

The Impact of Banking Digitalization on Operational Efficiency and Its Implications for Profitability: A Case Study of Bank Bjb's Garut Branch

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ABSTRACT

This study aims to identify and analyze the impact of banking digitization on operational efficiency and profitability levels, as well as to examine the mediating role of operational efficiency at Bank BJB's Garut Branch. The study employed a quantitative approach with an explanatory design, utilizing survey methods, case studies, and a cross-sectional time frame. Primary data were collected via a questionnaire administered to employees at Bank BJB's Garut Branch and analyzed based on 91 responses. The instrument utilized a five-point Likert scale. Tests were conducted using validity and reliability tests, classical assumptions, linear regression, t-tests, F-tests, the coefficient of determination, and mediation analysis using the PROCESS Model 4 with 5,000 bootstrap samples and a 95% confidence interval. The results indicate that banking digitalization has a positive and significant effect on operational efficiency ($B=0.884$; $\beta=0.785$; $t=11.963$; $p<0.001$) with $R^2=0.617$. Banking digitization also has a positive and significant effect on profitability after controlling for operational efficiency ($B = 0.576$; $\beta = 0.423$; $t = 4.414$; $p < 0.001$). Operational efficiency has a positive and significant effect on profitability ($B = 0.551$; $\beta = 0.456$; $t = 4.757$; $p < 0.001$). The second model explains 69.0% of the variation in profitability. The indirect effect of digitalization on profitability through operational efficiency is 0.487 with a 95% bootstrap interval [0.278; 0.698]. Since this interval does not include zero and the direct effect remains significant, operational efficiency is shown to partially mediate the relationship between banking digitalization and profitability. The main findings indicate that digitalization creates value through two channels: improved process efficiency and direct benefits to profitability.

Keywords: *Banking Digitalization; Operational Efficiency; Profitability; Mediation; Bank BJB Garut Branch*

INTRODUCTION

Digital transformation has become a crucial part of the changing business model in the banking industry. Digitalization not only transforms service channels but also influences internal processes through automation, information integration, accelerated transactions, and the utilization of digital systems in operational activities. Consequently, the success of digitalization cannot be measured solely by increased app usage but also by the technology's ability to generate efficiency and financial performance.

In the context of Bank BJB's Garut Branch, the banking service environment is increasingly interconnected with the transaction ecosystems of local governments, hospitals, village administrations, businesses, and the general public. The implementation of digital services such as DIGI, Siskeudes Link, and support for online Samsat services demonstrates that service processes are becoming increasingly digitized. However, the availability of digital channels does not in and of itself prove that manual processes have decreased, productivity has increased, costs have decreased, or profitability has improved.

This phenomenon is reinforced by industry data. In the source thesis, the Financial Services Authority (OJK) noted that the BOPO ratio for commercial banks increased from 78.68% in June 2024 to 85.65% in June 2025, while operating expenses grew faster than operating revenue. At bank bjb specifically, the number of DIGI Mobile users reached approximately 1.8 million in December 2025, but the BOPO ratio increased from 90.2% in Q4 2024 to 92.2% in Q4 2025. Net ROA on an individual basis also fell from 0.7% to 0.6%, although the cost-to-income ratio improved from 71.5% to 70.9%. The divergent trends in these indicators suggest that digitalization, efficiency, and profitability do not always automatically move in the same direction.

Previous literature has also not provided entirely consistent conclusions. Research on digitalization and bank performance shows that technology can improve performance, but the benefits depend on the quality of implementation, organizational capabilities, and investment costs. Elmahdy et al. (2025) specifically highlight the importance of operational efficiency as a mechanism linking fintech and profitability. Thus, the relationship between digitalization and profitability needs to be analyzed not only directly but also through operational mechanisms.

The research gaps in this study encompass three aspects. First, a results gap, as increased digital activity has not always been accompanied by improvements in efficiency and profitability. Second, an object gap, as empirical evidence at the regional development bank branch level is relatively limited compared to studies at the bank-wide or industry level. Third, a mechanism gap, as the relationship between digitalization and profitability needs to be explained through internal processes that transform technology into economic benefits. Operational efficiency is positioned as this mechanism.

