

Implications of the Use of Artificial Intelligence Technology on the Transformation of the Accounting Profession in the Indonesian Banking Sector

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ABSTRACT

The rapid adoption of Artificial Intelligence (AI) has reshaped the accounting profession, yet its specific impact within Indonesia's banking sector remains underexplored. This study aims to analyze how AI transforms accountants' roles across different banking types, employing a qualitative case study approach on state-owned banks (BRI and Mandiri), private banks (BCA), and digital banks (SeaBank and Bank Jago). The findings show that AI shifts accountants' responsibilities from routine administrative tasks toward analytical and strategic functions, particularly in algorithm validation and risk management. The degree of implementation varies: state-owned banks struggle with legacy system integration, private banks emphasize reputation risks, and digital banks focus on cybersecurity challenges. These changes require accountants to develop new competencies, including data literacy, AI system understanding, and advanced analytical skills. The study concludes that AI both introduces new risk dimensions and strengthens risk mitigation practices, offering implications for professional adaptation strategies and educational policy development.

Keywords: Artificial Intelligence, accounting profession, banking sector, risk management, digital transformation.

INTRODUCTION

The accounting profession plays a fundamental role in maintaining integrity, transparency, and accountability of financial information within the banking sector. Accountants are no longer limited to preparing financial statements; they now serve as strategic partners supporting risk management, governance, and data-driven decision-making. Regulatory reforms, evolving reporting standards, and increasing stakeholder demands for transparency require accountants to adapt to digital reporting systems, large-scale data analytics, and automation. The International Federation of Accountants (1) emphasizes that accountants must master technological competencies to remain relevant in an increasingly digitalized business environment. In Indonesia, the Institute of Public Accountants of Indonesia (2) highlights a technological skill gap that may hinder accountants' contributions to risk mitigation strategies in the banking sector.

A major driver of this transformation is the adoption of Artificial Intelligence (AI) in banking. AI technologies are widely utilized to strengthen risk management, including real-time fraud detection, automated credit scoring, customer service chatbots, transaction behavior analytics, and regulatory compliance monitoring. The extent of AI implementation varies across banking categories in Indonesia—state-owned banks, private national banks, and digital banks. This study focuses on four representative cases: Bank Rakyat Indonesia (BRI) and Bank Mandiri (state-owned), Bank Central Asia (BCA) (private), and SeaBank and Bank Jago (digital). These institutions were selected to reflect diverse operational scales and AI adoption complexities that directly influence the evolving roles of accountants.

For instance, Bank Rakyat Indonesia (BRI) has integrated AI and Big Data Analytics through its BRIBrain platform to accelerate credit analysis, enhance risk assessment accuracy, and detect suspicious transactions. According to the 2023 Annual Report and an official @bankbri_id Instagram post (November 15, 2023, #BRIBrainUntukNegeri), this technology reduced credit analysis time from days to minutes while increasing assessment accuracy by 30%. Similarly, BCA, in its 2023 Sustainability Report, highlights the use of AI to improve regulatory compliance and minimize operational risk. Meanwhile, digital banks such as SeaBank and Bank Jago leverage AI for application-based services, including customer behavior analytics for product personalization and digital security systems. These variations demonstrate that different banking categories present distinct AI complexities, ultimately reshaping accountants' work patterns, required competencies, and responsibilities.

Bank Central Asia (BCA), a major private national bank, utilizes AI primarily to enhance risk governance and data security. The 2023 Sustainability Report describes AI applications in fraud detection, Anti-Money Laundering (AML), and optimization of the myBCA app. Through its official LinkedIn post (September 14, 2023), BCA announced that its machine learning models improved money-laundering detection accuracy by 25% and accelerated internal investigations. These innovations strengthen internal risk controls while demanding that accountants develop data-driven auditing and analytical skills to assess regulatory compliance.

In contrast, digital banks such as SeaBank rely on AI as their operational backbone. The 2023 Annual Report notes the use of Optical Character Recognition (OCR) for faster account opening, machine learning for creditworthiness analysis, and an AI-powered chatbot ("Sinta") operating 24 hours a day via Natural Language Processing (NLP). A promotional video on SeaBank's official TikTok account (@seabankid, January 21, 2024) demonstrated these capabilities; however, user comments also revealed limitations in handling complex issues such as transaction cancellations or detailed complaints. This example underscores that while AI enhances efficiency, digital service risks must be managed effectively, particularly through the accountant's role in ensuring system accountability and customer protection.

