Robotic Process Automation in Auditing: A Systematic Review

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ABSTRACT

In the current era of digital transformation, Society 5.0 has significantly impacted various sectors, including accounting. Robotic Process Automation (RPA), an innovation arising from this transformation, enables the automation of business processes using software to execute repetitive tasks quickly and accurately. Public accountants, crucial players in ensuring compliance and financial report credibility, are not exempt from the influence of this transformation. The implementation of RPA in public accountant practices raises significant questions about the extent to which this technology can replace human roles in the audit process. While RPA can automate various routine audit tasks, including internal control testing, transaction processing, and financial data analysis, it challenges the traditional role of accountants in interpreting and making decisions based on broader business contexts. Despite the immense potential of RPA in enhancing audit efficiency and accuracy, several challenges need addressing, such as technology integration with existing systems, data security, and cultural changes among accounting professionals. The alignment of audit regulatory needs with RPA capabilities is also a crucial aspect to consider. This research refers to recent literature and case studies related to RPA implementation in public accounting, audit, and risk management contexts. The importance of this research lies in its contribution to understanding the impact of digital transformation, particularly RPA, on the public accountant profession.

Keywords*: Robotic process automation, Digital transformation, Public accounting, Audit, Risk management*

ABSTRAK

Era masyarakat 5.0 telah memengaruhi transformasi digital, termasuk sektor akuntansi. Salah satu inovasi yang muncul adalah Robotic Process Automation (RPA), sebuah teknologi yang mengotomatisasi proses bisnis menggunakan perangkat lunak. Penerapan RPA dalam bidang akuntansi publik dinilai dapat menggantikan peran manusia dalam proses audit dengan teknologi. Meskipun RPA mampu meningkatkan efisiensi dan akurasi audit, tetapi terdapat beberapa tantangan terkait integrasi teknologi, keamanan data, perubahan budaya, dan penyesuaian regulasi. Penelitian ini menggunakan pendekatan kualitatif dengan tinjauan pustaka untuk menjelaskan dampak RPA dalam konteks akuntansi publik, audit, dan pengelolaan risiko. Teori

Keagenan diterapkan untuk memahami dinamika hubungan antara klien (principal) dan RPA (agen) dalam konteks audit. Penerapan RPA dalam audit, terutama pada siklus pendapatan, menunjukkan potensi positif dalam meningkatkan minat pada perpajakan dan layanan keuangan. Meskipun demikian, dampak RPA dalam menggantikan peran auditor masih dalam tahap awal, dengan kompleksitas desain dan implementasi yang menjadi kendala. Risiko terkait keputusan ekonomi dan adaptasi terhadap database klien yang beragam juga menjadi tantangan yang perlu diatasi. Meskipun beberapa penelitian menunjukkan bahwa RPA dapat menggantikan tugas-tugas audit manual, keputusan ekonomi dan perbedaan profil auditor menyebabkan implementasi RPA masih memerlukan upaya yang signifikan. Oleh karena itu, penelitian ini memberikan kontribusi pada pemahaman dampak transformasi digital, khususnya RPA, terhadap profesi akuntan publik.

Kata kunci: *Robotic process automation, Transformasi digital, Akuntansi publik, Audit, Manajemen risiko*

INTRODUCTION

In the current era of digital transformation, Society 5.0 has significantly impacted various sectors, including the field of accounting. One of the emerging innovations is Robotic Process Automation (RPA), a technology that enables the automation of business processes using software to execute repetitive tasks quickly and accurately (Dey & Das, 2019; Madakam et al., 2019; Ribeiro et al., 2021). Public accountants, as key players in ensuring compliance and the credibility of financial reports, are also not exempt from the influence of this transformation (Ademola et al., 2020; Grossi & Argento, 2022; Muraina & Dandago, 2020).

The implementation of RPA in the practice of public accountants raises significant questions about the extent to which this technology can replace human roles in the audit process. RPA can automate various routine audit tasks, including testing internal controls, transaction processing, and financial data analysis (Masafumi, 2022). This opens the door to high operational efficiency but also challenges the traditional role of accountants in interpreting and making decisions based on a broader business context.

