



Swami Vivekananda Advanced Journal for Research and Studies
Online Copy of Document Available on: www.svajrs.com

ISSN:2584-105X

Pg. 272- 277



The Impact of Intelligent Automation on Banking Performance: A Review Study on AI-Driven Decisions through Robotics Process Automation

Kirti Verma

Research Scholar, Department of Applied Economics, University of Lucknow

Raza Shabbir

Assistant Professor, Shia PG College, Lucknow Affiliated to University of Lucknow.

Accepted: 22/05/2026

Published: 23/05/2026

DOI: <http://doi.org/10.5281/zenodo.20354198>

Abstract

In the age of emerging technologies, the integration of Intelligent Automation (IA) through Artificial Intelligence (AI) and Robotic Process Automation (RPA) is transforming the operational and strategic dimensions of the banking sector. This literature-based study critically examines the impact of AI-driven decision-making and RPA implementation on banking performance, focusing on efficiency, customer experience, compliance, and risk management. Banks worldwide are leveraging intelligent automation to streamline routine processes, reduce operational costs, enhance accuracy, and deliver real-time services. AI-enabled process is also facilitating advanced fraud detection, predictive analytics, and personalized customer interactions. However, the adoption of these technologies introduces challenges such as cybersecurity risks, automation bias, legacy system integration, and ethical concerns too. This study explores findings, inputs from industry case studies, and theoretical frameworks to highlight both the benefits and limitations of intelligent automation in banking. The analysis reveals that while IA significantly improves productivity and decision-making, its sustainable implementation needs strategic governance, regulatory alignment, and a human-centric approach. The study concludes by identifying key research gaps and proposing future directions for evaluating long-term outcomes, including environmental sustainability and workforce impacts. This review paper contributes to the growing discourse on digital transformation in financial services, offering practical insights for policymakers, banking professionals, and researchers aiming to optimize AI-RPA integration.

Keywords: *Intelligent Automation (IA), Artificial Intelligence (AI), Robotic Process Automation (RPA), Banking Performance, Review Study*

1. Introduction

In the age of Rapid developments in digital technologies like robotic process automation (RPA), machine learning (ML), and artificial intelligence (AI), there is a radical change in the global banking industry. These technologies work together to create Intelligent Automation (IA), which is transforming the process and existing systems bank's function, provide services, and make decisions. Intelligent automation incorporates cognitive skills to facilitate data-driven decision-making, predictive analytics, and dynamic process optimization, in contrast to classical automation, which concentrates on rule-based job execution. This shift affects key areas including operational efficiency, customer engagement, compliance, and risk management and is not just technological in nature. Dalsaniya, A., & Patel, K. (2022).

The usages of AI-driven RPA have become a crucial enabler in a time when financial institutions are under increasing pressure to reduce expenses, increase accuracy, improve client experiences, and react quickly to regulatory changes. High-volume operations like loan processing, fraud detection, customer onboarding, and regulatory reporting are now being automated by banks with amazing speed and accuracy. In a highly dynamic financial market, these advances promise both competitive advantage and efficiency gains. Despite these advantages, the integration of intelligent automation presents several challenges. Issues such as data privacy, cybersecurity risks, workforce displacement, ethical concerns, and regulatory alignment demand careful managerial and policy attention. Moreover, the lack of empirical studies evaluating long-term sustainability and impact on human capital creates a gap in both academic and industry discourse. This literature-based study aims to critically examine the business impact of AI-driven

decision-making through RPA in banking. By exploring and analysing existing literature, case studies, and secondary sources, it explores how intelligent automation reshapes performance, highlights its benefits and limitations, and identifies strategic imperatives for its successful adoption. The study also offers insights into emerging risks and proposes future directions for sustainable integration of intelligent systems in the banking ecosystem.

2. Literature Review:

The advent of intelligent automation—often framed as the integration of robotic process automation (RPA) with artificial intelligence (AI)—is revolutionizing operational and strategic dimensions within the banking industry. RPA excels at performing repetitive, rule-based tasks with speed and precision (Investopedia, 2017), while AI infuses these bots with learning and decision-making capabilities. Together, they form a potent hybrid capable of transforming efficiency, compliance, customer service, and risk management (Gartner, 2020; MDPI, 2022).

