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Digital Transformation in Internal Quality Audits at Higher Education Institutions: An Empirical Analysis of Technological Impact

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Abstract – This research is driven by the need to gain a deeper understanding of the integration of digital technology into the internal quality audit process and its impact on audit quality. This research aims to analyze the benefits, challenges, and strategic steps in implementing digital transformation in internal quality audits. Through qualitative research, the researcher reconstructs from various existing sources about digital transformation. Literature materials related to digital transformation in internal quality audits at universities were obtained from various references and analyzed critically and in-depth using the Miles & Huberman technique, namely data reduction, data display, and conclusion. This study reveals that many universities still apply manual or semi-digital approaches that are less efficient in the implementation of internal quality audits. On the other hand, the use of digital technology in internal quality audits helps improve speed, accuracy, and transparency in the audit process. Digital transformation significantly enhances the internal audit function by integrating advanced technologies such as data analytics, artificial intelligence, and cloud computing. These technologies facilitate a more efficient audit process, allowing auditors to analyze large amounts of data quickly and accurately, which ultimately leads to better decision-making and improved audit quality. This shift not only enhances operational efficiency but also enables a more comprehensive assessment of risks and institutional controls, thereby strengthening the overall quality assurance framework. By leveraging digital technology, higher education institutions can enhance the audit process to ensure that robust quality assurance mechanisms are in place and capable of addressing contemporary challenges.

Keywords: *Digital transformation, Internal quality analysis, Higher education*

1. INTRODUCTION

In recent years, digitalisation has transformed many aspects of life, including the higher education sector. Higher education institutions are faced with the demand to maintain high standards of quality and accountability, so the internal quality audit process has become increasingly important. Internal quality audit acts as a mechanism to assess, monitor, and improve the quality of education, services, and operations within the institution. However, conducting effective and efficient audits often encounters various challenges, ranging from limited resources, time constraints, to the complexity of the data that must be managed. Digital transformation offers solutions to these challenges by utilising advanced technologies such as artificial intelligence (AI), big data, and cloud-based systems.

Despite the potential of digital transformation to support internal quality audits, many universities still apply manual or semi-digital approaches that are less efficient. These traditional approaches are often time-consuming, labour-intensive, and prone to human error. On the other hand, the use of digital technology in internal quality audits can help increase speed, accuracy, and transparency in the audit process. However, there are still few empirical studies that discuss how technology impacts the implementation of internal quality audits in higher education, especially in the context of improving the quality and efficiency of the audit itself.

The urgency and importance of digital transformation in internal quality auditing in higher education is increasingly recognised as institutions strive to improve their governance and operational effectiveness. This transformation is not just a trend, but a necessity driven by the

complexity of the modern education environment, the need for compliance with evolving regulatory frameworks, and demands for increased accountability and transparency.

This research is driven by the need to better understand how digital technology can be integrated into the internal quality audit process and how it impacts audit quality. With empirical evidence, this research aims to provide clearer insights into the benefits, challenges, and strategic steps in applying digital transformation to internal quality auditing. The main motivation for this research is to answer the question: to what extent can digital technologies improve the effectiveness and efficiency of internal quality audits in higher education? The findings of this study are expected to help higher education institutions to more readily adopt technology to ensure high quality standards and inspire policies that support the application of digital technology in academic and administrative quality management.

2. LITERATURE REVIEW

2.1. Digital Transformation

Digital transformation is the process of integrating digital technologies into all operational aspects of an organisation or business, resulting in fundamental changes in the way the organisation operates and delivers value to its customers. This transformation includes the utilisation of digital technologies such as big data, Internet of Things, artificial intelligence, and cloud computing to improve efficiency, accelerate innovation, and create better customer experiences [1][2]. Digital transformation is a radical evolution that involves the use of digital technology to change business processes and organisational models [3]. It is at the core of the fourth industrial revolution that fundamentally changes the way business, learning, and growth are understood [4].

Digital transformation is a process that involves the integration of digital technologies into all operational and strategic aspects of an organisation, fundamentally changing the way the organisation operates and delivers value to customers [5][6]. This process not only includes the implementation of new technologies, but also requires changes to the organisation's culture, business models, and the way it interacts with customers [7].