This study aims to analyze the state of banking digitalization, operational efficiency, and profitability; to test the effect of digitalization on efficiency; to test the effect of digitalization on profitability; to test the effect of efficiency on profitability; and to test the indirect effect of digitalization on profitability through operational efficiency. The contribution of this study lies in

the empirical evidence at the Bank BJB Garut Branch level and the explanation of the mechanism of digital value creation through efficiency.

METHOD

This study employs a quantitative approach with an explanatory design, survey method, case study approach, and a cross-sectional time horizon. The research objects are banking digitalization, operational efficiency, and profitability. The research subjects are employees of Bank BJB's Garut Branch who are involved in operational activities and use digital systems in their work. Based on the research data, 91 responses were analyzed.

Variables	Role	Key Indicators
Banking Digitization (X)	Independent	Access, convenience, speed, routine use, integration, security, reliability, training, technical support
Operational Efficiency (Y)	Mediator	Time efficiency, employee productivity, resource/capacity optimization, reduction of manual work and rework
Profitability (Z)	Dependent	Profit, profit growth, revenue, fee-based income, profit targets, cost efficiency, asset/capital productivity, net interest income

Data collection used a five-point Likert scale questionnaire. Instrument quality was assessed using Pearson's Product-Moment correlation and Cronbach's Alpha. Classical assumption tests included residual normality, multicollinearity, and heteroscedasticity. Inferential analysis used linear regression with two models: the first model tested $X \rightarrow Y$, while the second model tested X and $Y \rightarrow Z$. Mediation was tested using PROCESS Model 4 with 5,000 bootstrap samples and a 95% confidence interval. Indirect effects were considered significant if the bootstrap interval did not include zero.

RESULTS AND DISCUSSION

Variable	Mean	Category
Banking Digitalization	3.80	High
Operational Efficiency	3.73	High
Profitability	3.66	High

Banking digitization has an average score of 3.80 and falls into the high category. Accessibility received a strong rating, and the routine use of digital systems achieved a high score.

However, system reliability and disruptions that hinder work remain areas that need improvement. Operational efficiency has an average score of 3.73, indicating that technology is perceived to help reduce administrative and physical document costs, speed up transactions, increase productivity, and reduce manual work. Profitability received an average score of 3.66, the lowest among the three variables, suggesting that the financial benefits of digitalization still require cost control and improved conversion of digital activities into revenue.

Path	B	β	t	Sig.
$X \rightarrow Y$	0.884	0.785	11.963	<0.001
$X \rightarrow Z Y$	0.576	0.423	4.414	<0.001
$Y \rightarrow Z X$	0.551	0.456	4.757	<0.001

Model 1 yields an R^2 of 0.617 and an Adjusted R^2 of 0.612. This means that 61.7% of the variation in Operational Efficiency can be explained by Banking Digitalization. Model 2 yields an R^2 of 0.690 and an Adjusted R^2 of 0.683. Thus, Banking Digitalization and Operational Efficiency together explain 69.0% of the variation in Profitability. The F-test shows that Model 1 is significant ($F = 143.108$; $p < 0.001$) and Model 2 is significant ($F = 97.906$; $p < 0.001$).

The first regression equation is $Y = 0.366 + 0.884X$. The second regression equation is $Z = -0.576 + 0.576X + 0.551Y$.

Effect	Coefficient	95% Bootstrap CI	Decision
Total $X \rightarrow Z$	1.062	—	Significant
Direct $X \rightarrow Z Y$	0.576	—	Significant
Indirect $X \rightarrow Y \rightarrow Z$	0.487	[0.278; 0.698]	Significant; partial mediation

The indirect effect of 0.487 has a 95% bootstrap confidence interval between 0.278 and 0.698. Since the interval does not include zero, the indirect effect is significant. The direct effect remains significant at 0.576 after the mediator is included. Thus, Operational Efficiency partially mediates the relationship between Banking Digitalization and Profitability.