2.1 Operational efficiency and cost reduction

RPA's primary value proposition lies in automating mundane back-office functions such as data entry, reconciliation, loan processing, and credit card issuance. For instance, banks using RPA have reported reductions in process turnaround time from days to just minutes, alongside a 30% decrease in operational costs (SGAnalytics, 2025; Codetru, 2024). At Wells Fargo, RPA-driven automation in fraud monitoring enhanced detection capabilities and accelerated response times (AppInventiv, 2025). Similarly, Deutsche Bank automated trade finance and cash operations, significantly improving output quality and throughput (Kizen, 2025). JPMorgan Chase reported annual savings of 360,000 human work hours after deploying RPA in commercial loan processing (Kizen, 2025).

Literature confirms that such operational gains are widespread: a financial-services sector review indicates invoice processing speed improved by 50%, compliance reporting became real-time, and bots operated at nearly 99% uptime versus typical human coverage (Cleveroad, 2024; Asset Voyager, 2025). However, rapid implementation demands substantial upfront investment in integration with legacy systems, security, and training (Asset Voyager, 2025; AppInventiv, 2025).

2.2 Customer experience and personalization

Banks are leveraging AI-augmented RPA to enhance customer interactions. Chatbots powered by natural language processing (NLP) handle routine queries 24/7, freeing human agents for complex requests (Jellyfish, 2025; Cleveroad, 2024). Bank of America reduced response times significantly by automating FAQs and simple transactions (AppInventiv, 2025). These technologies enable personalized product recommendations and sentiment-aware feedback, improving satisfaction and loyalty (Jellyfish, 2025).

Despite benefits, user reception of chatbots is mixed: one study found that over 80% of customers preferred human interaction after using chatbots (Lucent Innovation, 2025). Thus, the hybrid AI-RPA must balance automation with empathetic, human-based support to avoid alienating users.

2.3 Compliance, risk management and fraud detection

It is a common observation that highly regulated banks are increasingly adopting intelligent automation to manage compliance and minimize risks. RPA supports continuous, auditable processes for KYC, AML, and regulatory reporting (A3Logics, 2025; SGAnalytics, 2025). Axis Bank, for example, deployed RPA to bolster fraud detection, identifying anomalies in real time while complying with evolving regulations (Ciotech Outlook, 2025). Deutsche Bank also

experienced cost savings through automated compliance and fraud monitoring (Ciotech Outlook, 2025).

AI-enhanced RPA systems learn from historical fraud patterns and adaptively update detection models, outperforming rule-based systems alone (Ciotech Outlook, 2025; Direct Impact Solutions, 2025). Moreover, AI-driven credit risk systems can process large datasets using deep learning to detect early signs of default (Bi & Bao, 2024), while machine-learning underwriting tools such as Upstart and ZestFinance leverage data analytics to assess creditworthiness (Wikipedia, 2025).

However, increasing automation raises concerns around cybersecurity, data integrity, and overreliance on automated outputs, commonly termed 'automation bias'. AI systems may be vulnerable to adversarial attacks if not designed with robust defense and explainability (Kovacevic et al., 2024; Schemmer et al., 2022). Banks must therefore integrate explainable AI (XAI) frameworks to ensure transparency, auditability, and trust in AI-guided processes (Hanif, 2021; Schemmer et al., 2022).

2.4 Synergy of AI and RPA and sustainability considerations in Banking

While classic RPA addresses repetitive tasks, intelligent automation extends capabilities to pattern analysis, decision-making, data classification, and predictive insights (Wikipedia, 2025). A comprehensive review of AI-RPA integration highlights benefits such as operational agility and service quality, but also underscores the scarcity of sustainable integration models that incorporate social and environmental impacts (MDPI, 2022). The literature proposes maturity frameworks that assess readiness, deployment, performance metrics, and sustainability indicators—enabling ongoing

evaluation across operational, social, and environmental domains (MDPI, 2022).

