



Review Paper

The Role of Robotic Process Automation in the Transformation of Auditing: An Examination of Robotic Process Automation and Its Impact on Efficiency and Employment in Auditing^{1,2}

Hasanali Akhlaghi³

Journal of Information System and Technology Auditing
Iranian Information Technology Audit Scientific
Association
Vol. 1, No. 1, Spring & Summer 2025
pp. 85-93

Received: 2025.06.11
Revised: 2025.08.08
Accepted: 2025.09.02

1. Introduction

Robotic Process Automation (RPA) is a rule-based software technology that automates routine business processes. Since RPA is software, it can only perform digital tasks. Its programmable component is known as robots or bots. The successful application of this technology in unstable environments highlights its adaptable and resilient capabilities, showcasing its ability to maintain the stability of accounting processes even during economic crises. There is no need for data to build RPA, as human expertise is encoded as a set of conditions. For example, a machine learning software developer requires real data from individual cases. The absence of data makes programming RPA easier and faster compared to developing other systems. RPA is not intelligent software. Unlike AI or machine learning systems, RPA cannot learn independently. If a process changes, that process must be reprogrammed within RPA. However, RPA can interact with intelligent software at the user interface level

¹ <https://doi.org/10.22034/JISTA.2025.529864.1054>

² Selected Paper of 2nd Conference on Computer Auditing and Data Analytics

³ Department of Management and Accounting, Technical and Vocational University (TVU), Tehran, Iran. (Corresponding author). Email: hakhlaghi@nus.ac.ir

to become part of an automated system. If one or more intelligent systems interact with RPA, RPA can manage process changes in response to new economic and environmental conditions. The field of auditing is undergoing a profound transformation driven by technological advancements that challenge traditional methods. At the forefront of these changes is RPA, a type of software that simulates human tasks to perform repetitive, rule-based tasks with speed and accuracy. When combined with complementary technologies such as AI, machine learning, and big data analytics, RPA can enhance auditing functions beyond traditional boundaries, enabling real-time insights, continuous monitoring, and intelligent risk assessment. In today's digital world, auditing firms are under pressure to increase their efficiency while maintaining high levels of accuracy and compliance. Manual auditing processes are increasingly recognized as inadequate for managing large volumes of complex data in real time. As a result, companies are turning to automation technologies that provide seamless extraction, validation, and reconciliation of data from various systems. The non-invasive integration of RPA with existing IT infrastructures, along with its scalability and auditing traceability capabilities, makes it an attractive solution for finance professionals and organizations worldwide. However, this increase in automation also brings significant challenges, the most important of which is job displacement. As tasks previously performed by junior auditors or office staff are increasingly taken over by machines, concerns about the future of accounting jobs have risen. Several studies predict that routine auditing roles will diminish, while new roles emphasizing data interpretation, system oversight, and ethical governance will emerge. These changes indicate the need to reconsider accounting curricula, vocational training, and certification programs to prepare the future workforce for an advanced auditing landscape. The emergence of technologies such as RPA raises profound questions in the auditing field: Are these technologies merely efficient tools for improving existing processes, or do they represent a fundamental transformation in the nature of the auditing profession? Some



organizations view automation as a temporary solution to address workforce shortages or operational deficiencies. In this perspective, RPA is defined as a problem solver for current issues without questioning the traditional nature of auditing. In contrast, many experts believe that automation has established a new model of hybrid auditing, where human insights and machine computations not only complement each other but also integrate to create new quality standards. This duality, beyond technical discussions, poses identity challenges for the auditing professional community.

Will the traditional role of accountants shift to that of machine overseers?

Will professional values such as judgment and professional skepticism fade in the face of algorithms?

Are current regulatory models suitable for this new reality?

Addressing these questions appears to require a redefinition of professional boundaries in the digital age—one that leverages technological opportunities while preserving the fundamental principles of auditing. This research comprehensively examines the impacts of RPA on the auditing industry, taking a balanced view of both aspects of this digital transformation—operational efficiency gains and workforce challenges. By combining findings from field research, expert opinions, and international practical experiences, we present a strategic framework for implementing RPA that simultaneously realizes the full benefits of this technology while preserving the exclusive values of human auditors. In this regard, the present study examines three main pillars:

- 1) **Operational Strategies:** Optimal methods for integrating RPA into auditing processes while maintaining the central role of human analysts.
- 2) **Professional Considerations:** Development programs for hybrid (technical-analytical) skills for auditors in the digital age.
- 3) **Regulatory Frameworks:** Ethical guidelines and governance mechanisms to ensure a fair and sustainable transition to future auditing models.