In a business context, digital transformation serves to improve efficiency, innovation, and competitiveness, and enables organisations to adapt quickly to changing markets and consumer needs [8][9]. One important aspect of digital transformation is its ability to create new value through innovation and creativity [9]. This transformation allows organisations to not only improve traditional methods, but also to create new business models that are more relevant to technological developments and market needs [6][10]. Overall, digital transformation is a complex and multidimensional phenomenon, which requires a holistic approach to be implemented successfully. By effectively leveraging digital technologies, organisations can improve their competitiveness, create new value, and adapt quickly to dynamic business environment changes [8][11].

2.2. Internal Quality Audit

Internal Quality Audit is a systematic evaluation process conducted internally by an organisation to assess compliance with established quality standards, policies, and procedures. Its purpose is to ensure the effectiveness of the quality management system, identify opportunities for improvement, and reduce the risk of nonconformities. These audits include a review of processes, documentation, and operational practices to ensure that the organisation remains compliant with the quality requirements set, both by standards such as ISO 9001 and internal regulations [12][13]. Internal Quality Audit is a systematic, independent, and documented process to ensure activities in higher education institutions conform to procedures and standards to achieve institutional objectives [14]. It is an important requirement for higher education, which serves as a form of self-evaluation [15].

Internal Quality Audit plays an important role in verifying written records, analysing policies, evaluating procedures, and recommending improvements [16]. To improve efficiency, universities developed web-based information systems for Internal Quality Audit, such as SIAMI and AMIOnline, which automate processes such as auditor-auditee pairing, checklist management, and report generation [14][17]. These systems aim to address challenges in determining audit findings and ensuring timely completion of internal quality audit reports, ultimately improving the overall quality of education services through transparency and accountability [15][16]). Internal Quality

Audit is defined as a documented process that systematically examines the quality system within an organisation. This audit aims to ensure that activities are in accordance with established procedures and standards, so as to achieve institutional goals [18].

Internal Quality Audit is a systematic and independent process carried out to evaluate the suitability of the implementation of predetermined standards in an organisation, especially in higher education [19][14]. This process aims to ensure that all activities carried out by the institution are in accordance with established procedures and meet the expected quality standards [14]. Internal Quality Audit serves as a tool to maintain and improve the quality culture within the organisation, as well as a means to reflect and self-evaluate the performance of the institution [15]. In the context of higher education, Internal Quality Audit is an integral part of the Internal Quality Assurance System (SPMI) which aims to ensure that all education, research, and community service activities are carried out in accordance with the standards set by accreditation agencies [19][20]. Internal Quality Audit is conducted regularly, often annually, and involves various stakeholders within the institution, including lecturers, administrative staff, and students [21]. The audit process includes several stages, from data collection, evaluation, to the preparation of audit reports that will be used for continuous improvement [20].

Overall, Internal Quality Audit is an important component of quality improvement efforts in universities and other organisations. Through effective Internal Quality Audit implementation, institutions can ensure that they not only meet the set standards, but also commit to continuously improve the quality of services and outcomes provided to their stakeholders [19][20][22].

2.3. Higher Education

Higher education is an educational institution that provides advanced education after secondary education, which aims to develop science, technology, art, and produce professional and academic personnel through various educational programmes, such as diploma, bachelor, master, and doctorate. Higher education can take the form of universities, institutes, colleges, academies, or polytechnics, which play a role in producing graduates who have academic abilities and practical skills in various fields [23][24]. Universities, or higher education institutions in Indonesia, are defined as post-secondary education institutions that offer diploma, undergraduate, postgraduate, doctoral, professional, and specialist programmes [25][26]. These institutions are governed by the Tridharma principle, which includes education and teaching, research and development, and community service [25].

Higher Education plays an important role in advancing knowledge, technology, and the welfare of society through its strategic functions [26]. Curriculum development in higher education involves the formulation of basic concepts and a comprehensive management system [27]. An effective learning process in Higher Education requires clear learning outcomes, sound organisational structure, transparent management, well-designed curriculum, skilled staff, and adequate facilities [27]. In addition, religious education in these institutions aims to foster moral character and strong religious values among students [28].