Despite the strategic appeal, empirical studies on long-term impacts remain limited. Most banks focus on cost and efficiency metrics, neglecting broader outcomes such as workforce displacement, ethical implications, data privacy, and cyber risk management (MDPI, 2022).

2.5 Challenges and mitigation strategies Towards AI-Human Collaboration

Key adoption challenges include integration with legacy systems, high initial costs, data security concerns, resistance from employees fearing redundancy, and technical errors causing compliance risk (AppInventiv, 2025; Asset Voyager, 2025). Case studies recommend phased implementation, pilot projects, stakeholder engagement (IT, compliance, HR), robust change management, employee retraining, and continuous performance monitoring (Asset Voyager, 2025). To mitigate data-related risks, effective encryption, regular audits, and privacy compliance are essential. Preventing automation bias requires embedding XAI tools that expose decision rationales and enforce human oversight (Hanif, 2021; Schemmer et al., 2022). Study results suggest that properly designed explainable interfaces reduce commission errors and promote balanced AI-human collaboration (Schemmer et al., 2022).

3. Research Objectives

1. To explore the impact of AI-driven decision-making through Robotic Process Automation (RPA) on operational efficiency and customer experience.
2. To analyse the challenges and strategic considerations associated with the adoption of intelligent automation in banking.

4. Research Design and Method

A thorough literature assessment of peer-reviewed journal articles, case studies, white papers, and industry reports published between 2015 and 2025 served as the foundation for the qualitative research design used in this study. Academic databases including Scopus, Web of Science, Google Scholar, and other institutional repositories were the sources of secondary data. Operational efficiency, customer experience, compliance, and risk management are the four main categories into which the assessment synthesizes insights using a thematic approach. Publications that discuss AI, RPA, and intelligent automation in banking were the main emphasis of the inclusion criteria.

5. Statement of Research Gaps

Only few prior studies explore the problems of Intelligent Automation (IA) through Artificial Intelligence (AI) and Robotic Process Automation (RPA) in terms of pure research. Future research should critically appraise long-term implications of intelligent automation in banking. Empirical investigations into social effects—such as skill-level disruption, job displacement, customer acceptance, and internal oversight—are notably absent (MDPI, 2022). There is also an emergent need to explore and evaluate environmental impact: energy consumption, digital waste, and carbon footprints associated with AI-RPA infrastructure and any collaboration. In this way, the ethical governance of autonomous decision systems—especially in areas like loans and fraud detection—requires regulatory attention and transparency frameworks.

6. Key Managerial Imperatives for Banking Professionals

In today's rapidly evolving financial landscape, banking professionals must navigate a complex mix of technological innovation, regulatory compliance,

customer expectations, and risk management. Key managerial imperatives include fostering digital literacy and embracing intelligent automation to improve operational efficiency and decision-making. Managers must champion the integration of technologies such as AI, RPA, and data analytics while ensuring cybersecurity and data privacy standards are met. Strategic leadership is essential to drive innovation and maintain a customer-centric culture that focuses on personalized service and relationship management. Regulatory compliance, including adherence to KYC norms, must be managed proactively with continuous monitoring and adaptation to policy changes. Moreover, managers/professionals in banking sector should invest in workforce reskilling and change management to support staff through digital transitions, reducing resistance and increasing adaptability. Ethical governance and sustainability must also be prioritized, ensuring transparency, accountability, and long-term value creation. In the age of heightened competition and disruptive fintech entrants, banking professionals must demonstrate agility, resilience, and a commitment to continuous learning. These imperatives are not only crucial for institutional performance but also for maintaining public trust and long-term industry relevance in an increasingly automated and customer-driven financial ecosystem.

7. Limitations of the Study

Present study is mainly based on published work by academicians and other industry people. If, first hand responses will be there then key observations related to Intelligent automation, robotic interface and AI usages might differ. Banking users are not included under this study. Their qualitative sentiments might offer more practical lessons and improvement areas in Intelligent Automation (IA) through Artificial Intelligence (AI) and Robotic Process Automation (RPA).