Despite its benefits, AI implementation introduces new risk challenges. Kokina and Davenport (6) warn that AI in financial sectors may create algorithmic bias, opaque decision-making, and accountability issues. Complaints regarding SeaBank's chatbot performance illustrate how technological limitations can reduce service quality. Moreover, data security remains a critical concern since customer financial data are classified as sensitive information under Law No. 27 of 2022 on Personal Data Protection (11). From a risk management theory perspective, failure to control technological and operational risks can trigger reputational risk, eroding public trust and altering expectations of accountants' roles in governance and technology-based risk mitigation.

According to the Risk Management Theory proposed by Hillson and Murray-Webster (4), accountants play a strategic role in ensuring system reliability, data validity, and regulatory compliance amid AI adoption in banking. Accountants are required not only to understand financial processes but also to master technological aspects related to operational, reputational, and compliance risks. The ability to evaluate algorithms, identify potential data bias, and formulate risk-based recommendations positions accountants as vital intermediaries between technological innovation and corporate governance.

Therefore, this study aims to explore how the utilization of AI technology affects the transformation of the accounting profession in Indonesia's banking sector through a qualitative approach. The analysis focuses on differences in AI implementation across state-owned, private, and digital banks, and its implications for accountants' evolving roles. The results are expected to provide academic contributions to the literature on accounting and technological transformation, as well as practical insights for accountants, financial institutions, and educational bodies in developing adaptive strategies for the digital era.

RESEARCH METHOD

Research Type and Approach

This study adopts a qualitative research design with an exploratory case study approach, in which the theoretical framework plays a central role in guiding the analysis. The qualitative approach allows an in-depth understanding of the complexities surrounding the utilization of Artificial Intelligence (AI) and its implications for the evolving roles and competencies of accountants in Indonesia's banking sector (3).

The research objects are classified into three categories of banks: state-owned banks, private banks,

and digital banks. This classification represents the overall structure of Indonesia's banking industry, highlighting variations in strategy, technological readiness, and risk management practices within each category.

1. State-Owned Banks – *Bank Rakyat Indonesia (BRI)* and *Bank Mandiri*
BRI was selected due to its extensive customer base, nationwide service network, and significant involvement in national financial inclusion programs. Its 2023 Sustainability Report indicates AI implementation in fraud detection, credit risk analysis, and customer service enhancement. Bank Mandiri, on the other hand, is known for its aggressive digital transformation strategy, particularly through its AI-based super-app *Livin' by Mandiri*, which integrates big data analytics and risk management innovation.
2. Private Bank – *Bank Central Asia (BCA)*
BCA was chosen for its consistent investment in banking technology, including AI integration for e-banking services and customer behavior analysis. The 2023 Annual Report highlights AI utilization in product personalization, anti-fraud systems, and operational efficiency—making BCA representative of the private banking category.
3. Digital Banks – *SeaBank Indonesia* and *Bank Jago*
SeaBank represents a fully digital banking model without physical branches, leveraging AI for *Optical Character Recognition (OCR)*-based identity verification, automated credit scoring, and *Natural Language Processing (NLP)* chatbots. Bank Jago emphasizes collaborative strategies within the digital ecosystem through integrations with *Gojek* and *Bibit*, implementing AI in risk scoring, transaction analysis, and user experience enhancement.

Following Yin's (2018) guidelines, the exploratory case study approach is appropriate for examining contemporary phenomena where the boundaries between the phenomenon and context are blurred. In this case, AI implementation in banking cannot be separated from business strategy, organizational structure, and institutional culture. Comparing these three bank categories allows the study to identify variations in AI strategy, risk exposure, and accountants' responses to technological transformation.

Research Strategy

This research employs a single-case study design with multiple units of analysis (5). The single case focuses on the transformation of accountants' roles and competencies resulting from AI utilization in Indonesia's banking sector. The multiple units of analysis enable examination across three distinct banking contexts:

1. State-Owned Banks – representing public institutions with broad service coverage and systemic stability responsibilities.
2. Private National Banks – representing financially flexible institutions emphasizing technological innovation.
3. Digital Banks – representing branchless banks operating entirely on digital platforms and pioneering AI adoption.

These categories were selected to provide a comprehensive overview of how AI adoption influences the accounting profession under varying business structures, organizational cultures, and strategic objectives. The selection was based on public information availability, access to official reports, and the relevance of AI applications in each bank type.

