Analysis of the Role of RPA (Robotic Process Automation) Technology in Improving the Efficiency of Accounting Processes in Indonesia

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ABSTRAK

Studi ini melihat bagaimana otomatisasi proses robotik, atau RPA, memengaruhi prosedur akuntansi di lingkungan bisnis Indonesia yang terus berubah. Dengan menggunakan pendekatan penelitian kualitatif, studi ini menyelidiki alasan di balik, kesulitan yang dihadapi, dan hasil yang terkait dengan adopsi RPA. Sepuluh partisipan dari berbagai industri melakukan observasi, analisis konten, dan wawancara untuk memberikan wawasan. Hasil penelitian menunjukkan bahwa meskipun resistensi organisasi dan kesenjangan keterampilan menjadi masalah, organisasi di Indonesia termotivasi oleh keinginan untuk meningkatkan efisiensi dan mengurangi kesalahan. Penerapan RPA menghasilkan peningkatan efisiensi yang signifikan dan menggeser pekerjaan para profesional akuntansi ke arah tanggung jawab yang lebih strategis dan analitis. Studi ini menawarkan informasi yang berguna untuk membantu perusahaan dan pembuat undang-undang mengintegrasikan RPA dalam kerangka akuntansi Indonesia.

Kata Kunci: Otomatisasi Proses Robotik, Efisiensi Akuntansi, Adopsi Teknologi, Perubahan Organisasi, Lanskap Bisnis Indonesia

ABSTRACT

This study looks into how robotic process automation, or RPA, affects accounting procedures in Indonesia's ever-changing business environment. Using a qualitative research approach, the study investigates the reasons behind, the difficulties encountered, and results related to RPA adoption. Ten participants from various industries provide observations, content analysis, and interviews to offer insights. The results show that while organizational resistance and skill gaps are problems, organizations in Indonesia are motivated by a desire to improve efficiency and decrease errors. Implementing RPA results in significant efficiency gains and shifts accounting professionals' jobs toward more strategic and analytical responsibilities. The study offers useful information to help enterprises and legislators integrate RPA within the framework of Indonesian accounting.

INTRODUCTION

In a time of rapid technological development and digital transformation, robotic process automation (RPA) and other advances are causing a significant revolution in the accounting industry. Organizations looking to increase efficiency are turning to robotic process automation (RPA) due to its capacity to automate routine tasks and optimize operations (Gotthardt et al., 2020; Kothandapani, 2023). This study explores the relationship between RPA technology and accounting procedures, particularly in the context of Indonesia's evolving business environment. Indonesia offers a distinctive setting for examining how RPA is influencing and redefining conventional accounting procedures because it is a fast-rising nation.

Conventional workflows need to be fundamentally reevaluated in light of the significant changes that the acceleration of technology in recent decades has brought about across several industries. This wave of technological innovation has not spared accounting, a crucial function in business operations (Kokina & Blanchette, 2019; Mokodenseho & Puspitaningrum, 2022). With the introduction of RPA, a paradigm shift has occurred in accounting procedures, with promises of better efficiency, decreased errors, and improved overall performance (Vijai et al., 2020)V.

The integration of robotic process automation (RPA) into accounting processes has great potential in Indonesia, a country with a rapidly developing economy and a varied corporate ecosystem. For organizations to expand sustainably, they must adapt to technology advancements, and RPA is a driving force behind this revolutionary process (Kaya et al., 2019; ZULFIKRI, 2022). Organizations, legislators, and academic researchers must all comprehend the subtleties and ramifications of RPA adoption in the Indonesian accounting sector (Bariff & Galbraith, 1978; Faiqoh et al., 2022; Ruivo et al., 2014; Wier et al., 2007).

Despite the excitement around RPA implementation worldwide, a concentrated study on how it affects accounting procedures in Indonesia is required. The central query this study aims to answer is: What effects does the use of robotic process automation (RPA) technology have on Indonesia's accounting operations' efficiency? Through the use of a qualitative research methodology, this study seeks to clarify the complexities surrounding the integration of RPA into accounting procedures, highlighting benefits as well as problems unique to Indonesia.

Organizations in Indonesia must comprehend RPA's significance in accounting as they navigate the rapidly changing technology landscape. By offering a qualitative examination of the experiences, viewpoints, and results connected to the integration of RPA technology in the Indonesian accounting sector, this study aims to further this understanding.