8. Conclusion

Present study explores the various dimensions covering of Intelligent automation and robotic process automation in banking is already delivering significant improvements in efficiency, customer experience, and compliance. Empirical evidences from global banks confirms quantifiable gains such as reduced processing times, cost savings, improved service responsiveness, and enhanced fraud detection. Still adoption is not prominent without challenges: system integration, security, bias, and workforce impacts must be carefully managed. Paper highlights that AI-empowered RPA systems provide scalable, adaptive automation in managing customer experience in Banks. Literature emphasizes the importance of descriptive insights, explainability, human oversight, and governance to avoid overreliance and systemic risks. Moreover, sustainable integration ranging across disciplines like economic, social, and environmental dimensions remains underexplored. This review paper suggests future research should include mixed-method approaches—quantitative performance analysis and qualitative stakeholder perspectives—to holistically evaluate intelligent automation outcomes in banking sector. Frameworks of AI and RPA should incorporate sustainability indicators, human-Centric Job design, and policy mechanisms to ensure responsible adoption.

References

1. A3Logics. (2025). Robotic Process Automation (RPA) in Banking | Use Cases. Ciotech Outlook.
2. AppInventiv. (2025). Transforming banking efficiency: Robotic Process Automation in Banking. AppInventiv.
3. Bi, S., & Bao, W. (2024, April 28). Innovative application of artificial intelligence technology in bank credit risk management. *arXiv*. <https://arxiv.org/abs/2404.18183>
4. Cleveroad. (2024). RPA in Banking: Use Cases You Should Know About. Cleveroad.

5. Codetru. (2024). RPA in Banking Industry – Benefits, use cases, implementation. Codetru.
6. Dalsaniya, A., & Patel, K. (2022). Enhancing process automation with AI: The role of intelligent automation in business efficiency. *International Journal of Science and Research Archive*, 5(2), 322-337.
7. Direct Impact Solutions. (n.d.). RPA Solutions: A Revolution in Banking Operations. Direct Impact Solutions.
8. Gartner. (2020). Intelligent automation. In *Journal of Securities Operations & Custody* (Vol. 12, Issue 3, p. 266–277).
9. Hanif, A. (2021, December 14). Towards explainable artificial intelligence in banking and financial services. *arXiv*. <https://arxiv.org/abs/2112.08441>
10. Investopedia. (2017, February 27). Robotic Process Automation (RPA): Definition and benefits.
11. Jellyfish Technologies. (2025). RPA in Banking Industry: Benefits & Top 25 Use Cases 2025!
12. Kizen. (2025). RPA in Banking: A Transformative Implementation Guide.
13. Kovacevic, A., Radenkovic, S. D., & Nikolic, D. (2024, November 28). Artificial intelligence and cybersecurity in banking sector: opportunities and risks. *arXiv*. <https://arxiv.org/abs/2412.04495>
14. MDPI. (2022). Integration of artificial intelligence and robotic process automation: Literature review and proposal for a sustainable model. *Applied Sciences*, 14(21), 9648.
15. Schemmer, M., Kühl, N., Benz, C., & Satzger, G. (2022, April 19). On the influence of explainable AI on automation bias. *arXiv*. <https://arxiv.org/abs/2204.08859>
16. SGAnalytics. (2025). RPA in Banking Industry benefits & use cases implementation.
17. SGAnalytics. (2025). RPA in banking industry benefits use cases implementation.

Disclaimer/Publisher’s Note: The views, findings, conclusions, and opinions expressed in articles published in this journal are exclusively those of the individual author(s) and contributor(s). The publisher and/or editorial team neither endorse nor necessarily share these viewpoints. The publisher and/or editors assume no responsibility or liability for any damage, harm, loss, or injury, whether personal or otherwise, that might occur from the use, interpretation, or reliance upon the information, methods, instructions, or products discussed in the journal’s content.
