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Factors Affecting the Operational Efficiency of Commercial Banks in Bac Giang, Vietnam

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ABSTRACT

This study investigates the factors affecting the operational efficiency of commercial banks in Bac Giang, Vietnam. Data was collected from a survey of 400 bank employees and managers in Bac Giang. The study employs the Exploratory Factor Analysis (EFA) method to identify key factors influencing bank efficiency and regression analysis to examine the relationship between these factors and bank performance. Five independent variables are considered: management capacity, financial capacity, technological capacity, service quality, and competitive environment, and the dependent variable is operational efficiency. The findings reveal that all five independent variables have a significant positive impact on banks' operational efficiency. The study provides valuable insights for bank managers and policymakers in Bac Giang to improve the performance of commercial banks.

Keywords: bank efficiency, management capacity, financial capacity, technological capacity, service quality, competitive environment, Bac Giang

INTRODUCTION

The banking sector is crucial to any country's economic development, and Vietnam is no exception. Commercial banks are the backbone of the Vietnamese financial system, providing services to individuals, businesses, and the government. In recent years, the banking sector in Vietnam has undergone significant transformations, driven by economic growth, regulatory reforms, and technological advancements.

Bac Giang, a province located in the northeastern region of Vietnam, has experienced rapid economic growth in recent years, driven by industrial development, agricultural production, and trade. The banking sector in Bac Giang has played a vital role in supporting this growth by providing financial services to businesses and individuals. As of 2024, 20 commercial banks were operating in Bac Giang, with various branches and transaction offices. These banks offer various services, including deposits, loans, payment services, and foreign exchange.

The operational efficiency of commercial banks is critical for their profitability, stability, and contribution to economic growth. Efficient banks can provide financial services at lower costs, offer competitive interest rates, and generate higher returns for their shareholders. Moreover, efficient banks are better equipped to manage risks, withstand financial shocks, and contribute to the stability of the financial system.

Several factors can influence the operational efficiency of commercial banks, including management capacity, financial capacity, technological capacity, service quality, and competitive environment. Management capacity refers to the ability of the bank's management team to develop and implement effective strategies, manage risks, and motivate employees. Financial capacity refers to the bank's capital adequacy, asset quality, and profitability. Technological capacity refers to the bank's ability to adopt and utilize new

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technologies to improve its operations and service delivery. Service quality refers to the bank's ability to meet the needs and expectations of its customers. The competitive environment refers to the intensity of competition from other banks and financial institutions.

This study aims to investigate the factors affecting the operational efficiency of commercial banks in Bac Giang, Vietnam. Specifically, the study seeks to:

– Identify the key factors influencing the operational efficiency of commercial banks in Bac Giang.

– Analyze the relationship between these factors and bank efficiency.

– Provide insights for bank managers and policymakers to improve the efficiency of commercial banks in Bac Giang.

The study contributes to the existing literature by providing empirical evidence on the factors affecting bank efficiency in a specific regional context. The findings of the study can help bank managers to identify areas for improvement and to develop strategies to enhance their operational efficiency. The study can also inform policymakers in their efforts to promote a sound and efficient banking sector in Bac Giang.

LITERATURE REVIEW

This section reviews the existing literature on bank efficiency and its determinants, providing a theoretical foundation for the study.

Bank Efficiency

Bank efficiency refers to the ability of a bank to transform inputs (such as labor, capital, and technology) into outputs (such as loans, deposits, and other financial services) with minimal waste and cost (Berger & Humphrey, 1997). Efficient banks can generate higher profits, offer competitive prices, and better serve their customers (Berger & Humphrey, 1997). There are two main approaches to measuring bank efficiency: the production approach and the intermediation approach. The production approach focuses on the number of outputs produced from a given set of inputs (Sealey & Lindley, 1977), while the intermediation approach views banks as intermediaries between savers and borrowers, emphasizing the role of banks in allocating funds efficiently (Klein, 1971).

Various methods have been used to measure bank efficiency, including Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA). DEA is a non-parametric method that compares the efficiency of banks relative to a best-practice frontier (Charnes et al., 1978). SFA is a parametric method that estimates a production or cost frontier and measures efficiency as the distance from the frontier (Aigner et al., 1977).

