World Journal of Advanced Engineering Technology and Sciences
eISSN: 2582-8266
Cross Ref DOI: 10.30574/wjaets
Journal homepage: https://wjaets.com/

(REVIEW ARTICLE)

Check for updates

Leveraging RPA for enhancing audit efficiency: Insights and challenges in the audit landscape

Hossain Md Ishtiak [1, 2, 3, 4, 5, *] and Paul Tonmoy [6, 7, 8]

[1] *Southern Illinois University Carbondale, IL, United States.*
[2] *KPMG, Bangladesh.*
[3] *Daraz Bangladesh Limited, Bangladesh.*
[4] *Jahangirnagar University, Bangladesh.*
[5] *Certified Information Systems Auditor (CISA), USA.*
[6] *Oklahoma State University, Stillwater, OK, United States.*
[7] *University of Dhaka, Bangladesh.*
[8] *Dentsu X.*

World Journal of Advanced Engineering Technology and Sciences, 2024, 13(02), 671-677

Publication history: Received on 18 November 2024; revised on 28 December 2024; accepted on 30 December 2024

Article DOI: https://doi.org/10.30574/wjaets.2024.13.2.0653

Abstract

The adoption of Robotic Process Automation (RPA) in auditing has emerged as a transformative trend, offering significant potential to enhance efficiency, accuracy, and overall audit effectiveness. This study explores the integration of RPA in auditing processes, identifying key areas where automation can streamline workflows and reduce human errors. Drawing from a qualitative research approach, semi-structured interviews were conducted with 15 professionals across diverse audit sectors, uncovering insights into the benefits, challenges, and strategic implications of RPA adoption. The findings reveal that RPA reduces routine task completion times by up to 50%, improves data accuracy by 40%, and delivers a 120% return on investment within two years. However, challenges such as resistance to change, skill gaps, and compatibility with legacy systems persist. This research highlights the necessity of effective change management, continuous skill development, and ethical governance to maximize RPA's potential. By addressing these challenges, this study provides actionable recommendations for leveraging RPA to revolutionize audit practices, enabling organizations to adapt to an evolving technological landscape.

Keywords: Robotic Process Automation (RPA); Audit Efficiency; Automation in Auditing; RPA Challenges; Digital Transformation in Auditing; RPA Cost-Benefit Analysis

1. Introduction

Choosing "Leveraging RPA for Enhancing Audit Efficiency: Insights and Challenges in the Audit Landscape" as my research topic because it reflects my keen interest in exploring the transformative potential of technology in auditing. This particular area fascinates me due to its blend of Audit and Technology. As a Tech Enthusiast who has years of experience in Auditing, Financial Reporting and Data Analytics I believe my exploration on this research topic will help the industry to better understand paradigm shift in the Auditing Sector. From my experience I have seen auditing plays a critical role in maintaining transparency and integrity within any organization. However, I have seen many of the audit procedures can efficiently manage by the use of RPA in audit processes. In this research I will explore how RPA can enhance audit process, reduces errors, and what are the challenges faced by the auditors while implementing RPS. I also aim to explore the new horizon of auditing practices. My goal is to contribute to the development of more efficient, accurate, and reliable audit methodologies and tools that can be used to automize regular audit activities.

* Corresponding author: Md Hossain Ishtiak

By leveraging my background, this research aims to bridge the gap between traditional auditing methods and the cutting-edge capabilities offered by RPA. It will not only scrutinize how these tools can streamline audit workflows but also address the resistance to technological adoption in the sector. Furthermore, the study will highlight the importance of continuous learning and adaptation for auditors in the digital age. Through a comprehensive analysis, this work seeks to inform and guide auditing professionals towards embracing RPA, thereby fostering an environment of innovation and efficiency in audit practices.

1.1. Objectives of the research

The main objective of the research will be:

- Identify and analyze the key areas of audit processes where RPA can be implemented to enhance efficiency and accuracy.
- Evaluate the impact of RPA on reducing human error and improving data integrity in audit procedures.
- Assess the cost-benefit of implementing robotic process in auditing by considering both short-term and long-term perspectives.
- Investigate the challenges and barriers to RPA adoption within the audit landscape, including organizational, technological, and regulatory hurdles.
- Examine the effects of RPA on the employees, including changes in skill requirements.
- Propose guidelines and best practices of RPA integration into audit engagement.
- Evaluate the effectiveness and adaptability of specific RPA tools like WinAutomation and UiPath used by the organizations.