3. METHODS

This research uses a literature study research type or approach. Researchers carried out steps in literature study research through Topic Selection, Information Extraction, Determination of Research Focus, Data Source Collection, Data Analysis, and Report Preparation. Data collection is done by finding sources from journal references, such as the journal on Assuring Quality in Legal Education through Action Research [29]. Other book references such as a book on Cases on Digital Strategies and Management Issues in Modern Organizations [30]. Researchers reconstruct from various existing sources that conduct research and studies on digital transformation. Literature materials related to digital transformation in internal quality audits in higher education obtained from various references were critically and deeply analysed, so as to support the propositions and ideas in this study. The collected data were analysed qualitatively using data analysis techniques according to Miles & Huberman, namely data reduction, data display, and conclusions. Data analysis cannot be separated from data collection and archival sources. Analysis is based on the value, quality and state of the data obtained. In other words, the search for truth in this research is based on and measured by the quality, value and state of the data concerned.

4. RESULTS AND DISCUSSIONS

4.1. The Integration of Digital Technology in Internal Quality Audit Process

The urgency and importance of integrating digital transformation in internal quality audits in higher education stems from the need to improve efficiency, compliance, and risk management in an increasingly complex educational environment. By integrating digital technologies, institutions can improve their audit processes, thus ensuring that quality assurance mechanisms are robust and capable of meeting contemporary challenges. The urgency of integrating digital transformation in internal quality audits is further underscored by the growing complexity of regulatory requirements and the increasing emphasis on cybersecurity. As educational institutions implement more sophisticated digital systems, internal audit functions must ensure that those systems are secure and compliant with relevant regulations [31][32]. This proactive approach to risk management is critical to maintaining institutional integrity and maintaining stakeholder trust [32]. Additionally, aligning internal audit activities with the institution's strategic objectives and risk profile is critical to improving audit effectiveness and ensuring that audits add value to the organisation [33][34].

Integrating digital technology in the internal quality audit process is a strategic step that can improve the efficiency and effectiveness of audits in various institutions, especially in the education sector. In this context, the application of web-based information systems for internal quality audits has been proven to overcome various obstacles faced by auditors, such as discrepancies in determining the type of audit findings and untimely completion of reports [15].

This digital transformation also creates opportunities for continuous monitoring through methods such as process mining, which can provide deeper insights into public service performance and audit effectiveness [35]. Furthermore, the development of an Internal Quality Audit management information system integrated in the Internal Quality Assurance System (IQAS) cycle in higher education shows that digital technology can play an important role in evaluating the implementation of higher education standards [20]. This system includes not only desk-evaluation and visitation processes, but also corrective action requests and documentation, all of which can be optimised through the use of digital technology [20]. The integration of digital technology in Internal Quality Audit not only improves efficiency, but also supports the achievement of higher quality standards in education. A framework that adopts actor network theory is also important in designing an information system for internal quality audit based on IAPS 4.0.

This approach helps identify the actors involved and ensure that the designed system can function efficiently and systematically [36]. Information systems designed using modern technology, such as PHP and MySQL, enable faster and more accurate data processing, thereby increasing the efficiency of the auditor's work [15]. In addition, the use of digital technologies such as artificial intelligence, the Internet of Things, and Big Data in internal audit can speed up the audit process and increase transparency. Digital transformation includes the development of advanced digital communication channels, the use of artificial intelligence, robotics, and automation of operations to improve productivity [37]. This process involves enterprise-wide changes, leading to the development of new business models [4]. Organisations need to prepare strategies, improve human resource capabilities, and adjust infrastructure to deal with the positive and negative impacts of digital transformation [3].

In essence, integrating digital transformation is a way to adapt to changing conditions and survive in business competition [37]. Thus, the integration of digital technology in internal quality audits focuses not only on tools and systems, but also on collaboration and interaction between various stakeholders in the audit process. Overall, the integration of digital technologies in the internal quality audit process provides many benefits, including increased efficiency, transparency, and audit quality. By utilising the right information systems and modern technology, institutions can ensure that the audit process runs well and meets set standards.

4.2. The Impact of Digital Technology on Internal Quality in Higher Education

Digital transformation has a significant impact on the quality of internal quality audits in higher education institutions. In this context, internal quality audits serve as an important mechanism to ensure that higher education institutions meet the established standards, which in turn contributes to the accreditation and reputation of the institution [36]. With the adoption of digital technology, the audit process can become more efficient and transparent, allowing for better data collection and

analysis, as well as improving the accuracy of audit reports [38][39]. One important aspect of digital transformation is the enhancement of auditors' ability to identify and manage risks associated with information technology. Digitalization allows auditors to apply more sophisticated data analysis techniques, which can help in detecting anomalies and potential deviations in the audit process [31][40]. Additionally, the use of digital information systems in internal quality audits can accelerate the documentation and reporting processes, as well as enhance collaboration among audit teams [36].