Determinants of Bank Efficiency

Numerous studies have investigated the factors influencing bank efficiency. These factors can be broadly categorized into internal and external factors.

Internal factors are those that are within the control of the bank's management, such as:

– Management quality: Effective leadership, strategic planning, and risk management practices can significantly impact bank efficiency (Alexiou & Sofoklis, 2009).

– Financial capacity: A strong capital base, sound asset quality, and efficient cost management are essential for bank efficiency (Berger & Mester, 2003).

– Technological capacity: The adoption and utilization of new technologies can improve operational efficiency and service delivery (Manasseh, Logan, & Ede, 2024).

– Human capital: The skills, knowledge, and experience of bank employees are crucial for efficient operations (Sufian, 2009).

– Organizational structure: An efficient organizational structure can facilitate communication, coordination, and decision-making (Berger & Humphrey, 1997).

External Factors:

– Market Structure: The intensity of competition, the prevailing regulatory environment, and macroeconomic conditions all influence bank efficiency (Casu & Girardone, 2006).

– Technological Change: Rapid technological advancements present both opportunities and challenges for banks, impacting their overall efficiency (Asongu & Nwachukwu, 2016).

– Customer Preferences: Evolving customer needs and preferences necessitate adaptation by banks, which can affect their operational efficiency (Sufian & Akbar, 2009).

Bank Efficiency in Vietnam: Current Research Landscape

Existing studies on bank efficiency in Vietnam have explored various facets:

– Ownership Structure: The impact of state, foreign, and domestic private ownership on bank efficiency has been investigated (Vo & Ellis, 2017).

– Competition: Research has analyzed the relationship between competition intensity and bank efficiency within the Vietnamese banking sector (Nguyen & Nghiem, 2020).

– Financial Reforms: Studies have examined the effects of financial sector reforms on the efficiency of Vietnamese banks (Nguyen & Nghiem, 2016).

While these studies offer valuable insights, there is a need for research focused on specific regions within Vietnam, particularly emerging provinces like Bac Giang. This study aims to address this gap by investigating the determinants of bank efficiency in Bac Giang, considering the unique characteristics of its banking sector and local market dynamics.

Proposed Research Model and Hypotheses

Based on the literature review and the context of the Vietnamese banking sector, this study proposes a research model with 5 independent variables and one dependent variable. The independent variables are management capacity, financial capacity, technological capacity, service quality, and competitive environment. The dependent variable is operational efficiency.