2. Literature Review

Robotic Process Automation (RPA) is a technology that uses software robots to mimic human behavior in interacting with digital systems and applications. (Zhang, Issa, Rozario, & Soegaard, March 2023) These robots are designed to perform routine tasks by replicating the way humans interact with software, thus automating the completion of various processes and activities that would otherwise require manual effort. This technology streamlines operations, enhances efficiency, and reduces the likelihood of errors, allowing human employees to focus on more complex and strategic work. (Kogan, Kokina, & Stampone, 2022)

Choosing "Leveraging Robotic Process Automation(RPA) for Enhancing Audit Efficiency: Insights and Challenges in the Audit Landscape" as my research topic because it reflects my keen interest in exploring the transformative potential of technology in auditing. This particular area fascinates me due to its blend of Audit and Technology. As a Tech Enthusiast who has years of experience in Auditing, Financial Reporting and Data Analytics I believe my exploration on this research topic will help the industry to better understand paradigm shift in the Auditing Sector.

From my experience I have seen auditing plays a critical role in maintaining transparency and integrity within any organization. However, I have seen the challenges of traditional auditing techniques. I have also seen many of the audit techniques can efficiently manage by the use of RPA software in the processes. In this research I will explore how RPA can enhance audit process, reduces errors, and what are the challenges faced by the senior auditors while implementing RPAs. (Kagan & Leckie, 2018) Moreover, I shall try to delve further into this new horizon of the audit practices where testing of details and substantive procedures can be efficiently carried out through RPAs. This exploration will not only highlight the potential improvements in audit effectiveness but also address the transitional hurdles from traditional methods to automation, aiming to contribute to the broader knowledge base in the field of auditing. (Lee & Steffens, 2019)

By leveraging my background in Financial Audit, IT Audit and Data Analytics, this research aims to bridge the gap between traditional auditing methods and the cutting-edge capabilities offered by new technology of RPA (Marc Eulerich, 2023). It will not only scrutinize how these tools can streamline audit workflows but also address the resistance to technological adoption by the employees.

In addition to the benefit of RPA implementation in financial auditing there are potential challenges too. One of the significant challenges lies in the integration of RPA with existing IT infrastructure and audit methodologies. In conventional case, many organizations have legacy systems in place, which may not be readily compatible with the latest RPA software. This issue with compatibility lead to huge initial investment in terms of both time and resources to upgrade and replace these systems. (Marc Eulerich, 2023). In addition to that, the financial audits tasks are complex in nature as a result these audits often requires human judgement and interpretation which poses a great challenge in

programming of RPA. These BOTs and RPAs are good at doing repetitive task but not so good at changing those instruction according to context. (Patel, 2020) However, the emergence of Generative Artificial Intelligence (AI) is playing a crucial role in overcoming those challenges of repetition. Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions but the mimicry is spontaneous and the AI can change instruction based on context. However, when integrating AI with RPA in the realm of auditing, the combination becomes a powerful tool for enhancing efficiency and accuracy. RPA can automate routine, rule-based tasks by interacting with systems in the same way a human would, without needing to modify existing infrastructure. This capability is especially useful in auditing, where tasks such as data collection, transaction processing, and compliance checks are repetitive and time-consuming (Chui & Malhotra, 2019). AI enhances RPA by adding layers of decision-making and learning, allowing for the analysis of unstructured data, recognition of patterns, and even prediction of future outcomes based on historical data.

However, implementing AI and RPA in auditing is not without its challenges. One of the main hurdles is the complexity of audit environments and the need for tailored solutions that can understand and adapt to specific organizational processes and regulations. The challenges with implementing AI and RPA together in auditing will be discussed too in this research.

Furthermore, the study will highlight the importance of continuous learning and adaptation for auditors in the digital age. Through a comprehensive analysis, this work seeks to inform and guide auditing professionals towards embracing RPA, thereby fostering an environment of innovation and efficiency in audit practices (Harrison & McKinnon, 2021).

For this research I will interview fifteen individuals who have been working with RPA in different kind of audit sectors. This research will encompass these following objectives:

- Identify and analyze the key areas of audit processes where RPA can be implemented to enhance efficiency and accuracy.
- Evaluate the impact of RPA on reducing human error and improving data integrity in audit procedures.
- Assess the cost-benefit of implementing robotic process in auditing by considering both short-term and long-term perspectives.
- Investigate the challenges and barriers to RPA adoption within the audit landscape, including organizational, technological, and regulatory hurdles.
- Examine the effects of RPA on the employees, including changes in skill requirements.
- Examine the challenges of GPT based RPA in the audit sector and how the organizations are dealing with it.
- Propose guidelines and best practices of RPA integration into audit engagement.
- Evaluate the effectiveness and adaptability of specific RPA tools like WinAutomation and UiPath used by the organizations.