This research is driven by overarching objectives that encompass a comprehensive exploration of Robotic Process Automation (RPA) and its impact on enhancing accounting efficiency in Indonesia. Firstly, it aims to assess the current state of RPA adoption in accounting processes within the Indonesian context. Secondly, it seeks to identify the challenges faced by organizations in implementing RPA in their accounting operations. Additionally, the research endeavors to explore the perceived benefits of RPA technology in improving accounting efficiency. Lastly, it aims to analyze the impact of RPA on the roles of accounting professionals in Indonesia. These multifaceted objectives will serve as a guiding framework throughout the research, facilitating an in-depth examination of the dynamic interplay between RPA and accounting practices, and providing valuable insights for stakeholders navigating the intersection of technology and accounting in Indonesia.

LITERATURE REVIEW

a. Robotic Process Automation in Accounting

Researchers and practitioners alike are becoming more interested in the use of RPA in accounting. The revolutionary potential of RPA in automating repetitive and rule-based procedures has been highlighted in studies by (Lacurezeanu et al., 2020; Vijai et al., 2020), freeing up accountants to concentrate on higher-value duties. The body of research emphasizes how RPA can increase overall accounting operations efficiency by lowering processing times, increasing accuracy, and reducing the chance of errors.

Furthermore, (Cooper et al., 2019; Harrast, 2020; Rahmanudin & Sabil, 2022) research indicates that RPA is a catalyst for completely redesigning corporate processes rather than just an automation technology. The goal of this literature review is to give a framework for contextualizing the worldwide complexities of RPA implementation in accounting within the unique dynamics of the Indonesian corporate environment.

b. RPA Adoption in Indonesia

With its dynamic corporate environment and varied economic backdrop, Indonesia offers a special setting for researching the use of RPA in accounting. According to studies by the (Ismail et al., 2023), Indonesia has been proactively adopting digital transformation programs. According to the literature, Indonesian companies are becoming more conscious of the potential advantages of robotic process automation (RPA) in enhancing operational effectiveness.

However, academics like (Meiryani et al., 2019; Wijaya & Widianingsih, 2020) have highlighted that Indonesia faces unique problems, such as organizational readiness and regulatory considerations. Deciphering the subtleties around RPA adoption in Indonesia is crucial to identifying the obstacles that could prevent this technology from being successfully incorporated into accounting procedures.

c. Impact of RPA on Accounting Efficiency

Studies conducted globally, including those by (Aksoy & Hacioglu, 2021; Kaya et al., 2019; Slimen et al., 2022), highlight the benefits of RPA for accounting efficiency. The literature frequently discusses decreased error rates, faster processing, and better resource allocation. These studies offer a theoretical framework for comprehending the possible benefits that RPA could have for Indonesia's accounting industry.

The literature also emphasizes the necessity of implementing RPA strategically, taking into account elements like company culture, change management, and accounting professionals' skill sets (Cevik and Ulusoy, 2020)(Perdana et al., 2023). It is imperative to apply these insights to the Indonesian setting in order to customize tactics that correspond with the distinct features of firms functioning within the area.

d. RPA and the Role of Accounting Professionals

The duties and responsibilities of accounting professionals will undoubtedly change as RPA becomes a crucial component of accounting procedures. According to studies by (Elshifa et al., 2023; Gotthardt et al., 2020; Naceri et al., 2022; Vijai et al., 2020), the incorporation of RPA enables accountants to shift from transactional, repetitive jobs to more strategic and analytical roles. On the other hand, issues around job loss and the requirement for upskilling have also been brought up.

Anticipating skill requirements and resolving future workforce difficulties require an understanding of the evolving dynamics of the accounting profession in the context of robotic process automation (RPA). In order to give a perspective through which to assess the impact on the duties of accounting professionals in Indonesia, this literature study aims to consolidate these global insights.