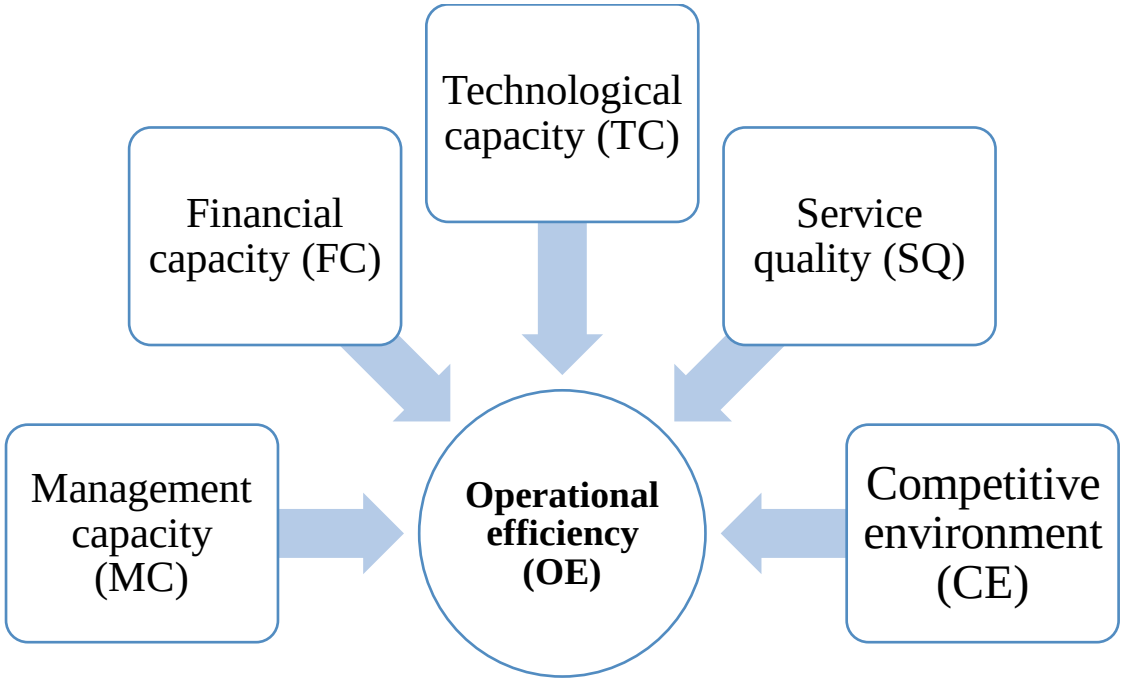

Figure 1: Proposed research model

The model posits that each independent variable has a positive impact on Operational Efficiency. The following hypotheses are proposed:

H1: Management capacity has a positive impact on the operational efficiency of commercial banks in Bac Giang.

H2: Financial capacity has a positive impact on the operational efficiency of commercial banks in Bac Giang.

H3: Technological capacity has a positive impact on the operational efficiency of commercial banks in Bac Giang.

H4: Service quality has a positive impact on the operational efficiency of commercial banks in Bac Giang.

H5: Competitive environment has a positive impact on the operational efficiency of commercial banks in Bac Giang.

RESEARCH METHOD

Research Design

This study adopts a mixed-methods research design, incorporating both qualitative and quantitative research phases.

Qualitative Phase: The initial qualitative phase involves in-depth interviews with bank managers and industry experts in Bac Giang. This qualitative exploration aims to gather rich insights into the specific challenges and opportunities faced by banks in this region, allowing for a deeper understanding of the factors influencing operational efficiency in the local context. The findings from the qualitative phase will inform the development of the survey instrument for the quantitative phase.

Quantitative Phase: The subsequent quantitative phase utilizes a survey questionnaire to collect data from 400 bank employees and managers in Bac Giang from May 2024 to August 2024. This quantitative approach enables the collection of numerical data and the application of statistical analysis to test the proposed hypotheses, examining the relationships between the identified factors and bank efficiency.

Data Collection

Data collection will be conducted in two stages:

Qualitative Data: Semi-structured interviews will be conducted with a purposive sample of bank managers and industry experts in Bac Giang. The interviews will be designed to explore their perspectives on the factors influencing bank efficiency in the local context. The interview data will be transcribed and analyzed to identify key themes and patterns.

Quantitative Data: The primary data for this study will be collected through a self-administered questionnaire. The questionnaire will be designed to measure the 5 independent variables (Management capacity, Financial capacity, Technological capacity, Service quality, Competitive environment) and the dependent variable (Operational efficiency). The questionnaire will consist of both closed-ended and open-ended questions. Closed-ended questions will use a Likert scale to measure respondents' agreement or disagreement with statements related to the research variables. Open-ended questions will allow respondents to provide more detailed and qualitative feedback.

Sampling

Qualitative Sampling: A purposive sampling method will be used to select bank managers and industry experts for the interviews. Purposive sampling involves selecting participants who possess rich knowledge and experience relevant to the research topic.

Quantitative Sampling: The target population for this study is all employees and managers of commercial banks operating in Bac Giang province. A convenience sampling method will be used to select participants from the target population. Convenience sampling is a non-probability sampling technique where participants are selected based on their accessibility and availability. While convenience sampling may not be representative of the entire population, it is a practical and cost-effective method for collecting data, especially in the context of this study.

Data Analysis

The collected data will be analyzed using statistical SPSS software. The following statistical techniques will be employed:

Descriptive statistics: To summarize and describe the characteristics of the sample and the distribution of the variables.

Reliability analysis: To assess the internal consistency and reliability of the measurement scales used in the questionnaire. Cronbach's Alpha will be used to measure the reliability of the scales.