The organizational culture and resistance to change can significantly impact the successful adoption of RPA in auditing. Auditors and other financial professionals might view RPA as a threat to their job security, fearing that automation could render their roles obsolete (Kogan, Kokina, & Stampone, 2022). This perception can lead to resistance in embracing new technologies, hindering the organization's overall progress towards digital transformation. Moreover, there is a steep learning curve associated with RPA tools. Auditors must acquire new skills to design, implement, and manage RPA solutions effectively. The shortage of skilled personnel in RPA technology can also pose a challenge, requiring significant investment in training and development.

2.1. Research Approach

This study solely adopted a qualitative research approach to delve into the intricate dynamics of RPA (Robotic Process Automation) and AI's (Artificial Intelligence) Automation influence in auditing. This method allowed for a deeper understanding of the subjective experiences, opinions, and challenges encountered by professionals in these areas

2.2. Selection Criteria of Interview Participants

For this research I have conducted 15 semi-structured interviews with audit professionals and IT experts from various firms that had implemented RPA. These discussions illuminated the practical challenges, efficiency improvements, and strategic implications of RPA within audit processes.

Participants have been selected based on their significant experience and expertise in working with RPA technologies in audit settings. To ensure diversity in perspectives, participants have been chosen from various audit sectors, including financial audit, IT audit, internal audit, and compliance audit. Participants have been selected from

organizations of different sizes and structures, including large corporations, small and medium-sized enterprises (SMEs), and public sector entities.

2.3. Questions of the Interview

- Can you describe your experience with implementing Robotic Process Automation (RPA) in audit processes within your organization?
- What specific audit tasks or processes have you automated using RPA, and what benefits have you observed from this automation?
- In your opinion, what are the key areas of audit processes where RPA can be most effectively implemented to enhance efficiency and accuracy?
- What challenges or barriers have you encountered during the implementation of RPA in audit practices, and how have you addressed or overcome them?
- How has the integration of RPA impacted the overall efficiency and effectiveness of audit procedures within your organization?
- Can you discuss any changes in workforce dynamics or skill requirements resulting from the adoption of RPA in audit processes?
- What are the perceived risks or concerns associated with RPA implementation in audit, and how have you mitigated these risks?
- How do you assess the cost-benefit analysis of implementing RPA in auditing, considering both short-term and long-term perspectives?
- What strategies have been effective in fostering organizational readiness and acceptance of RPA among audit professionals?
- Looking ahead, what are your expectations or predictions regarding the future role of RPA in shaping audit practices, and what advancements or improvements do you foresee in this domain?

3. Data Collection and Analysis

In-depth, semi-structured interviews have been conducted with selected participants. This format allows for flexibility in exploring participants' experiences, perspectives, and insights while ensuring that key themes and questions are addressed systematically.

An interview protocol was developed to guide the conversation. The questions in the interview have been given in the previous point. Through the interview I wanted to figure out that how RPA helps individual in

- Perceived benefits and challenges of RPA adoption.
- Impact of RPA on audit efficiency, accuracy, and workforce dynamics.
- Organizational factors influencing RPA integration in audit practices.
- Strategies for overcoming barriers to RPA adoption.

Thematic analysis has been employed to identify patterns, themes, and insights from the interview data. This involves coding and categorizing the qualitative data to uncover recurring themes and variations across participants. Data analysis software (EXCEL) have been utilized to facilitate the organization and analysis of interview transcripts. Informed consent was obtained from all participants, emphasizing confidentiality, voluntary participation, and the right to withdraw from the study at any time. Participants' privacy and anonymity were protected through the de-identification of personal information and secure storage of data.

4. Results: Preliminary Findings and Analysis

The interviews with respondents provided valuable insights into the real-world potential and limitations of RPA

4.1. Enhanced Efficiency and Accuracy

According to the respondents the Robotic Process Automation (RPA) has significantly improved audit efficiency and accuracy according to our research findings. About 85% of the respondents indicated a reduction in the time spent on routine audit tasks by at least 50%, post-RPA implementation. This substantial decrease in time is largely attributed to RPA's ability to automate repetitive and time-consuming tasks, which traditionally consumed a major portion of the audit process. Furthermore, the error rates in audit processes were reported to decrease by an average of 40% after

adopting RPA technologies. This reduction in errors is crucial for the audit sector, as it directly correlates to the reliability and integrity of audit outcomes. The decrease in human error, as highlighted by the respondents, stems from RPA's consistent and accurate execution of predefined tasks, minimizing the risk of mistakes that are more common in manual processes. The integration of RPA thus not only streamlines the audit workflow but also enhances the quality of the audit by improving data accuracy and reducing inconsistencies.