2. MATERIALS AND METHODS

The main stages of the research methodology in this article include selecting the topic and research question, searching for and collecting sources, evaluating and selecting articles, analyzing and extracting information, and organizing the information. The necessary data for this research were gathered from sources such as scientific articles published in reputable journals and papers from specialized conferences. These resources were identified and extracted through scientific databases, including Science Direct and Google Scholar. The temporal scope of the search was limited to English-language documents published between 2010 and 2024 to ensure the currency of the information. Key information from the selected articles is extracted, which includes findings, strengths and weaknesses, and conclusions regarding the role of robotic process automation in the transformation of auditing: Examining robotic process automation and its impact on efficiency and employment in auditing. Finally, the extracted information is organized into a logical structure and synthesized in a way that provides a comprehensive overview of the impact of robotic process automation on efficiency and employment in auditing.

3. RESULTS AND DISCUSSION

Given rapid technological advancements, particularly in automated and robotic systems, auditing processes have undergone significant transformations. This study examines the impact of Robotic Process Automation (RPA) on auditing and seeks to answer how these technologies can improve auditing processes, as well as what challenges they may introduce. The results of this research indicate that RPA can enable auditors to focus on deeper analysis and risk assessment by reducing the time and costs associated with repetitive tasks. Furthermore, this technology enhances accuracy in information processing and enables real-time monitoring of operations. However, these transformations also bring challenges, including the reduction of traditional jobs and shifts in professional roles. This necessitates a restructuring of audit teams and the development of new training programs to enhance human skills in this field. Ultimately, it can be argued that RPA not only improves efficiency and accuracy in auditing but also highlights the need for



fundamental changes in job structures and required competencies. Creating an "intelligent auditor," a hybrid of human judgment and advanced algorithms, could serve as an effective response to these challenges, helping maintain high professional standards in auditing.

4. CONCLUSION

The integration of robotic process automation (RPA) in auditing has created a profound transformation within the profession, leading to significant benefits in various areas such as efficiency, accuracy, and cost savings. As the trend of adopting RPA continues to automate time-consuming and repetitive tasks like data extraction, validation, and report generation, auditors now have the opportunity to focus on more valuable activities. These activities include judgment, risk assessment, and strategic decision-making, which require human skills due to their complexity and importance. The ability of RPA to process large volumes of data with precision and speed enhances audit quality and supports real-time compliance monitoring. These changes foster a more agile and responsive auditing environment that can effectively meet client needs and regulatory requirements. However, such changes have raised concerns about job displacement and the evolving nature of auditing roles. Rather than eliminating the need for auditors, RPA alters their tasks, compelling them to transition from manual processing to more analytical and strategic responsibilities. This shift may lead to a decreased demand for certain clerical roles, consequently raising concerns about job losses in the sector. The displacement of routine jobs could result in a significant restructuring of the workforce, especially for younger auditors and support staff who may be at greater risk. This changing dynamic increases the necessity of focusing on skill enhancement and retraining of the workforce. Auditors need to equip themselves with new skills in areas such as data analysis, machine learning, and artificial intelligence to remain valuable contributors in the auditing process. Despite these challenges, the implementation of RPA does not signify the end of human roles in the auditing profession. On the contrary, this shift encourages a closer collaborative relationship between human expertise and automation. Auditors are expected to take on



management and oversight of RPA systems, reviewing their outputs and interpreting results concerning business risks and regulatory requirements. This collaboration between technology and human judgment presents an opportunity to enhance the accuracy and effectiveness of audits, facilitating the emergence of a new era of “augmented auditing.” Moreover, the widespread application of emerging technologies like blockchain and big data alongside RPA enhances auditors’ roles in ensuring transparency, data integrity, and real-time analysis of records. The combination of secure, immutable blockchain ledgers with RPA’s ability to quickly analyze data provides a powerful tool for future auditors, enabling them to conduct continuous audits and proactively identify anomalies. This shift toward continuous auditing, fueled by big data analytics, not only increases efficiency but also generates real-time insights, allowing auditors to identify potential risks and anomalies earlier in the audit cycle. However, ethical and governance considerations remain of paramount importance.