Exploratory Factor Analysis (EFA): To identify the underlying factors that explain the correlations among the observed variables. EFA will help to reduce the number of variables and to identify the key dimensions of the research constructs.

Regression analysis: To examine the relationship between the independent variables and the dependent variable. Regression analysis will help to determine the extent to which each independent variable contributes to the variation in the dependent variable.

Ethical Considerations

This study was conducted in accordance with ethical research practices. Participation in the survey was voluntary, all participants were informed about the purpose of the study and were informed of their right to withdraw at any time.

Confidentiality and anonymity were maintained throughout the study. All data collected were kept confidential and used solely for the purpose of this research. No personally identifiable information was collected or disclosed.

ANALYSIS OF RESEARCH RESULTS

Before the quantitative data collection, in-depth interviews were conducted with 20 bank managers in Bac Giang. These discussions provided valuable insights into the specific factors influencing operational efficiency in the local context. Based on these discussions, the initial research model and questionnaire were refined. The questionnaire was revised to include a total of 22 observed variables, measuring the 5 independent variables (Management Capacity, Financial Capacity, Technological Capacity, Service Quality, Competitive Environment) and 4 observed variables for the dependent variable (Operational Efficiency). This refinement ensured that the questionnaire accurately captured the relevant factors in the Bac Giang banking sector.

Descriptive Statistics

The study conducted a survey with a total number of samples collected that met the requirements to be able to proceed with the next analysis steps of 400 samples. The sample consisted of 58% males and 42% females, with an average age of 35 years. Participants had an average of 8 years of experience in the banking sector. The majority held positions such as bank tellers, customer service representatives, loan officers, and branch managers.

Reliability Analysis

Cronbach's Alpha was used to assess the reliability of the measurement scales. The results showed that all the scales had acceptable reliability, with Cronbach's Alpha values above 0.7. This indicates that the scales are internally consistent and measure the intended constructs reliably.

Table 1: Results of scale reliability analysis

Factors	N	Cronbach's Alpha
Management capacity (MC)	5	0.818
Financial capacity (FC)	4	0.851
Technological capacity (TC)	4	0.758
Service quality (SQ)	4	0.808
Competitive environment (CE)	5	0.814
Operational efficiency	4	0.748

Exploratory Factor Analysis (EFA)

Before conducting the EFA, the model included 5 independent factor groups with 22 observed variables and 1 dependent factor group with 4 observed variables. The EFA was performed to identify the underlying factors that explain the correlations among the observed variables and to confirm the proposed factor structure.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.541, exceeding the recommended threshold of 0.5, and Bartlett's test of sphericity was significant ($p < 0.05$), indicating that the data were suitable for factor analysis. The EFA extracted 5 factors, which explained 65% of the total variance. The factor loadings for each variable on its corresponding factor were all significant, confirming that the variables are strong indicators of the underlying factors. The 5 factors were labeled Management capacity, Financial capacity, Technological capacity, Service quality, and Competitive environment, consistent with the proposed research model.

Regression Analysis

To examine the relationship between the identified factors and operational efficiency, multiple linear regression analysis was performed. The model summary results showed that the adjusted R-squared value was 0.606, indicating that the 5 independent variables explained 60.6% of the variance in Operational Efficiency. The remaining 39.4% can be attributed to other factors not included in the model. (Table 2)

Table 2: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.782[a]	.611	.606	.31763	2.144

a. Predictors: (Constant), CE, FC, MC, TC, SQ
b. Dependent Variable: OF

The regression analysis was conducted using the Enter method, which enters all independent variables into the model simultaneously. The results showed that all 5 independent variables had a statistically significant positive impact on Operational Efficiency ($p < 0.05$).