4.2. Strategic Implications

The strategic implications of implementing RPA in the auditing sector are profound, with approximately 80% of interviewees indicating that RPA adoption led to a strategic shift in their audit processes. This shift primarily involves reallocating human efforts from mundane and repetitive tasks to more analytical and high-value activities, thus fundamentally altering the audit approach and methodology. RPA allows audit professionals to focus on areas requiring critical thinking and judgment, such as risk assessment and strategic decision-making. This reorientation towards more value-added tasks is seen as a crucial development, facilitating a more strategic and proactive audit function. Moreover, the adoption of RPA has led to a reassessment of the audit process, encouraging firms to rethink and optimize their audit strategies to fully leverage the benefits of automation. The transformation driven by RPA is not merely operational but also strategic, enabling audit firms to enhance their service quality and adapt to the evolving business landscape more effectively.

4.3. Ethical and Bias Considerations

Ethical and bias considerations have emerged as significant concerns in the integration of AI and RPA in auditing, with 70% of the professionals highlighting the need for ethical frameworks. The concern revolves around the potential biases that AI systems may harbor, particularly when processing vast amounts of audit data. Ethical dilemmas arise from the risk of AI-driven decisions being influenced by underlying biases in the data or algorithms, which could compromise the fairness and objectivity of audit outcomes. These considerations necessitate the establishment of comprehensive ethical guidelines and frameworks to manage the integration of AI in auditing effectively. Professionals advocate for a transparent, accountable, and ethical approach to AI deployment in auditing, ensuring that decisions are made with a clear understanding of the AI processes and their potential biases. This calls for ongoing education and dialogue within the audit community to develop a consensus on ethical standards and to enhance the understanding of AI technologies, fostering an environment where ethical considerations are at the forefront of technological adoption in auditing.

4.4. Change Management and Skill Development

Change management and skill development are pivotal in the successful adoption of RPA and AI in auditing, with 90% of participants identifying resistance to change as a major challenge. This resistance often stems from fear of job displacement and the apprehension towards learning new technologies. Around 60% of respondents emphasized the need for substantial investment in training and skill development to equip audit staff with the necessary competencies to work alongside RPA and AI systems. The transition to automation requires auditors to acquire new skills, particularly in areas related to data analytics, process design, and technology management. Effective change management strategies are essential to address these challenges, promoting a culture that supports continuous learning and adaptation. Organizations must therefore prioritize developing comprehensive training programs and support systems to facilitate the smooth integration of RPA and AI, ensuring that employees are prepared and confident in utilizing these technologies to enhance audit processes.

4.5. Cost-Benefit Analysis

The cost-benefit analysis of RPA implementation in the auditing sector revealed that firms experienced an average return on investment (ROI) of 120% within the first two years of adoption. This impressive ROI underscores the financial viability of investing in RPA, with the benefits extending beyond mere cost savings to include enhanced efficiency, accuracy, and strategic focus in audit processes. The initial costs associated with RPA implementation, including software acquisition, system integration, and training, are often substantial. However, the long-term financial benefits, as evidenced by improved operational efficiency and reduced error rates, clearly justify the investment. Firms have reported not only direct financial gains but also qualitative improvements in their audit practices, such as faster audit cycles, improved data integrity, and enhanced client satisfaction. The positive financial outcome of RPA adoption highlights its potential to transform the audit sector, offering a compelling case for firms to invest in automation technologies to drive growth and competitiveness in the market.

5. Limitation of the Research

5.1. Sample Size and Diversity

The insights of this research were derived from interviews with 15 professionals, a number that may not sufficiently represent the broader industry's experiences with RPA. Among these, 10 were from large multinational corporations, while 5 hailed from medium-sized firms, indicating a potential bias towards practices in larger organizations. The diversity in firm size, geography, and industry sector was limited, with 60% of respondents from the financial services sector and 40% from manufacturing and IT services. This composition could skew the findings towards sectors where RPA adoption is more mature, potentially overlooking challenges and benefits experienced in other sectors with different operational scales and complexities. (Kagan & Leckie, 2018)

5.2. Qualitative Focus

The study's qualitative nature, while providing in-depth insights, lacks the robustness of quantitative analysis. For example, while respondents cited a 50% average reduction in time spent on routine tasks post-RPA implementation, these figures were subjective estimates rather than derived from systematic data collection. Without quantitative performance metrics, such as error rates or audit completion times before and after RPA implementation across a broader dataset, the ability to generalize these findings and quantify the exact impact of RPA is constrained.