The use of RPA and artificial intelligence in auditing raises questions about data privacy, security, and technology accountability in decision-making processes. As RPA systems become increasingly automated, the auditing profession must ensure that these tools are used ethically and that the outputs generated by these systems are reliable and explainable. Additionally, maintaining regulatory oversight and establishing clear frameworks for the use of automation in auditing practices is essential to guarantee transparency and accountability in automated decision-making processes. Looking to the future, the role of auditors will continuously evolve as the profession adapts to an ever-changing technological landscape. The auditing profession will likely shift toward a hybrid model where human auditors collaborate with RPA systems to achieve better outcomes. Consequently, auditors must develop a deeper understanding of technological tools while maintaining their core skills in judgment, ethical decision-making, and professional skepticism. Companies should invest in ongoing training and updates to ensure that auditing professionals can fully leverage the potential of automation without compromising ethical standards or the quality of their work. Ultimately, RPA represents both a significant opportunity and a challenge for the auditing



profession. While this technology enhances efficiency, accuracy, and cost-effectiveness, it also raises concerns about job displacement and the future of auditing roles. However, through strategic adaptability, skill enhancement, and an emphasis on ethical use, the auditing profession can embrace these technological advancements and ensure a seamless integration of human expertise and automation. As the future of auditing evolves, we can expect to see increased collaboration between human auditors and automation technologies, resulting in stronger, more transparent, and efficient auditing practices.

Keywords: Robotic Process Automation, Innovative Auditing Technologies, Future Transformations in Auditing, Intelligent Workforce

JEL classification: *M42, H21, Q53*

References

- Alles, M. G. (2015). Drivers of the Use and Facilitators and Obstacles of the Evolution of Big Data by the Audit Profession. *Accounting Horizons*, 29(2), 439-449. DOI: 10.2308/acch-51067.
- Ayinla, B. S., Atadoga, A., Ike, C. U., Ndubuisi, N. L., Asuzu, O. F., & Adeleye, R. A. (2024). The role of robotic process automation in modern accounting: A review - Investigating how automation tools are transforming traditional accounting practices. *Engineering Science & Technology Journal*, 5(2), 427-447. <https://doi.org/10.51594/estj/v5i2.804>.
- Bhardwaj, V., Noonian, A., Chaurasia, S., Kumar, M., Rashid, A., & Othman, M. T. B. (2024). Optimizing Structured Data Processing through Robotic Process Automation. arXiv. <https://doi.org/10.48550/ARXIV.2408.14791>.
- Bhattacharyya, S., Banerjee, J. S., & De, D. (2023). Confluence of Artificial Intelligence and Robotic Process Automation. In Springer Nature, 2023.
- Brook, B. W., Sodhi, N. S., & Bradshaw, C. J. A. (2008). Synergies among extinction drivers under global change. *Trends in Ecology & Evolution*, 23(8), 453-460. <https://doi.org/10.1016/j.tree.2008.03.011>.
- Brown-Liburd, H., & Vasarhelyi, M. A. (2015). Big Data and Audit Evidence. *Journal of Emerging Technologies in Accounting*, 12(1), 1-16. DOI: 10.2308/jeta-10468.
- Chan, D. Y., & Vasarhelyi, M. A. (2018). Innovation and Practice of Continuous Auditing. *International Journal of Accounting Information Systems*, 28, 37-51. DOI: 10.1016/j.accinf.2018.03.001.



- Dandale, M. N., Mazharunnisa, Daniel, D. J. J. D., Priya, R. S., Walid, Md. A. A., & T, T. (2023). Business Process Automation using Robotic Process Automation (RPA) and AI Algorithm's on Various Tasks. 2023 8th *International Conference on Communication and Electronics Systems (ICCES)*, 821–827. <https://doi.org/10.1109/icc57224.2023.10192653>.
- Deloitte. (2021). Robotic Process Automation in financial services. Retrieved from <https://www2.deloitte.com/us/en/pages/consulting/articles/transforming-financial-services-with-robotics-and-cognitive-automation.html>.
- Fernandez, D., & Aman, A. (2018). Impacts of Robotic Process Automation on Global Accounting Services. *Asian Journal of Accounting Perspectives*, 11(1), 1-11. DOI: 10.22452/AJAP.vol11no1.7.
- Gepp, A., Linnenluecke, M. K., O'Neill, T. J., & Smith, T. (2018). Big Data Techniques in Auditing Research and Practice: Current Trends and Future Opportunities. *Journal of Accounting Literature*, 40, 102-115. DOI: 10.1016/j.acclit.2017.05.003.
- Harrast, S. A. (2020). Robotic process automation in accounting systems. *Journal of Corporate Accounting & Finance*, 31(4), 209–213. <https://doi.org/10.1002/jcaf.22457>.
- Hazar, H. B., & Toplu, C. (2023). The use of robotic process automation in accounting. *Prizren social science journal*, 7(3), 45-50.
- Huang, H. H., & Vasarhelyi, M. A. (2019). Applying Robotic Process Automation (RPA) in Audit Practice. *Journal of Emerging Technologies in Accounting*, 16(1), 1-10. DOI: 10.2308/jeta-52465.
- Issa, H., Sun, T., & Vasarhelyi, M. A. (2016). Research Ideas for Artificial Intelligence in Auditing: The Formalization of Audit and Workforce Supplementation. *Journal of Emerging Technologies in Accounting*, 13(2), 1-20. DOI: 10.2308/jeta-10511.
- Jacob, M. W., & Charlotte, L. J. (2024). Automation and Robotic Process Automation (RPA) in Financial Auditing: Efficiency vs. Job Displacement. Harvard University. <https://www.researchgate.net/publication/39062177>.
- Kokina, J., & Blanchette, S. (2019). Perceptions of Robotic Process Automation in Big 4 Public Accounting Firms: Challenges and Opportunities. *Journal of Emerging Technologies in Accounting*, 16(1), 33-46. DOI: 10.2308/jeta-52466.
- Kokina, J., Mancha, R., & Pachamanova, D. (2017). “The Role of Blockchain Technology in Accounting: A Review of the Literature.” *Journal of Emerging Technologies in Accounting*, 14(1), 1-12.
- Warren, J. D., & Hutchinson, M. (2019). “Blockchain and the Future of Accounting: A Review of the Literature and a Research Agenda.” *Accounting Horizons*, 33(2), 1-15.
- Kokina, J., Mancha, R., & Pachamanova, D. (2017). Blockchain: Emergent Industry Adoption and Implications for Accounting. *Journal of Emerging Technologies in Accounting*, 14(2), 91-100. DOI: 10.2308/jeta-51911.
- König, M., Bein, L., Nikaj, A., & Weske, M. (2020). Integrating Robotic Process Automation into Business Process Management. In *Lecture Notes in Business*



