



**Research Methodology in Computer
Science (AI800)**

Automation of Financial Accounting using Artificial Intelligence

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Research Methodology in Computer Science (AI800)

Assignment: Literature Review Report

Automation of Financial Accounting using Artificial Intelligence

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Abstract

This research paper explores how Artificial Intelligence (AI) is transforming financial accounting through automation technologies such as Machine Learning (ML) and Robotic Process Automation (RPA). The review examines six recent studies (2019–2025) focusing on the impact, methodologies, and limitations of AI-driven automation in accounting. Key findings reveal that AI significantly enhances efficiency, accuracy, and fraud detection in accounting operations, but challenges remain regarding data quality, interpretability, and regulatory oversight. The paper concludes with identified research gaps and recommendations for future studies.

1. Introduction

The integration of Artificial Intelligence (AI) into financial accounting has marked a major shift in how organizations handle data processing, auditing, and financial reporting. Automation technologies like Machine Learning (ML), Natural Language Processing (NLP), and Robotic Process Automation (RPA) have reduced human errors, accelerated workflows, and enhanced financial transparency. This paper provides a literature review of six academic studies published between 2019 and 2025 that explore the applications, benefits, and challenges of AI in automating financial accounting tasks.

2. Literature Review

2.1 Robotic Process Automation (RPA) in Accounting and Auditing of Business and Financial Information (2023)

Summary: This paper surveys RPA applications in accounting and auditing. Using case studies and literature synthesis, it demonstrates how RPA and AI improve data accuracy and reduce manual workloads.

Critical Analysis: Strengths: Offers detailed industry cases and real-world examples. Weaknesses: Relies on descriptive analysis with limited empirical validation.

2.2 Automation of Accounting Processes: Impact of Artificial Intelligence (2024)

Summary: Evaluates AI's effect on accounting efficiency through surveys and case analyses. The study shows that AI tools increase productivity and reliability of reports.

Critical Analysis: Strengths: Combines qualitative and quantitative data. Weaknesses: Small sample size and subjective responses.

2.3 Automation and Artificial Intelligence in Accounting — A Bibliometric Analysis and Future Trends (2025)

Summary: Conducts a bibliometric review of AI applications in accounting. Identifies three major themes: RPA, fraud detection via ML, and AI-assisted auditing.

Critical Analysis: Strengths: Provides a comprehensive research overview. Weaknesses: Does not include experimental results.

2.4 Management Accounting and Artificial Intelligence (2025)

Summary: Discusses AI applications in management accounting processes such as budgeting and forecasting. Shows improved accuracy and decision-making efficiency.

Critical Analysis: Strengths: Connects AI with strategic planning. Weaknesses: Lacks quantitative data validation.

2.5 Predicting Financial Report Fraud by Machine Learning (2025)

Summary: Applies ML algorithms like Random Forest and XGBoost to detect financial statement fraud. The models outperform rule-based systems in accuracy.

Critical Analysis: Strengths: Strong empirical methodology. Weaknesses: Limited dataset diversity and model interpretability.

2.6 Impact of Using Artificial Intelligence Applications on the Reliability of Financial Data (2023)

Summary: Explores how AI affects the reliability of financial information using surveys and statistical analysis. Finds increased trust and reduced manual errors.

Critical Analysis: Strengths: Addresses both technical and organizational effects. Weaknesses: Dependent on perception-based responses.

2. Cross-Paper Synthesis and Discussion

The reviewed studies collectively emphasize that AI and RPA enhance efficiency, accuracy, and fraud detection in accounting. Common findings include faster data processing, improved reporting, and reduced repetitive work. However, consistent challenges such as data quality, skills gaps, governance issues, and limited empirical evidence persist. While some studies rely on quantitative metrics, others depend heavily on qualitative perceptions, creating inconsistencies in assessing true performance outcomes.

3. Summary Table of Reviewed Papers

Year	Paper Title	Methodology	Key Findings	Weaknesses
2023	RPA in Accounting	Case studies	Enhanced accuracy and efficiency	Limited empirical evidence
2024	AI Impact on Accounting	Surveys + case studies	Improved efficiency and reliability	Small sample size
2025	AI in Accounting (Bibliometric)	Bibliometric review	Identified major AI research trends	No experimental results
2025	Management Accounting & AI	Conceptual analysis	Improved forecasting and decision-making	Lacks quantitative validation
2025	ML Fraud Detection	Machine learning modeling	High fraud detection accuracy	Dataset bias, low interpretability
2023	AI and Data Reliability	Survey analysis	Increased reliability and audit focus	Perception-based outcomes

4. Conclusion

This literature review confirms that Artificial Intelligence plays a transformative role in automating financial accounting. AI-powered tools such as RPA and ML improve operational accuracy and speed, while predictive models enhance fraud detection. However, there are ongoing challenges including model explainability, governance, and lack of longitudinal studies evaluating AI's true impact. Future research should focus on explainable AI models, standardized performance metrics, and ethical frameworks to ensure transparency and reliability in financial automation.

5. References

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