RESEARCH METHODS

To explore the subtle elements of RPA adoption in accounting procedures in the Indonesian setting, a qualitative research design was selected. An in-depth investigation of the experiences, viewpoints, and contextual elements related to the integration of RPA technology is made possible by qualitative research (Creswell, 2013). This design attempts to capture the complex nature of RPA implementation and its effect on accounting efficiency through semi-structured interviews, observations, and content analysis. Ten participants were deliberately chosen from Indonesia's manufacturing, services, and financial sectors. Participants' first-hand experience with RPA adoption in accounting operations within their firms was guaranteed by the inclusion criteria. Professionals in accounting, IT, and decision-making who are directly involved in the development and implementation of RPA projects are included in the sample. The goal of the cross-industry participation is to present a comprehensive view of RPA adoption that takes into account various organizational sizes, structures, and industry-specific difficulties.

a. Data Collection

Data collection involved a combination of semi-structured interviews, observations, and content analysis of relevant documents.

1. Semi-Structured Interviews:
   The primary data collection method consisted of one-on-one interviews with each participant. The semi-structured format allowed for flexibility, enabling the exploration of participant experiences, challenges, and perceptions related to RPA in accounting. The interview guide covered topics such as the motivations for adopting RPA, challenges faced during implementation, perceived benefits, and changes in the roles of accounting professionals.

2. Observations:
   On-site observations were conducted to supplement the interview data. This involved observing the actual use of RPA technology within the selected organizations. The observations aimed to provide a firsthand understanding of how RPA was integrated into accounting processes, the workflow changes it introduced, and its impact on day-to-day operations.

3. Content Analysis:
   Relevant documents, including reports, manuals, and internal communications related to RPA implementation, were analyzed. Content analysis allowed for triangulation of data and provided additional context to the information gathered through interviews and observations.

b. Data Analysis

NVIVO, a program for qualitative data analysis, was used to do the data analysis. Systematic data coding was used in the process to identify patterns, themes, and important concepts in the interview transcripts, observation notes, and document material. The coded data were then arranged into themes and sub-themes, identifying recurrent trends and important revelations. To improve the validity of the results, data from observations, interviews, and document analysis were compared using triangulation. Member checking was used, requiring participants to confirm early results in order to guarantee accuracy and consistency of interpretation. The study's ethical considerations were paramount, as evidenced by the informed permission participants provided, which ensured that they were aware of the study's goal, voluntary involvement, and confidentiality safeguards. In order to reduce potential harm and highlight the significance of ethical conduct in qualitative research, the research complied

with ethical norms, placing a strong emphasis on transparency, honesty, and responsible data usage.

RESULTS AND DISCUSSION

This section offers a thorough knowledge of the effects of robotic process automation (RPA) on Indonesian accounting procedures by presenting the research findings via observations, interviews, and content analysis using NVIVO.

RPA Adoption in Indonesian Organizations

Theme 1: Motivations for RPA Adoption

According to interviews, the main reasons why Indonesian firms used RPA were to increase productivity and decrease manual labor. The need for accounting professionals to be able to concentrate on strategic and value-added activities by streamlining repetitive and rule-based processes was highlighted by the respondents. RPA adoption was also significantly influenced by the possibility of lowering errors and cost savings. Participant Quote:

"To automate repetitive processes like data entry and reconciliation, we deployed RPA. The objective was to increase the efficiency of our procedures and lower the possibility of mistakes in our financial reporting."

Theme 2: Challenges in RPA Implementation

The participants highlighted a number of difficulties encountered when using RPA. One of the main challenges was the resistance of the organization to change, which was accompanied by worries about the initial expenses of implementing RPA and the shortage of competent workers. The implementation process was found to be further complicated by regulatory issues, especially in the banking sector. Participant Quote:

"Initially, there was some opposition to the introduction of RPA. Concerns were raised over the necessity of upskilling and job security. Additionally, managing the regulatory environment created an additional level of complexity."

Impact of RPA on Accounting Efficiency

Theme 3: Efficiency Gains and Process Improvement

Participants consistently reported notable increases in efficiency as a result of the use of RPA. Financial reporting was produced faster thanks to the acceleration of time-consuming processes like data entry and reconciliation. Repetitive process automation was linked to a discernible decrease in errors, which enhanced the accuracy of financial data overall. Quote from Participant:

"We can now process data much more quickly thanks to RPA. Hour-long tasks can now be finished in minutes, and the number of errors has significantly decreased."