Although the potential of RPA in enhancing audit efficiency and accuracy is significant, there are several challenges that need to be addressed. Some of these involve integrating technology with existing systems, data security, and cultural changes among the accounting workforce (Rawashdeh et al., 2022). Alignment between audit regulatory requirements and the capabilities of RPA is also a crucial aspect to consider. This research will refer to recent literature and case studies related to the implementation of RPA in the context of public accounting, audit, and risk management. The importance of this research lies in its contribution to understanding the impact of digital transformation, especially RPA, on the public accounting profession.

LITERATURE REVIEW
Agency Theory

Agency theory is a relationship based on an agreement or contract between a principal and an agent (Cruz & Haugan, 2019; Schillemans & Bjurstrøm, 2020; Vitolla et al., 2020). The principal delegates authority to the agent to perform specific tasks, including the delegation of decision-making authority from the principal to the agent (Bjurstrøm, 2020). The principal, as the contract maker, will provide rewards for the agents (Eldon S. Hendriksen, 1992). The implementation of RPA can be considered as the introduction of a new agent (technology) working as a tool to execute audit tasks (Eulerich et al., 2022). Clients, as principals, decide to utilize this agent to enhance efficiency. Applying agency theory can provide profound insights into the dynamics of agency in the context of implementing RPA in the practice of public accountants, helping identify potential conflicts of interest, incentives, and ways to improve their management.

Robotic Process Automation

Robotic Process Automation or RPA is software technology used to create, deploy, and manage robotic software, enabling it to mimic human actions (Mohamed et al., 2022; Reddy et al., 2019; Schmitz et al., 2019). This software is capable of executing lightweight actions typically performed by humans when interacting with systems or digital software. Examples include system navigation, data recognition, and various other repetitive tasks. In its implementation, RPA is commonly used to automate simple business tasks. This software can work faster, consistently, and with minimal errors compared to human work.

Audit

Audit is a systematic set of steps applied by an auditor to obtain and evaluate evidence related to the economic events of a company. Its primary objective is to ensure that all activities comply with established standards and convey these findings to stakeholders (Mulyadi, 2016). Companies are expected to carry out competent supervisory functions, especially being responsible for the use of funds to ensure the smooth operation of the entire corporate sector. Audit is a systematic process conducted by qualified and independent individuals. This process involves the collection and assessment of evidence, as well as efforts to express an opinion on the accuracy of financial reports (Rachmah, 2016).

Rachmah (2016) defines audit as a series of activities involving the measured collection and evaluation of information. The evaluated information must be measurable and categorized based on defined criteria, enabling a clear assessment of its quality, whether it is excellent, good, sufficient, less good, or not good, using well-defined criteria. The financial company emphasizes that the audited entity can be a company, department, or other entities, and the audit is conducted by a qualified and independent group of individuals, also known as auditors. The audit involves identifying the extent to which data aligns with the set task criteria, and these specifications must be based on clearly defined parameters. In other words, the differences should be determined using specific criteria. Finally, the audit results are reported.

Types of Audit

According to Sukrisno (2004), there are three common types of auditing, namely operational audit (operational/management examination), compliance audit (compliance audit), and financial audit (audit of financial statements). Operational audit or management involves examining the procedures and operational methods of an organization with the aim of evaluating efficiency, effectiveness, and economy. This type of audit can be considered as management consulting services, as the recommendations produced are intended to be implemented by the management. Compliance audit, on the other hand, aims to assess whether the staff of an organization has complied with the rules and procedures set by the competent authority. Compliance audits are usually provided by authorities that have established company policies and procedures. Meanwhile, financial audit is an evaluation of the accuracy of financial statements presented by management as a whole, compared to generally accepted accounting standards (GAAP). The results of this audit are expressed in the form of an auditor's opinion, such as an unqualified opinion, disclaimer, or negative opinion, and aim to ensure the accuracy of financial statements in accordance with generally accepted accounting principles.

METHODS

This research adopts a qualitative approach using the literature review method. This method is implemented by collecting references from previous studies, which are then synthesized to draw conclusions. The results of combining various previous studies are utilized for several purposes: firstly, to understand the emerging influence of Robotic Process Automation (RPA) in the audit process. Secondly, to assess whether RPA has the potential to replace the role of auditors in specific contexts. And thirdly, to explain how

RPA is utilized in the practice of public accountants. This approach enables researchers to formulate a comprehensive view of the impact and implications of RPA usage in the audit context and to understand the extent to which this technology can influence the traditional role of auditors.

The research data sources were obtained from literature sources such as scientific journals and publications related to the research topic. The data collection technique was carried out through the selection, retrieval, and analysis of literature materials to gather information about RPA. The population of this research includes national and international journals related to RPA.

