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A Study on Financial Risk Identification and Evaluation of Bank A in Vietnam

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Abstract: The sound operation of commercial banks is crucial for maintaining the stability of the financial system, particularly in emerging economies. With the deepening of financial reforms and increasing market competition in Vietnam, commercial banks are facing more complex financial risks. Taking Bank A in Vietnam as the research object, this study focuses on the identification and evaluation of financial risks. A comprehensive financial risk assessment model combining the Analytic Hierarchy Process (AHP) and the Entropy Weight Method (EWM) is constructed. Based on key financial indicators, a multi-level evaluation system covering capital adequacy, asset quality, profitability, and liquidity is established. The integration of AHP and EWM effectively reduces subjectivity in indicator weighting and improves the reliability of evaluation results. Empirical analysis using recent financial data of Bank A demonstrates that the proposed model can effectively assess the bank's financial risk level and provide useful references for financial risk management in Vietnamese commercial banks.

Keywords: Financial risk identification; Financial risk evaluation; AHP; EWM; Vietnamese commercial banks.

1. Introduction

The rapid development of the banking sector has significantly increased the complexity of financial risk management. Accurate evaluation of financial risks has therefore become a critical task for banks and regulators. In emerging economies such as Vietnam, commercial banks face growing pressure to improve risk control and comply with international supervisory standards.

To strengthen financial stability, the regulatory framework of the State Bank of Vietnam has gradually incorporated principles from Basel II. These regulations provide important guidance for assessing bank capital adequacy, liquidity, asset quality, and other financial risk indicators. However, traditional single-method evaluation approaches often fail to capture the multidimensional nature of banking risks.

To address this issue, this study proposes a comprehensive financial risk evaluation model that integrates the Analytic Hierarchy Process (AHP) and the Entropy Weight Method (EWM). The AHP method reflects expert judgment and subjective weighting, while the entropy method determines objective weights based on the variability of data. By combining these two approaches, the model improves both the scientific rigor and reliability of the evaluation results.

Based on the financial supervision standards derived from Basel II and the evaluation criteria issued by the State Bank of Vietnam, this study constructs a financial risk evaluation index system and applies it to a case study of a Vietnamese commercial bank. The results provide empirical evidence for enhancing financial risk management and offer useful references for regulators and banking institutions.

2. Literature Review

Financial risk management has become a core research topic in modern banking literature, particularly in the context of increasing financial globalization and regulatory reforms. Previous studies have investigated banking financial risk from multiple perspectives, including profitability risk, credit risk, liquidity risk, capital adequacy risk, and operational risk. Traditional risk evaluation methods mainly relied on single-dimensional financial ratio analysis. Although these approaches provided basic descriptive information about bank performance, they were limited in their ability to capture the multidimensional and dynamic characteristics of financial risk in modern banking systems.

With the rapid development of quantitative decision science, multi-criteria decision-making (MCDM) methods have been widely introduced into financial risk evaluation research. Among these methods, the Analytic Hierarchy Process (AHP) has been extensively applied due to its ability to transform qualitative expert knowledge into quantitative weight measurements. AHP is particularly suitable for complex decision problems involving multiple financial indicators and hierarchical evaluation structures. However, the subjective nature of expert judgment may introduce potential bias and reduce the objectivity of evaluation results.

To address the limitations of subjective weighting methods, objective weighting approaches such as the Entropy Weight Method (EWM) have also gained increasing attention. The entropy method determines indicator weights based on data dispersion characteristics derived from information theory. Indicators with higher variability generally contain more information and should therefore be assigned higher weights in comprehensive evaluation systems. However, entropy-based methods may neglect practical financial knowledge and regulatory experience, which may reduce the interpretability of evaluation results from a banking supervision perspective.

To overcome the limitations of single-method evaluation models, recent studies have increasingly adopted hybrid decision-making frameworks combining subjective and objective weighting methods. The integration of AHP and entropy weighting methods has been widely recognized as an effective approach for improving evaluation accuracy and reliability. By combining expert knowledge with data-driven statistical characteristics, hybrid models can provide more balanced and robust risk assessment results.

In the context of emerging economies, financial risk management research on commercial banks has attracted

growing academic attention. Since the implementation of Basel II regulatory standards, commercial banks in emerging markets have faced increasing pressure to strengthen capital adequacy, improve liquidity management, and enhance credit risk control mechanisms. Banking regulators have gradually adopted international supervisory standards to improve financial system stability. However, compared with developed financial markets, comprehensive financial risk evaluation research in emerging banking systems remains relatively limited.

In particular, most existing studies on banking risk in developing countries mainly focus on traditional financial performance indicators such as profitability and asset quality, while relatively less attention has been paid to non-traditional risks such as compliance risk, anti-money laundering risk, corporate governance risk, and operational risk. With the rapid development of digital finance and financial technology applications, these non-traditional risks have become increasingly important in modern banking risk management.

From the perspective of the Vietnamese banking sector, empirical research on comprehensive financial risk evaluation remains underexplored. Although Vietnamese commercial banks have gradually adopted Basel II regulatory standards, there is still a lack of integrated risk assessment frameworks that combine regulatory compliance requirements with quantitative multi-criteria evaluation methods. Therefore, there is a clear research gap in developing comprehensive financial risk evaluation models tailored to the operational characteristics of Vietnamese commercial banks.