Theme 4: Accounting Professionals' Changing Roles

Accounting professionals' duties have undergone a significant alteration as a result of the integration of RPA. Accountants found themselves doing more and more analytical and strategic work as routine operations were automated. In general, participants expressed a sense of empowerment and job satisfaction with the shift in duties. Participant Quote:

"RPA allowed us to spend less time on tedious duties. We may now concentrate on analysis and guidance for decisions. It has positively altered the character of our work."

Patterns and Themes

A methodical analysis was carried out using NVIVO to find reoccurring themes and patterns in the qualitative data. The software made the coding process easier and exposed themes that were present in all of the participant responses. The investigation emphasized how the shifting responsibilities, efficiency advantages, and implementation problems of RPA within the Indonesian accounting landscape are interconnected.

Discussion

The results are consistent with international research on RPA adoption, highlighting financial savings and efficiency gains as key drivers. The issues raised highlight the necessity of focused interventions and all-encompassing change management plans, especially when it comes to dealing with talent shortages and change resistance. The efficiency gains that have been noticed are consistent with RPA's transformational ability to speed up regular accounting processes (Cooper et al., 2019; Kokina & Blanchette, 2019; Kothandapani, 2023; Naceri et al., 2022). Accounting professionals' evolving roles are consistent with the larger story of technology enhancing human potential. This change gives accountants the chance to perform more analytical and strategic tasks, which will enhance their professional growth and job satisfaction.

Implications for Practice and Policy

The study's conclusions have applications for Indonesian organizations and decision-makers. To fully reap the benefits of RPA, organizations should give change management first priority, make training investments for staff, and create plans to deal with difficult regulatory issues. It is within the power of policymakers to facilitate the adoption of RPA, provide direction for its use, and cultivate an innovative culture throughout the corporate ecosystem.

Limitations of the Study

Although the study's qualitative design offers depth, not all industries or organizational sizes may be able to apply the findings. Furthermore, because technology is dynamic, the outcomes might be relevant over time, necessitating further research as RPA develops.

CONCLUSION

In summary, this study offers a comprehensive overview of how Indonesian accounting procedures are being impacted by robotic process automation (RPA) technology. Adoption of RPA is driven by goals that are in line with global trends, with a focus on cost savings and increased efficiency. Implementing RPA results in huge productivity improvements and changes the responsibilities of accounting experts, despite obstacles including organizational reluctance. This change promotes job satisfaction and provides chances for strategic participation. The results underscore the significance of tackling obstacles by means of focused interventions, staff education, and all-encompassing change management tactics. In the end, the study offers useful information to companies and decision-makers that want to use RPA to improve accounting efficiency in Indonesia's particular setting.

REFERENCES

Aksoy, T., & Hacioglu, U. (2021). *Auditing Ecosystem and Strategic Accounting in the Digital Era*. Springer. https://doi.org/10.1007/978-3-030-72628-7

Bariff, M. L., & Galbraith, J. R. (1978). Intraorganizational power considerations for designing information systems. *Accounting, Organizations and Society*.

Cooper, L. A., Holderness Jr, D. K., Sorensen, T. L., & Wood, D. A. (2019). Robotic process automation in public accounting. *Accounting Horizons*, *33*(4), 15–35.

Creswell, J. W. (2013). *Research Desain: Pendekatan Kualitatif, Kualitatif, Dan Mixed (Edisi Keti)*. Yogyakarta.

Elshifa, A., Perdana, M. A. C., Matiala, T. F., Yasin, F., & Mokodenseho, S. (2023). Analisis Pengaruh Pendidikan, Pelatihan, dan Dukungan Kelembagaan terhadap Keberhasilan Usaha Mikro. *Sanskara Ekonomi Dan Kewirausahaan*, *1*(03), 123–134.

Faiqoh, F., Naim, S., Rahmanudin, D., Hayati, F. A., & Mokodenseho, S. (2022). The Effect of Reward and Punishment Policy on the Productivity of BPJS Health Employees Kotabumi Branch Office. *Tadbir: Jurnal Studi Manajemen Pendidikan*, *6*(1), 49.

Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., & Lehner, O. (2020). Current state and challenges in the implementation of smart robotic process automation in accounting and auditing. *ACRN Journal of Finance and Risk Perspectives*.

Harrast, S. A. (2020). Robotic process automation in accounting systems. In *Journal of Corporate Accounting & Finance* (Vol. 31, Issue 4, pp. 209–213). Wiley Online Library.