Data Collection Techniques

All data in this research are secondary data obtained from credible and publicly accessible sources. Secondary data were chosen to focus on analyzing AI-related policies, practices, and implications in banking through existing published materials, without conducting direct interviews or field observations. The data collection process consisted of the following steps:

1. Literature Review and Official Documents
 - Reviewing academic journals, books, and research reports on AI, accounting professions, and risk management.
 - Using annual and sustainability (ESG) reports from state-owned (BRI and Bank Mandiri), private (BCA), and digital banks (SeaBank and Bank Jago) to extract relevant information on AI implementation in accounting, auditing, and financial services.

2. Publications from Official Institutions and Professional Associations

- Utilizing documents from *Otoritas Jasa Keuangan (OJK)*, *Bank Indonesia (BI)*, and *Ikatan Akuntan Indonesia (IAI)* to understand the regulatory framework and guidelines for AI and risk management in banking.
- Referring to international publications by *ICAEW*, *Deloitte*, *PwC*, and *McKinsey* for comparative insights into global banking AI practices (14) (15) (16) (17).

3. Official Social Media Content of Banks

- Collecting data from verified posts on *Instagram*, *LinkedIn*, and *YouTube* accounts of each bank to complement official reports with real-time information about AI innovation, accountant training programs, and digital campaigns.
- Analyzing user feedback to capture public sentiment and challenges in AI implementation from the customer perspective.

The collected data were analyzed thematically to identify relevant patterns linking AI implementation and accountants' evolving roles. Following Yin's (2018) framework, secondary data serve as valid evidence when systematically managed and analyzed in exploratory case studies.

RESULTS AND DISCUSSION

Implementation of Artificial Intelligence in Indonesian Banking

The implementation of Artificial Intelligence (AI) across Indonesian banks shows diverse levels of maturity, influenced by organizational scale, infrastructure, and strategic priorities. State-owned banks such as *Bank Rakyat Indonesia (BRI)* and *Bank Mandiri* have integrated AI into large-scale risk management frameworks, focusing on fraud detection, credit scoring, and digital customer service. BRI's *BRIBrain* system applies machine learning for microcredit risk assessment and transaction monitoring, reducing credit analysis time from days to minutes while improving accuracy by 30% (7). Similarly, Bank Mandiri integrates *predictive analytics* within its *Mandiri Data Lake* to identify potential credit risks early and applies *facial recognition* and *liveness detection* for secure digital KYC processes (8).

Despite these advances, legacy systems remain a major obstacle for state-owned banks, causing integration inefficiencies and higher operational risk. These institutions require extensive data governance frameworks and continuous staff training to ensure effective AI adoption. Consequently, accountants in such banks must possess hybrid competencies in data analytics, compliance, and technological oversight to remain relevant in increasingly digital environments.

Private banks, represented by *Bank Central Asia (BCA)*, demonstrate more agility in leveraging AI. BCA employs machine learning for *credit risk modeling*, *fraud detection*, and *predictive analytics* to support real time, data-based decision-making. Its AI-driven systems contributed to reducing non-performing loan (NPL) ratios from 2.2% to 2.0% in 2023 (9). The BCA Virtual Assistant (VIRA), an NLP-based chatbot, handles over 1.5 million monthly interactions with 94% accuracy, significantly reducing operational workload. However, challenges remain in system integration, data protection compliance, and human resource development—requiring accountants to act as both analysts and compliance monitors.

Digital banks such as *SeaBank* and *Bank Jago* represent the forefront of AI-driven banking in Indonesia. Operating fully online, SeaBank utilizes AI for *e-KYC verification*, *automated credit scoring*, and *chatbot based customer service*. The system enables account opening in less than five minutes and maintains NPL levels below 1.5% despite increased lending volumes (10). However, digital service risks persist—users report difficulties in resolving complex issues through chatbots. SeaBank mitigates these challenges by updating algorithms quarterly and collaborating with cybersecurity partners to enhance system resilience.

Across these categories, the complexity of AI implementation varies: state-owned banks prioritize operational and integration risks, private banks focus on reputational and compliance risks, while digital banks emphasize cybersecurity and data privacy. This diversity reinforces that no single AI strategy fits all banking models, highlighting the need for adaptive risk management that aligns with institutional context and regulatory frameworks.

Implications for the Accounting Profession

AI adoption in the banking sector has redefined the role of accountants, shifting them from traditional record-keepers to strategic data analysts and risk governance specialists. In BRI and Bank Mandiri, accountants participate in AI model validation, interpreting algorithmic results in credit risk assessments and ensuring regulatory compliance. The need for continuous upskilling—particularly in data analytics and digital ethics—has become evident.