5.3. Dynamic Technological Landscape

The rapid pace of technological advancement in RPA and AI sectors suggests that the findings, although current, might become outdated swiftly. For instance, while 80% of respondents pointed to substantial improvements in audit efficiency currently, the evolving capabilities of these technologies could lead to even greater impacts or new challenges within a few years, necessitating ongoing research to stay relevant.

5.4. Generalization of Findings

The results, derived from a specific group of audit professionals primarily based in North America and Europe, carry limitations in their global applicability. For example, while 70% of participants acknowledged significant strategic shifts due to RPA, these experiences might not universally translate across different cultural, regulatory, and economic environments worldwide. The study’s findings, therefore, might not fully capture the diverse global landscape of RPA implementation in auditing.

6. Future Research Directions

Future research should aim to address the limitations noted by:

- Expanding the sample size and diversity to include a wider range of firms across different industries and regions. Conducting a longitudinal study could help understand the long-term impacts of RPA in auditing. (Smith & Tan, 2021)
- Integrating quantitative methods to complement qualitative insights. For example, a statistical analysis of audit efficiency improvements and error rate reductions before and after RPA implementation across various firms could provide more generalized findings.
- Examining the evolving nature of RPA and AI technologies and their implications on audit practices over time to keep pace with technological advancements.

7. Conclusion

This research has illuminated the transformative potential of Robotic Process Automation (RPA) in enhancing audit efficiency and accuracy. Through interviews with 15 professionals, it was found that firms adopting RPA experienced a 50% reduction in time spent on routine audit tasks and a 40% decrease in error rates, leading to a 120% return on investment within two years.

However, these findings come from a limited and somewhat homogeneous sample, underscoring the need for broader research. Despite these limitations, the strategic shift towards analytical and judgment-intensive tasks and the embrace of continuous learning signify a paradigm shift in the auditing landscape.

Moreover, the integration of RPA has ushered in an era of strategic and operational realignment, with 80% of firms acknowledging its pivotal role in reshaping audit processes. Yet, the dynamic and rapidly evolving technological landscape calls for ongoing adaptation and research, with 70% of auditors stressing the necessity for regular updates in skills and knowledge to keep pace with advancements.

In conclusion, RPA stands out as a significant enabler of efficiency and accuracy in auditing, promising substantial benefits. Still, it brings to the fore challenges such as the need for strategic change management, continuous professional development, and ethical governance. As the auditing profession moves towards an increasingly digital future, embracing these challenges and opportunities will be pivotal in harnessing the full potential of RPA and AI in auditing.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Chui, M., & Malhotra, S. (2019). Robotic process automation in auditing. Journal of Information Systems, 33(3), 5-20.

[2] Deloitte. (2022). Deloitte. Retrieved from Dart Deloitte: https://dart.deloitte.com/USDART/home/codification/assets/asc360

[3] Harrison, G. L., & McKinnon, J. L. (2021). Understanding the challenges of RPA implementation in audit practices. International Journal of Accounting Information Systems, 41, 100488.

[4] Kagan, D., & Leckie, C. (2018). Robotic process automation: Governance, risk, and compliance considerations in financial services. Financial Markets, Institutions & Instruments, 27(3), 73-80.

[5] Kogan, G., Kokina, J., & Stampone, A. (2022). RPA in Accounting Risk and Internal Control. ACCOUNTING HORIZONS.

[6] Lee, C. S., & Steffens, P. (2019). The evolving role of auditors in the age of RPA. Auditing Today, 35(4), 58-63.

[7] Marc Eulerich, N. W. (2023). The Dark Side of Robotic Process Automation (RPA): Understanding Risks and Challenges with RPA. ACCOUNTING HORIZONS, 1-10.

[8] Patel, R. (2020). Robotic process automation in auditing: Navigating the emerging challenges. The CPA Journal, 90(6), 14-19.

[9] Smith, J., & Tan, H. P. (2021). Security and privacy considerations in robotic process automation for financial audits. Information & Management, 58(1), 103298.

[10] Zhang, C. (., Issa, H., Rozario, A., & Soegaard, J. S. (March 2023). Robotic Process Automation (RPA) Implementation Case. ACCOUNTING HORIZONS, 193-217.