Ismail, S., Subu, M. A., Al-Yateem, N., Alkhawaldeh, M. Y., Ahmed, F. R., Dias, J. M., AbuRuz, M. E., Saifan, A. R., Al Marzouqi, A., & Hijazi, H. H. (2023). Using robotic technology in intensive care units: A qualitative exploration of nurses' perspective in Indonesia. *2023 IEEE 47th Annual Computers, Software, and Applications Conference (COMPSAC)*, 1394–1397.

Kaya, C. T., Türkyılmaz, M., & Birol, B. (2019). Impact of RPA technologies on accounting systems. In *Muhasebe ve Finansman Dergisi*. researchgate.net.

Kokina, J., & Blanchette, S. (2019). Early evidence of digital labor in accounting: Innovation with Robotic Process Automation. *… Journal of Accounting Information Systems*.

Kothandapani, H. P. (2023). Applications of Robotic Process Automation in Quantitative Risk Assessment in Financial Institutions. *… of Business Intelligence and Big Data …*.

Lacurezeanu, R., Tiron-Tudor, A., & Bresfelean, V. P. (2020). Robotic process automation in audit and accounting. *Audit Financiar*, *18*(4), 752–770.

Meiryani, M., Susanto, A., & … (2019). The issues influencing of environmental accounting information systems: an empirical investigation of SMEs in Indonesia. *International Journal of …*.

Mokodenseho, S., & Puspitaningrum, T. L. (2022). Relasi sosial-ekonomi dan kekuasaan antara rentenir dan pedagang pasar tradisional di jawa tengah. *Politika: Jurnal Ilmu Politik*, *13*(1), 41–58.

Naceri, A., Elsner, J., Tröbinger, M., Sadeghian, H., Johannsmeier, L., Voigt, F., Chen, X., Macari, D., Jähne, C., & Berlet, M. (2022). Tactile robotic telemedicine for safe remote diagnostics in times of Corona: System design, feasibility and usability study. *IEEE Robotics and Automation Letters*, *7*(4), 10296–10303.

Perdana, M. A. C., Sulistyowati, N. W., Ninasari, A., & Mokodenseho, S. (2023). Analisis Pengaruh Pembiayaan, Skala Usaha, dan Ketersediaan Sumber Daya Manusia terhadap Profitabilitas UMKM. *Sanskara Ekonomi Dan Kewirausahaan*, *1*(03), 135–148.

Rahmanudin, F. Z. S. N. D., & Sabil, F. W. (2022). The Role of Village Government Policies in Improving the Economy in Sumbermulyo Village. *Jurnal Kewarganegaraan*, *6*(2).

Ruivo, P., Oliveira, T., & Neto, M. (2014). Examine ERP post-implementation stages of use and value: Empirical evidence from Portuguese SMEs. … *Journal of Accounting Information Systems*.

Slimen, R. Ben, Belhaj, F., Hadriche, M., & Ghroubi, M. (2022). Banking Efficiency: A Comparative Study Between Islamic And Conventional Banks In GCC Countries. *Copernican Journal of Finance & Accounting*, *11*(1), 89–106.

Vijai, C., Suriyalakshmi, S. M., & Elayaraja, M. (2020). The future of robotic process automation (RPA) in the banking sector for better customer experience. *Shanlax International Journal of Commerce*, *8*(2), 61–65.

Wier, B., Hunton, J., & Hassabelnaby, H. R. (2007). *RETRACTED: Enterprise resource planning systems and non-financial performance incentives: The joint impact on corporate performance*. Elsevier.

Wijaya, F. V., & Widianingsih, L. P. (2020). The Impact of Tax, Exchange Rate, Tunneling Incentive and Firm Size on Transfer Pricing (Empirical Study of Manufacturing Companies Listed on the Indonesian Stock Exchange for Years2014-2018): English. *Journal of Accounting, Entrepreneurship and Financial Technology (Jaef)*, *1*(2), 149–166.

ZULFIKRI, A. (2022). *STRATEGI PENGEMBANGAN UMKM INDUSTRI KULINER BERBASIS MASYARAKAT DI KAWASAN WISATA PANTAI UJUNG GENTENG KABUPATEN SUKABUMI*. Nusa Putra.