At BCA, accountants are increasingly required to understand programming languages such as Python or SQL to interpret AI-generated data and oversee fraud detection systems. Their involvement in resolving algorithmic errors—such as false transaction flags—illustrates the growing importance of accountants as intermediaries between technology and governance.

For digital banks like SeaBank, accountants play a critical role in ensuring algorithmic fairness and data security in compliance with OJK and *Personal Data Protection Law No. 27/2022 (12)*. They collaborate with IT and risk management teams to audit AI systems and detect potential bias or ethical violations.

This transformation extends beyond practice to education. The *Indonesian Institute of Accountants (13)* recommends integrating courses such as *AI in Accounting* and *Data Analytics for Auditors* into university curricula. This initiative reflects the evolving competencies required of future accountants—combining financial expertise, technological literacy, and ethical awareness.

In summary, AI does not replace accountants but elevates their professional scope, enabling them to safeguard data integrity, evaluate algorithmic reliability, and contribute strategically to risk-based decision-making. Banks that invest in human capital development and adaptive governance will be better positioned to harness AI's potential sustainably.

CONCLUSION

The findings of this study demonstrate that Artificial Intelligence (AI) has become a pivotal element in reshaping both the operational and professional landscape of Indonesia's banking sector. AI implementation varies across bank categories—state-owned, private, and digital—reflecting different risk priorities and technological capacities. While state-owned banks focus on operational integration, private banks emphasize efficiency and reputational management, and digital banks lead in agility and cybersecurity readiness. For the accounting profession, AI adoption signifies a transition from routine financial reporting to a more analytical and strategic role in risk governance, data validation, and regulatory compliance. Accountants are now required to master digital literacy, interpret algorithmic outputs, and collaborate with multidisciplinary teams to ensure ethical and transparent AI usage. In essence, AI does not replace accountants but redefines their value proposition. The sustainability of AI-driven transformation depends on the alignment between technological innovation, regulatory frameworks, and human competence development. Strengthening education, training, and professional ethics will be crucial for maintaining trust and accountability in the evolving digital banking ecosystem.

REFERENCES

- [1] International Federation of Accountants. (2023). *Future-ready accountants in the digital age*. IFAC. <https://www.ifac.org>.
- [2] Institut Akuntan Publik Indonesia. (2024). *Laporan tahunan IAPI 2024*. IAPI.
- [3] Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- [4] Hillson, D., & Murray-Webster, R. (2007). *Understanding and managing risk attitude*. Gower Publishing Limited.
- [5] Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE Publications.
- [6] Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *Journal of Emerging Technologies in Accounting*, 14(1), 115–122. <https://doi.org/10.2308/jeta-51730>

- [7] Bank Rakyat Indonesia (BRI). (2023). *Annual Report 2023: Strengthening digital resilience*. PT Bank Rakyat Indonesia (Persero) Tbk.
- [8] Bank Mandiri. (2023). *Sustainability Report 2023: Empowering digital innovation*. PT Bank Mandiri (Persero) Tbk.
- [9] Bank Central Asia (BCA). (2023). *Annual Report 2023: Responsible innovation in digital banking*. PT Bank Central Asia Tbk.
- [10] SeaBank Indonesia. (2023). *Annual Report 2023: Driving digital transformation through AI*. PT Bank SeaBank Indonesia.
- [11] Law of the Republic of Indonesia No. 27 of 2022. *On Personal Data Protection*.
- [12] Otoritas Jasa Keuangan (OJK). (2024). *Peraturan OJK No. 12/2024 tentang Tata Kelola dan Audit Sistem Kecerdasan Buatan di Sektor Jasa Keuangan*.
- [13] Indonesian Institute of Accountants (IAI). (2024). *Recommendation for AI integration in accounting education*. IAI Publication.
- [14] Deloitte. (2023). *AI and the future of banking: From automation to intelligence*. Deloitte Insights.
- [15] McKinsey & Company. (2023). *Global banking AI report: Accelerating transformation with trust and transparency*. McKinsey Global Institute.
- [16] PricewaterhouseCoopers (PwC). (2023). *Responsible AI for the financial sector*. PwC Global.
- [17] The Institute of Chartered Accountants in England and Wales (ICAEW). (2023). *Artificial Intelligence and the Future of Accountancy*. ICAEW.