



The Effect of Digital Transformation on Financial Performance with Business Risk as a Momed in Banking Companies Listed on the Indonesia Stock Exchange

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Keywords

Digital Service Transformation, Service Quality, Customer Satisfaction

Abstract

The Indonesian banking sector is undergoing significant digital transformation driven by technological advancements and changing consumer expectations. This shift requires the adoption of new technologies while managing business risks to sustain financial performance. This study investigates how digital transformation influences the financial performance of banking companies on the Indonesia Stock Exchange (IDX), with business risk as a moderation and mediation variable. Using data from 229 banking companies over 2019–2023, financial performance is measured through Return on Assets (ROA), Return on Equity (ROE), and Earnings Per Share (EPS). Business risk is assessed using Total Earnings Per Share (T.EPS), EBIT, and EBITDA. Findings indicate that digital transformation does not significantly affect financial performance directly in the short term but significantly impacts business risk. Business risk partially mediates the relationship between digital transformation and financial performance, though the effect is weak, and shows no significant moderation role. This research enhances understanding of how digital transformation shapes banking institutions' financial health and highlights the importance of managing business risk to optimize financial outcomes in the digital era.



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Introduction

The banking sector plays a crucial role in the Indonesian economy, serving as an institution that connects parties who have surplus funds with those who require funds (Bhegawati & Utama, 2020). Banking also acts as a driver of economic stability, supports economic growth, and ensures the smooth operation of the national payment system (Annisa, 2018; Azmi & Takarini, 2022; Imron, 2024; Rahma, 2022). Alongside the rapid development of technology, the Indonesian banking sector is compelled to undertake digital transformation to maintain competitiveness and enhance operational efficiency in the face of increasingly fierce market competition (Prihandono et al., 2024; Ula, 2025). Digital transformation in banking not only encompasses the adoption of new technologies, such as artificial intelligence

(AI), cloud computing, and blockchain, but also fosters innovations in business models that deliver faster and more efficient services to customers (Akter et al., 2022; Munira, 2025).

However, this digitalization process presents substantial challenges, particularly in the area of risk management (Siswanti et al., 2024). The implementation of new technologies requires banks to devote greater attention to cybersecurity, personal data protection, and regulatory changes, all of which have the potential to heighten uncertainty (Wang et al., 2024). Consequently, business risk emerges as a critical factor that must be managed effectively to ensure that digital transformation proceeds optimally without undermining the bank's financial performance (Al-Ansi et al., 2024). Business risks linked to digitalization—such as threats to security systems, reliance on technology, and rapid regulatory changes—may disrupt operations and reduce profitability if they are not mitigated through appropriate strategies. A bank's financial performance, typically measured by Return on Assets (ROA) and Return on Equity (ROE) indicators, serves as a key metric in evaluating management's effectiveness in utilizing assets and capital to generate profits. While digitalization can boost efficiency and competitiveness, inadequately managed risks may diminish the positive impact of such transformation (Alojail & Khan, 2023).

Previous studies have offered varied perspectives on this relationship. For example, Vial (2019) highlighted that digital transformation can improve service efficiency and quality, whereas Westerman et al. (2014) observed that its financial benefits may only materialize over the long term. Furthermore, Brigham & Houston (2019) pointed out that digital adoption introduces business risks—including cybersecurity threats and regulatory ambiguities—that can adversely affect profitability. Despite these findings, limited research has examined the dual role of business risk as both a mediator and a moderator in the relationship between digital transformation and financial performance in the Indonesian banking sector (Alojail & Khan, 2023).

Therefore, this study seeks to examine how digital transformation influences the financial performance of banks listed on the Indonesia Stock Exchange (IDX), considering business risk as both a moderating and mediating factor that may strengthen or weaken the relationship between digital transformation and financial performance. This research is expected to contribute to a deeper understanding of the importance of risk management in the banking sector's digitalization efforts, thereby enabling the achievement of optimal financial performance (Abdurrahman et al., 2024; Dicuonzo et al., 2019).

Materials and Method

This study employed a quantitative approach to test the relationship between digital transformation and bank financial performance, as well as the role of business risk as a moderating and mediating variable, using statistically analyzable data. Sekaran (2003) noted that associative research aims to understand relationships or influences between two or more variables, which aligned with this study's purpose.

The purposive sampling method applied in this research followed Ferdinand's (2014) view that sample selection should be based on predetermined criteria relevant to the research objectives. Banks listed on the Indonesia Stock Exchange (IDX) during the 2019–2023 period were selected based on the availability of complete, published data.

Secondary data were obtained from banks' annual reports, consistent with Creswell's (2014) assertion that such data provide valid and reliable information from credible sources. This was particularly relevant for financial data drawn from corporate reporting.

For data analysis, Structural Equation Modeling (SEM) was used in line with Hair et al. (2014), who stated that SEM is appropriate for examining relationships among variables in complex models. This method enabled the analysis of both direct and indirect relationships and permitted hypothesis testing to assess the significance of variable influences.