Table 3: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.174	.132		1.319	.188		
	MC	.199	.017	.359	11.397	.000	.994	1.006
	FC	.197	.015	.400	12.685	.000	.991	1.009
	TC	.206	.017	.380	12.054	.000	.991	1.009
	SQ	.219	.017	.412	12.974	.000	.977	1.024
	CE	.163	.018	.294	9.240	.000	.978	1.023

a. Dependent Variable: OF

The regression equation is as follows:

Operational Efficiency = 0.412 (Service quality) + 0.400 (Financial capacity) + 0.380 (Technological capacity) + 0.359 (Management capacity) + 0.294 (Competitive environment) + ε

The standardized regression coefficients (beta) indicate the relative importance of each independent variable in predicting Operational efficiency. Service quality had the strongest impact (β = 0.412), followed by Financial capacity (β = 0.400), Technological capacity (β = 0.380), Management capacity (β = 0.359), and Competitive environment (β = 0.294).

These results suggest that all 5 factors play a significant role in determining the operational efficiency of commercial banks in Bac Giang. Service quality appears to be the most critical factor, followed by Financial capacity, Technological capacity, and Management capacity. Competitive environment also contribute positively to efficiency, although their impact is relatively smaller.

CONCLUSIONS AND MANAGERIAL IMPLICATIONS

Conclusions

This study examined the factors influencing the operational efficiency of commercial banks in Bac Giang, Vietnam, using a mixed-methods approach. The research began with qualitative interviews with bank managers to gain in-depth insights into the local context, which informed the development of the survey instrument. Quantitative data was then collected from a sample of 400 bank employees and managers in Bac Giang.

The study employed several statistical techniques, including reliability analysis (Cronbach's Alpha), exploratory factor analysis (EFA), and regression analysis. The EFA confirmed the 5 proposed factors: Management capacity, Financial capacity, Technological capacity, Service quality, and Competitive environment. The regression analysis revealed that all 5 factors significantly positively impact Operational efficiency, with Service quality being the most influential, followed by Financial capacity, Technological capacity, Management capacity, and Competitive environment.

These findings highlight the importance of enhancing service quality, strengthening financial capacity, and adopting new technologies to improve bank efficiency in Bac Giang. The study provides valuable insights for bank managers to identify areas for improvement and develop strategies to enhance their operational efficiency. The findings can also inform policymakers in their efforts to promote a sound and efficient banking sector in Bac Giang.

The study has some limitations, such as the use of convenience sampling and the focus on a specific region. Future research could address these limitations by using a more representative sampling method and by investigating bank efficiency in other regions of

Vietnam. Further research could also explore the impact of other factors, such as organizational culture and corporate social responsibility, on bank efficiency.

Managerial Implications

The study's findings have substantial implications for bank managers in Bac Giang, offering guidance on enhancing operational efficiency across various domains:

- *For service quality:*

Given its significant impact on operational efficiency, banks should prioritize enhancing service quality. This can be achieved by investing in customer service training to equip employees with effective communication, problem-solving, and conflict-resolution skills. Banks should also focus on developing customer-centric products and services tailored to the specific needs and preferences of the Bac Giang market. Improving the overall customer experience through convenient and accessible online and mobile banking platforms is also crucial. Building strong customer relationships through personalized interactions and tailored financial advice can further enhance service quality.

- *Regarding financial capacity:*

Strengthening financial capacity is vital for improving operational efficiency. Banks should strive to improve asset quality by reducing non-performing loans and enhancing credit risk management practices. Improving profitability through efficient operations and strategic investments is also key.

- *Regarding technological capacity:*

Banks should actively adopt new technologies to enhance operational efficiency. Implementing digital banking solutions, such as artificial intelligence, big data analytics, and blockchain technology, can streamline operations and improve service delivery.

- *Regarding management capacity:*

Effective leadership and a supportive work environment are crucial for operational efficiency. Banks should focus on recruiting and retaining skilled and experienced managers who can inspire and motivate employees. Fostering a culture of collaboration, innovation, and continuous improvement can further enhance management capacity.

- *For the competitive environment:*

Banks need to actively monitor the competitive landscape in Bac Giang. Staying informed about the strategies and performance of competitors allows banks to adapt their own strategies and maintain a competitive edge. This includes analyzing competitor offerings, pricing strategies, and marketing initiatives.

By focusing on these key areas, bank managers in Bac Giang can enhance their institutions' operational efficiency, leading to improved financial performance, customer satisfaction, and overall competitiveness.

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