve output and increase productivity. According to Davis, (1989), PEOU and PU establish end users' attitudes and beliefs about new technology, which will determine its adoption and utilization.

The Challenges of Implementing Artificial Intelligence in Producing Sustainability Report

When the Brundtland Commission defined sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," the idea began to gain popularity in 1987 (WCED, 1987). According to Davidson (2010), McKenzie Stephen (2004), (Morelli, 2011), and Olawumi & Chan (2018), the three interconnected components that go toward attaining sustainability are the environment, economy, and society.

The quality of the audit may be impacted by the application of AI in the financial statement audit. For example, a board member of the Public Company Accounting Oversight Board (PCAOB) stated that auditors shouldn't rely too much on AI tools because they can't replace the auditor's expertise, judgment, and professional skepticism (Harris, 2017). For auditors, audit quality is vital; it conveys the auditors' credibility and represents objectivity. It is also regarded as the foundation of auditing standards that regulate audit engagements (Abdullah, 1982; Fanani et al., 2021; FRC, 2020). Because AI biases have the potential to affect audit quality, they can be viewed as a barrier to AI's use in audit processes. In the end, AI is composed of codes and is susceptible to reflecting the prejudices of the programmers. Furthermore, the limits of the neural network technology supporting AI's deep learning could magnify AI biases if the coding information is devoid of qualitative features (Janvrin & Bierstaker, 2015; Solaimani et al., 2020).

The Impacts of Audit Assessment by Using Artificial Intelligence Based on Auditor's Perspective

AI is being used in auditing to assist auditors in finding flaws and problems in financial reports more quickly, according to a study. (Gentner et al., 2018). Additionally, it's utilized to support auditors' prediction-making and pattern-finding in data. According to (Nwakaego, 2015), Artificial Intelligence (AI) is transforming the auditing process, and software with AI capabilities can perform complicated audits far more precisely and effectively than human labor can. Furthermore, compared to a human auditor, it can analyze massive amounts of data far more rapidly and efficiently. This implies that AI has the potential to be far more significant in the auditing process and that it will probably grow in significance over time. The application of AI to assist auditors in spotting and preventing fraud was the main topic of Chassignol et al. (2018) Study.

According to Stahl et al. (2017), audit companies are currently investing a lot of money in the creation and application of artificial intelligence. According to PwC, one of the four major audit firms, ongoing investments in artificial intelligence will generate $15.7 trillion in economic development worldwide by 2030. According to reports, these improvements were facilitated by three different forms of AI (Munoko et al., 2020). The first type is referred to as "Assisted AI systems," which replicate jobs that humans now perform to help people make decisions or respond to various situations. Usually, pre-established protocols are followed in the implementation of these assisted AI systems. According to this viewpoint, humans make decisions and machines act. The term "mechanical intelligence" refers to assisted AI systems, which enable AI to do routine activities. (Munoko et al., 2020). The second type is known as "Augmented AI systems," wherein robots perform tasks but cooperative human-machine decision-making is necessary. These systems are referred to as having "analytical intelligence" since they can interact with their surroundings and pick up knowledge from the auditor (Guang-Huan, 2017). AI and auditors collaborate to make decisions in this context. Businesses can now accomplish goals that were previously unachievable thanks to this enhanced AI. (Munoko et al., 2020). We have "Autonomous AI systems" as the third form. These systems are capable of adapting to various situations and acting on their own without the need for auditor interaction (Kokina & Davenport, 2017). The auditor defers decision-making to AI in this scenario. Systems with autonomous AI exhibit "intuitive" as well as "empathetic" intelligence. The AI can adapt to novel circumstances in an inventive and efficient manner thanks to intuitive intelligence. However, empathic intelligence enables the AI to identify personal feelings, react appropriately, and have an impact on people. (Munoko et al., 2020).