Hypotheses	Results	Decision
H1: $X \rightarrow Y$	$B = 0.884$; $p < 0.001$	Supported
H2: $X \rightarrow Z$	$B = 0.576$; $p < 0.001$	Supported
H3: $Y \rightarrow Z$	$B = 0.551$; $p < 0.001$	Supported
H4: $X \rightarrow Y \rightarrow Z$	$B = 0.487$; CI [0.278; 0.698]	Supported; partial mediation

DISCUSSION

Banking Digitalization and Operational Efficiency

H1 is supported. Banking Digitalization has a positive and significant effect on Operational Efficiency with $B = 0.884$, $\beta = 0.785$, $t = 11.963$, and $p < 0.001$. The R^2 value of 0.617 indicates that Banking Digitalization explains 61.7% of the variation in Operational Efficiency. This finding

is consistent with the logic of the Technology Acceptance Model: technologies perceived as useful and easy to use tend to be utilized to improve task performance (Davis, 1989). In the context of bank branches, these benefits can manifest through faster transactions, improved access to information, reduced repetitive data entry, automation of administrative activities, and increased productivity.

The strength of this relationship does not mean that all efficiency issues have been resolved. Descriptive results show that system reliability and disruptions remain weak points. Therefore, strengthening the back-end, data integration, process standardization, and technical support are crucial to ensure that the benefits of digitalization are not lost due to disruptions or corrective work.

Banking Digitalization and Profitability

H2 is supported. After controlling for Operational Efficiency, Banking Digitalization continues to have a positive and significant effect on Profitability with $B=0.576$, $\beta=0.423$, $t=4.414$, and $p<0.001$. These results indicate the existence of a direct channel independent of the efficiency mechanism. Substantively, this channel may be related to expanded access to services, increased volume of digital transactions, fee-based income, quality of customer experience, and the ability of branches to process transactions beyond the limitations of space and time.

These findings must be interpreted with caution because profitability in this study was measured through employee perceptions, not audited branch income statements. Thus, the coefficients indicate a perceived relationship between digitalization and financial performance, not an estimate of changes in ROA or branch accounting profits.

Operational Efficiency and Profitability

H3 is supported. Operational Efficiency has a positive and significant effect on Profitability with $B=0.551$, $\beta=0.456$, $t=4.757$, and $p<0.001$. The standardized beta for Operational Efficiency is greater than the direct beta for Digitalization in Model 2, indicating that efficiency is a key predictor of profitability. Reducing time, manual work, errors, physical documents, and rework can lower the cost per transaction. At the same time, increased productivity and service capacity allow available resources to generate greater output.

These results indicate that efficiency is not synonymous with staff reductions. Efficiency can be achieved by redirecting employee time toward value-added activities, increasing transactions per employee, reducing corrections, and optimizing system capacity and capital.

Operational Efficiency as a Mediator

H4 is supported by partial mediation. The indirect effect of digitization on profitability is 0.487, and the bootstrap interval [0.278; 0.698] does not include zero. The direct effect remains significant at 0.576. These findings reveal a more comprehensive value creation pathway: digitalization improves work processes; process improvements enhance efficiency; and efficiency boosts profitability. At the same time, digitalization continues to exert a direct influence through increased transaction activity, service quality, and digital-based revenue opportunities.

These findings align with the argument by Elmahdy et al. (2025) that operational efficiency can serve as a key mechanism in the relationship between financial technology and profitability.

The contribution of this study is to demonstrate this mechanism in the context of Bank BJB's Garut Branch, thereby highlighting that digitalization should be viewed as an investment that must be converted into process improvements and economic benefits.

CONCLUSION

- Banking digitalization at Bank BJB's Garut Branch falls into the high category with an average score of 3.80; Operational Efficiency at 3.73; and Profitability at 3.66.
- Banking digitalization has a positive and significant effect on Operational Efficiency with $B=0.884$; $\beta=0.785$; $t=11.963$; $p<0.001$; and $R^2=0.617$.
- Banking digitalization has a positive and significant effect on Profitability after controlling for Operational Efficiency, with $B = 0.576$; $\beta = 0.423$; $t = 4.414$; $p < 0.001$.
- Operational Efficiency has a positive and significant effect on Profitability, with $B = 0.551$; $\beta = 0.456$; $t = 4.757$; $p < 0.001$.
- Operational Efficiency partially mediates the effect of Banking Digitalization on Profitability. The indirect effect is 0.487 with a 95% bootstrap interval [0.278; 0.698], while the direct effect remains significant.
- The first model explains 61.7% of the variation in Operational Efficiency, while the second model explains 69.0% of the variation in Profitability.

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