Results and Discussion

Based on the results of data analysis, digital transformation has a significant effect on financial performance, but this influence is also influenced by banks' ability to manage risks arising from the adoption of digital technology. The study tested five hypotheses, which discussed the direct and indirect influences between digital transformation, business risk, and financial performance. The following is a discussion of the results of each hypothesis tested in this study.

Hypothesis 1: The Influence of Digital Transformation on Financial Performance Based on Vial (2019) who stated that digital transformation can improve the efficiency and quality of services, this study shows that digital transformation does not have a significant effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX). The results showed that $p\text{-value} = 0.10$, which is greater than the significance limit of 0.05, which means that the relationship between digitalization and bank financial performance has not been proven to be significant in the short term. This is in line with the view of Westerman et al. (2014) who stated that the impact of digital transformation may take longer to be reflected in financial performance.

1. **Hypothesis 2: The Influence of Digital Transformation on Business Risk** The opinion from Brigham & Houston (2019) states that digital transformation can increase business risk, especially related to cyber threats and regulatory uncertainty. The results of this study support this opinion, where digital transformation is positively related to the increase in business risks faced by banks. The adoption of new technologies does carry potential risks, but with the implementation of the right mitigation strategies, banks can mitigate the negative impact of these risks. The coefficient of the path between digital transformation and business risk shows significant positive value.
2. **Hypothesis 3: The Influence of Business Risk on Financial Performance** Brigham & Ehrhardt (2017) explained that high business risk can affect a bank's financial performance, by increasing the volatility of profits and operating costs. The results of this study support this view, where business risk has a significant negative effect on the bank's financial performance. Banks that face high risks, such as cyber threats and rapid regulatory changes, showed declines in their Return on Assets (ROA) and Return on Equity (ROE), according to the findings recorded in the study
3. **Hypothesis 4: Business Risk as a Moderation Variable between Digital Transformation and Financial Performance** Baron and Kenny (1986) stated that risk can strengthen or weaken the relationship between independent and dependent variables. This study found that business risk serves as a moderation variable in the relationship between digital

transformation and financial performance. The results of the analysis show that business risks can amplify the positive impact of digitalization on financial performance if managed properly. Conversely, if risk is not managed effectively, the positive influence of digital transformation on the bank's financial performance will be reduced.

4. Hypothesis 5: Business Risk as a Mediating Variable between Digital Transformation and Financial Performance Baron and Kenny (1986) also explain that mediation variables explain how or why a relationship occurs. The results of this study show that business risk serves as a mediating variable in the relationship between digital transformation and financial performance. Banks that manage business risk well can make the most of digital transformation, which in turn will improve their financial performance. Conversely, if risk is not managed properly, even if digital transformation is implemented, the bank's financial performance will remain hampered.

These findings have important theoretical and practical implications. Theoretically, they contribute to the digital transformation literature by elucidating the complex risk-performance dynamics in banking. Practically, they emphasize that successful digital transformation requires concurrent attention to risk management. Banks must balance technological innovation with comprehensive risk mitigation strategies to maximize long-term financial benefits while minimizing potential adverse impacts (Attah et al., 2024; Bao et al., 2024; Ikudabo & Kumar, 2024; Sunkara, 2024). The study's results also highlight the need for a phased approach to digital transformation, where initial investments may not immediately translate into financial improvements but create foundations for sustainable competitive advantage. Banking regulators and management should consider these findings when designing digital transformation roadmaps and risk management frameworks.

Research Implications and Gaps

This research provides significant practical implications for the banking sector, especially in designing efficient digitalization strategies. The results show that digital transformation can improve banks' financial performance, but effective business risk management is essential for this positive impact to be achieved. Banks need to pay attention to data security, cyber threats, and regulatory uncertainty that arise due to the adoption of new technologies. For regulators, these findings emphasize the importance of policies that support digitalization while ensuring protection of the financial system and the risks it poses (Yudianto, 2020).

However, there are some research gaps that need to be addressed in further studies. This study only focuses on banks listed on the Indonesia Stock Exchange (IDX), so the results may not be fully generalized to banks that are not registered or operating outside Indonesia. In addition, while the study uses T.EPS, EBIT, and EBITDA indicators to measure business risk, more dynamic risk measurements, such as systemic risk indexes, can provide a more comprehensive picture. Further research can also expand the analysis by taking into account external factors such as industrial competition and global economic policies.

Conclusion

The study concluded that digital transformation did not have a significant direct effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX). While

technological adoption could enhance efficiency and service quality, its impact on Return on Assets (ROA) and Return on Equity (ROE) remained statistically insignificant in the short term. Business risk functioned as both a moderating and mediating variable, influencing the relationship between digital transformation and financial outcomes. The findings suggest that the benefits of digital initiatives can be diminished by risks such as cybersecurity threats and regulatory uncertainty if not effectively managed. Therefore, strong risk management is essential for banks to fully realize the advantages of digital transformation. Future research should explore the long-term effects of digitalization, integrate qualitative insights on technological adoption challenges, and examine how organizational readiness and risk management maturity influence financial performance in the evolving digital banking landscape.

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