3. Research Methodology

Data for this study is being gathered using a questionnaire survey. The questionnaire was divided into three sections: Contribution to Audit Quality (assisted, augmented, and autonomous AI systems); Obstacles of AI on Sustainability Report (weakness analysis, risk assessment, and professional reports); and Usefulness of AI (educational qualifications, professional certificates, and experience). To be more precise, the 21-item surveys are adapted from Davis (1989) and the FCR study on "The Use of Technology in the Audit of Financial Statements" (FRC, 2020), which is then measured and adjusted using two response choices (agree and disagree).

This method analysis is based on descriptive quantitative methods. An online questionnaire will be used to collect data from the research sample. 246 auditors from 20 Medan public accounting firms made up the study's population. Subsequently, the researchers used a purposive sampling strategy, limiting the sample to auditors with at least two years of work experience and those employed by the public accounting firms in Medan. 105 auditors were selected using the sampling technique, and 85 auditors provided input on the questionnaires that were distributed. The research employed data analysis techniques such as data summarization and percentage analysis of the values displayed on the Google form.

4. Results and Discussion

Respondent Characteristics

Table 1: Respondent Characteristics

Variables	Description	Frequencies	Percentage
Gender	Male	58	68
	Female	27	32
Educational Qualification	Bachelor	63	74
	Master and above	22	26
Working Period	2-3 years	32	38
	3-5 years	28	33
	More than 5 years	25	29

Source: Survey Data, 2024

Based on the data above, the number of respondents consists of 68% male and 31% female, 74% with bachelor's degrees 25% master's degrees and above, 38% of respondents have a 2-3 years working period 38% whereas 33% of 3-5 years and 29% working period more than 5 years.

Table 2: Questionnaire Development For Perceived Usefulness of AI

No.	Items for perceived usefulness	Agree	Disagree
1	Using AI systems and tools in auditing jobs could enable me to accomplish tasks more quickly	82,3%	18,7%
2	Using AI systems and tools could improve job performance in auditing	85,7%	14,3%
3	Using AI systems and tools in auditing jobs could increase my productivity	91,3%	8,7%
4	Using AI systems and tools could enhance my effectiveness of the job in auditing	88,2%	11,8%
5	Using AI systems and tools impacts positive risk management and compliance efforts in auditing	76,4%	23,7%
6	I would find AI systems and tools useful in my future job in auditing	94,1%	5,9%

Source: Survey Data, 2024

Table 2 explains that in general, more than 50% of auditors agree that AI provides usability and convenience in the audit process. Moreover, most auditors agree in total 94,1% that AI systems and tools are useful in their future job of auditing. So that the implementation process can produce a quality audit report. The percentage who answered disagree shows the statement that the usefulness of AI is not that significant in the audit process.

Table 3: Questionnaire Development For Perceived Obstacles of AI on Sustainability Report

No.	Items for perceived obstacles	Agree	Disagree
1	AI is useful for input, process, and output but not in developing analysis of sustainability report	71,4%	28,6%
2	The AI function does not yet cover all types of audits, particularly those that call for an examination of all relevant data, both financial and non-financial	85,7%	14,3%
3	AI function in data processing still needs to be maintained regularly to prevent data errors and loss	95,2%	4,8%
4	Using an AI system that groups accounts needs to be grounded on user logic, particularly for accounts about sustainable development	90,5%	9,5%
5	AI offers risk assessments only based on numbers but is unable to provide decisions regarding the company's sustainability for economic, social, and environment	91,7%	9,3%
6	If my organization has integrated AI technologies into our audit processes, I will indicate so. If not, I can articulate the main barriers	63,5%	36,5%

	to integrating AI in auditing.		
	I can identify the challenges associated with implementing AI in auditing processes.	41,1%	58,9%

Source: Survey Data, 2024

Table 3 shows most of the auditors agree that apart from usefulness, AI also has obstacles to its implementation of audit sustainability reports. The highest percentage is 95,2% which is shown by the statement that data processing still needs to be maintained regularly to prevent data errors and loss. Therefore, using AI for the audit process to build an assessment audit, specifically still needs maintenance for a system and tools to get over data errors.