Organizational culture also plays an important role in the successful implementation of digital transformation in internal quality audits. Research shows that an organizational culture that supports innovation and collaboration can enhance the effectiveness of the quality assurance system [41]. With the support from management and the involvement of all related parties, digital transformation can be better integrated into the audit process, thereby improving the quality of audit results and stakeholder satisfaction [40].

However, challenges also arise along with digital transformation. Auditors must develop new skills and understand the continuously evolving technology to remain relevant in an increasingly complex environment [42]. Additionally, risks related to cybersecurity and data privacy have become major concerns that must be well-managed in the audit process [31][40]. Therefore, it is important for universities to provide adequate training and resources for auditors so that they can adapt to these changes and improve the overall quality of internal quality audits.

Overall, digital transformation can enhance the quality of internal quality audits in higher education institutions by improving efficiency, accuracy, and transparency. However, the success of this implementation highly depends on the organizational culture, auditor skills, and effective risk management. Digital transformation significantly enhances the internal audit function by integrating advanced technologies such as data analytics, artificial intelligence, and cloud computing. These technologies facilitate a more efficient audit process, allowing auditors to analyze large amounts of data quickly and accurately, which ultimately leads to better decision-making and improved audit quality [31][43]. The ability to conduct audits remotely and in real-time became highly relevant after the COVID-19 pandemic, which necessitated a shift towards digital operations [40]. This shift not only enhances operational efficiency but also enables a more comprehensive assessment of institutional risks and controls, thereby strengthening the overall quality assurance framework [33][38].

Moreover, the cultural shift to embrace digital transformation within higher education institutions is crucial for fostering a culture of quality. The internal audit department is increasingly seeking professionals with digital competencies, which require continuous training and development to equip auditors with the skills needed to navigate the digital landscape [40][44]. This cultural transformation is crucial to ensure that internal audits not only meet compliance requirements but also drive continuous improvement and innovation in quality assurance practices [40]. In the MSME sector, digital transformation has proven to be key to surviving and thriving during crises, as seen during the COVID-19 pandemic, where many businesses switched to digital platforms to maintain their operations [45][46]. However, the process of digital transformation also faces various challenges and risks. Many organizations face difficulties in implementing effective digital transformation strategies, often due to a lack of understanding of the right technologies, resistance to change, or insufficient support from management [5][47]. Therefore, it is important for organizations to have a clear strategy and involve all stakeholders in this process, including employees and customers, to ensure the success of digital transformation [48][49].

The internal quality audit information system has also been developed to enhance the efficiency and effectiveness of the Internal Quality Audit implementation. By utilizing information technology, audit data management can be conducted in a more structured and integrated manner, making it easier to store and manage audit documents. Additionally, this system allows for more accurate and faster testing, as well as facilitating communication processes between auditors and auditees. However, the implementation of Internal Quality Analysis is not without challenges. Some of the challenges often faced include a lack of understanding about the importance of quality audits among the academic community, as well as the limited resources available to conduct thorough audits [50]. Therefore, it is important for institutions to provide training and socialization regarding the importance of Internal Quality Analysis, as well as to provide adequate support so that the audit

process can run smoothly and yield beneficial results for the development of the institution's quality [21]. By utilizing this technology, auditors can identify violations and issues more promptly, which in turn can enhance the overall quality of the audit.

5. CONCLUSION

Many universities still apply manual or semi-digital approaches that are less efficient in the implementation of internal quality audits. On the other hand, the use of digital technology in internal quality audits helps improve speed, accuracy, and transparency in the audit process. Digital transformation significantly enhances the internal audit function by integrating advanced technologies such as data analytics, artificial intelligence, and cloud computing. These technologies facilitate a more efficient audit process, allowing auditors to analyze large amounts of data quickly and accurately, which ultimately leads to better decision-making and improved audit quality. This shift not only enhances operational efficiency but also enables a more comprehensive assessment of risks and institutional controls, thereby strengthening the overall quality assurance framework. By leveraging digital technology, higher education institutions can enhance the audit process to ensure that robust quality assurance mechanisms are in place and capable of addressing contemporary challenges.

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