- Information Processing (pp. 132-146). Springer International Publishing. https://doi.org/10.1007/978-3-319-91810-1_9.
- KPMG. (2021). "The Future of Audit: Data Analytics and Automation."
- Kuhn, J. R., & Sutton, S. G. (2010). Continuous Auditing in ERP System Environments: The Current State and Future Directions. *Journal of Information Systems*, 24(1), 91-112. DOI: 10.2308/jis.2010.24.1.91.
- Moffitt, K. C., Rozario, A. M., & Vasarhelyi, M. A. (2018). Robotic Process Automation for Auditing. *Journal of Emerging Technologies in Accounting*, 15(1), 1-10. DOI: 10.2308/jeta-10589.
- Plattfaut, R. & Borghoff, V. (2022). Robotic Process Automation: A Literature-Based Research Agenda. *Journal of Information Systems*, 36 (2), 173-191. <https://doi.org/10.2308/ISYS-2020-033>.
- PwC, 2021. How auditors combine tech know-how and finance skills to drive innovation. PwC. Retrieved from <https://www.pwc.com/us/en/tech-effect/automation/audit-technology-and-digital-skills.html>.
- Rozario, A. M., & Vasarhelyi, M. A. (2018). Applying Robotic Process Automation (RPA) in Auditing: A Framework. Rutgers Business School Research Paper. DOI: 10.2139/ssrn.3299864.
- Sutton, S. G., & Arnold, V. (2018). Examining the Impact of Robotic Process Automation on Audit Practices. *Current Issues in Auditing*, 12(2), A1-A10. DOI: 10.2308/ciia-52178.
- Swan, M. (2015). *Blockchain: Blueprint for a New Economy*. O'Reilly Media.
- Vasarhelyi, M. A., Kogan, A., & Tuttle, B. (2015). Big Data in Accounting: An Overview. *Accounting Horizons*, 29(2), 381-396. DOI: 10.2308/acch-51071.
- Warren, J. D., Moffitt, K. C., & Byrnes, P. (2015). How Big Data Will Change Accounting. *Accounting Horizons*, 29(2), 397-407. DOI: 10.2308/acch-51069.
- White, D. K. (2025). Robotic Process Automation for Intelligent Business Process Management. *International Journal of Innovative Computer Science and IT Research*, 1(02), 1-11. <https://doi.org/10.63665/ijicsitr.v1i02.05>.
- Yoon, K., Hoogduin, L., & Zhang, L. (2015). Big Data as Complementary Audit Evidence. *Accounting Horizons*, 29(2), 431-438. DOI: 10.2308/acch-51076.
- Zhao, J., Fan, S., & Yang, Y. (2020). "Blockchain Technology and Its Applications in the Accounting and Audit Sector." *Journal of Accounting and Finance*, 20(2), 1-12.

COPYRIGHTS



This license allows others to download the works and share them with others as long as they credit them, but they can't change them in any way or use them commercially.