Table 4: Questionnaire Development For Perceived Contribution To Audit Quality

No.	Items for perceived contribution to audit quality	Agree	Disagree
1	Using AI systems and tools in auditing will automate routine audit processes and procedures, allowing more time to focus on areas of significant judgment	95,2%	4,8%
2	Using AI systems and tools in auditing will deepen my understanding of the entity and its processes	84,7%	15,3%
3	Using AI systems and tools in auditing will facilitate robust risk assessment through the analysis of entire populations	71,4%	28,6%
4	Using AI systems and tools in auditing will facilitate the focus of audit testing on the areas of highest risk through stratification of large populations	54,1%	45,9%
5	Using AI systems and tools in auditing will enable me to perform tests on large or complex datasets where a manual approach would not be feasible	74,1%	25,9%
6	Using AI systems and tools in auditing will improve consistency and central oversight in group audits	85,8%	14,2%
7	Using AI systems and tools in auditing will identify instances of potential fraud	83,5%	16,5%
8	Using AI systems and tools in auditing will identify unusual patterns and exceptions that might not be discernible using more traditional audit techniques	90,5%	9,5%

Source: Survey Data, 2024

Table 4 indicates on average more than 70% of auditors agree that AI contributes to audit quality, particularly in audit processes and procedures, audit testing, and identifying potential fraud. The research conducted by Rosli et al. (2012) Revealed that the acceptability and use of technological tools by auditors are influenced by their perceptions of the ease with which they can be integrated into their work and the perceived benefits of these technologies. Al-Ateeq et al., (2022) State that favorable TAM characteristics and technology adoption have been positively correlated with improvements in audit quality, which include increased data analysis efficiency and more successful risk assessments and decision-making processes.

5. Conclusion

The purpose of this study is to ascertain how well auditors comprehend artificial intelligence (AI) technologies and how they are applied in the context of their professional positions. Artificial Intelligence (AI) is a wide range of technologies that allow machines to perform cognitive tasks that humans perform, like learning, reasoning, and problem-solving. But knowledge of AI goes much beyond its simple definition and explores its many subfields, algorithms, and real-world applications. The practical uses of AI in auditing, such as data analysis, anomaly detection, fraud detection, risk assessment, and predictive modelling in audit financial reports and sustainability reports, should also be known to auditors. Strong knowledge of AI enables auditors to recognize its potential advantages, which include increased audit efficiency, enhanced risk identification, and improved decision-making based on insights from data. They are also aware of the difficulties in implementing AI, such as problems with algorithmic biases, interpretability, and ethical considerations.

In conclusion, auditors may confidently and skilfully traverse the constantly changing terrain of technology-driven auditing with a general understanding of AI. It gives them the ability to effectively use AI technologies and processes, which advances organizational resilience, innovation, and audit quality in the digital age. Furthermore, by using sophisticated analytics approaches, AI can help auditors discover fraud trends that were previously unknown (Sharma & Kumar Panigrahi, 2012). Through the use of previous data, machine learning algorithms can recognize intricate fraud schemes and uncover questionable activity that conventional audit techniques would miss. With this proactive strategy, auditors can keep ahead of fraudulent activity and take prompt action. AI-based solutions can also instantly identify any fraud and continuously monitor transactions. Artificial intelligence (AI) systems can identify anomalous or dubious transactions in real time, allowing auditors to take swift action by utilizing methods like anomaly detection and predictive analytics. This prompt discovery improves the overall efficacy of audits and lessens the financial impact of fraud. The advantages of AI in auditing have been the subject of numerous research. Our results support those of Noordin et al., (2022), who found that artificial intelligence (AI)-powered methods, like machine learning and natural language processing, can enhance audit quality by boosting the efficacy of fraud detection.

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