RESULTS AND DISCUSSION
The Impact Arising from the Role of Robotic Process Automation in Auditing

The RPA software has the ability to transform manual audit processes into automated ones, enhancing the performance of auditors and enabling better work in the workplace. The presence of RPA in audits has both positive and negative effects on its implementation. Based on research conducted by Adrian (2020), the implementation and development of RPA in public accounting practices can increase interest in taxation, consulting, and other financial services. In income audits, RPA can assist auditors in using features through a connection transfer to clients via File Transfer Protocol (FTP) to retrieve relevant audit evidence. Using RPA software, auditors can better understand client operations and comprehend the risk of material misstatement using RPA software.

However, implementing RPA in audits requires considerable effort compared to the relatively low impact it produces. According to Syed et al. (2020), RPA implementation requires a blueprint design that outlines specific actions the bot must take to complete tasks. Overall, bot design is still a manual and tedious task, inflexible, and prone to errors. Based on interviews conducted by Candratio et al. (2023), the efficiency gained from implementing RPA does not justify the effort involved. The coding and testing processes are complex for developing robots in RPA implementation and are considered inefficient when compared to using a small audit procedure. Additionally, efforts must be invested in creating a bot, but the bot's scalability cannot be increased because each auditor's profile is different. Ultimately, their economic decisions are immeasurable for automation. Thus, dealing with numerous clients with different database formats poses a challenge in translating the system into a standard form in implementing RPA in Public Accounting Offices.

Robotic Process Automation Replacing the Role of Auditors

Adrian (2020) states that RPA is a method of process improvement through the application of technology. When used in the context of auditing, RPA is expected to not only replace manually performed routine audit tasks but also serve as a catalyst for reengineering the audit process. RPA is also referred to as a type of computer code software that leverages cross-functional and cross-application macros to take over repetitive tasks typically carried out by humans. RPA acts as a non-moving or non-speaking autobot, serving as a physical machine capable of processing documents, utilizing artificial intelligence, or responding to voice recognition software. In the audit context, RPA is anticipated not only to replace manual and tedious audit tasks but also to motivate changes in the audit process design (Candratio et al., 2023). Ultimately, AI might automatically replace auditors and become a self-operating audit robot. If this happens, some accountants and auditors may lose their jobs, but RPA and AI will create new job opportunities (Masafumi, 2022).

Robotic Process Automation in the Practice of Public Accountants

Adrian (2020) states that the use of RPA for audit services is still in its early stages. This is due to the highly regulated nature of audit services, especially for public companies, under regulatory provisions. Auditors can utilize RPA to audit the revenue cycle by using features such as connecting file transfers to clients through File Transfer

Protocol (FTP). Using this feature, RPA can gather related audit evidence, including documents such as total sales per listing, and compare it with the total balance in the trial balance. Subsequently, RPA will calculate whether the total revenue for this year and the previous year differs materially. If the difference exceeds the materiality threshold, RPA will provide a warning regarding the materiality.

The use of RPA in the revenue cycle audit is not limited to the collection of audit evidence. RPA can calculate differences in price and quantity on sales invoices, sales orders, and shipping documents. Furthermore, RPA can issue alerts for sales transactions that involve differences in price and quantity. By automating audit test procedures for dual purposes, auditors can reallocate their time to other activities that enhance the quality of the audit. By leveraging this software, auditors can gain a better understanding of the client's operational business, allowing for a more accurate assessment of the risk of material misstatement.

CONCLUSION

RPA is a technology-based method that utilizes computer-based robots to enhance processes. This technology enables robots to perform a small number of tasks and applications typically carried out by humans. In the digital era, Society 5.0 has a significant impact on various fields, including accounting. As stakeholders in financial reporting, public authorities cannot avoid the influence of RPA on their operations. By integrating technology with existing systems, data management, and cultural changes, RPA can improve operational efficiency and reduce the need for conventional audits. However, there are challenges to overcome, such as balancing regulatory audit needs and RPA effectiveness. The implementation of RPA in the practice of public accountants can enhance the efficiency and accuracy of audits. This can improve auditor performance and enable better work in the workplace. As each auditor has a different profile, the implementation of RPA requires a clear blueprint design that includes the necessary steps to create a bot for auditing, although the bot creation process is time-consuming and costly.

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