Based on the research gaps identified above, this study contributes to the literature in two main aspects. First, it constructs a comprehensive financial risk evaluation index system suitable for Vietnamese commercial banks under Basel II regulatory standards. Second, it proposes an integrated AHP–entropy weighting model to improve the scientific rigor and reliability of financial risk evaluation. The empirical analysis based on Bank A provides practical evidence for financial risk assessment in emerging banking markets and offers valuable references for banking risk management and regulatory supervision.

3. Construction of AHP-EWM Evaluation Model

3.1. Analytic Hierarchy Process

3.1.1. Selection of AHP Indicators

The banking system in Vietnam is currently undergoing continuous improvements in risk management and compliance governance. In particular, after the implementation of Basel II promoted by the State Bank of Vietnam, commercial banks are facing increasingly stringent regulatory requirements in terms of capital adequacy, credit risk control, and liquidity management. Under this regulatory environment, constructing a financial risk evaluation indicator system that accurately reflects the characteristics of Vietnam's banking sector has become an issue of significant practical importance.

To establish the financial risk evaluation index system for Bank A, this study refers to the standards outlined in the Key Risk Control Indicators for Core Financial Institutions (Trial) issued by the State Bank of Vietnam. At the same time, the indicator framework is appropriately adjusted according to the operational conditions and financial characteristics of Bank A. Compared with studies focusing on Chinese commercial banks, financial risk evaluation in Vietnamese banks requires greater attention to non-traditional risks, including compliance risk, anti-money laundering risk, and corporate governance risk, in addition to conventional financial indicators such as profitability, capital adequacy, liquidity, and credit risk.

Table 1. Selection of Financial Risk Evaluation Indicators for Bank A

Target Level (A)	Criterion Level (B)	Indicator Level (C)
Financial Risk (A)	Profitability Indicators (B1)	Return on Assets (C11)
		Return on Capital (C12)
		Cost-to-Income Ratio (C13)
	Capital Adequacy Indicators (B2)	Capital Adequacy Ratio (C21)
		Tier-1 Capital Adequacy Ratio (C22)
		Core Tier-1 Capital Adequacy Ratio (C23)
	Liquidity Indicators (B3)	Liquidity Ratio (C31)
		Loan-to-Deposit Ratio (C32)
	Credit Risk Indicators (B4)	Provision Coverage Ratio (C41)
		Non-Performing Loan Ratio (C42)
		Loan Provision Ratio (C43)
	Other Risk Indicators (B5)	Operational Risk (C51)
		Compliance Risk (C52)
		Anti-Money Laundering Risk (C53)
		Corporate Governance Risk (C54)

The selection of indicators follows several fundamental principles, including comprehensiveness, importance, comparability, scientific validity, and operability. These principles ensure that the selected indicators can effectively reflect the actual risk conditions of banks while maintaining feasibility for subsequent quantitative analysis.

Based on the systematic identification of risk types for Bank A presented in Chapters 3 and 4, this study constructs a financial risk evaluation indicator system consisting of three hierarchical levels: the target level, the criterion level, and the indicator level. The target level represents the overall financial risk of Bank A. The criterion level includes five major dimensions: profitability risk (B_1), capital adequacy risk (B_2), liquidity risk (B_3), credit risk (B_4), and other risks (B_5). The indicator level further refines these criteria into fifteen specific risk indicators, as presented in Table 1.

To determine the relative importance of each evaluation factor, this study designed and distributed a questionnaire entitled "Survey on Financial Risk Weight Determination of Vietnamese Commercial Bank A Based on the Analytic

Hierarchy Process." The questionnaire aimed to collect expert judgments regarding the relative importance of different risk indicators.

A total of 50 questionnaires were collected in this survey. Respondents were mainly from financial institutions, including departments related to financial management, credit management, and risk control. Among them, 38 were professional technical staff, 5 were middle-level managers, and 3 were experts and scholars in related fields.

To ensure the reliability of the sample, incomplete or logically inconsistent responses were removed. Finally, 46 valid questionnaires were retained for analysis.

Since different respondents may have different perceptions regarding the importance of the same indicators, this study adopted the geometric mean method to synthesize the survey results. This method helps reduce individual judgment bias and allows the construction of a representative judgment matrix. The processed judgment matrix is shown below.

3.1.2. Calculation of AHP Indicator Weights

Step 1: Multiplication of Row Elements

Each row element in matrix A is multiplied:

$$M_i = \prod_{j=1}^{n} a_{ij}, \qquad (i = 1,2,\dots,n.)$$

Step 2: Calculation of the n-th Root

The n-th root of M_i is calculated to obtain the eigenvector:

$$W_i^* = M_i^{\frac{1}{n}}, \qquad (i = 1,2,\dots,n.)$$

Step 3: Normalization of the Eigenvector

The normalized weight vector is obtained as:

$$W_i = \frac{W_i^*}{\sum_{i=1}^{n} W_i^*}, \qquad (i = 1,2,\dots,n.)$$

Thus the weight vector is:

$$W_x = (W_1 ; W_2 ; W_3 ; W_4 ; W_5)$$

Step 4: Consistency Test

The maximum eigenvalue is calculated as::

$$\lambda_{max} = \frac{1}{n}\sum_{i-1}^{n} \frac{(AW)_i}{nW_i}, \qquad (i = 1,2,\dots,n.)$$

Then the Consistency Index (CI) is calculated:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

Finally, the Consistency Ratio (CR) is calculated:

$$CR = \frac{CI}{RI}$$

If CR < 0.1, the matrix passes the consistency test.

According to the four steps for calculating the weights of the target-level indicators, the weights of the profitability indicators, capital adequacy indicators, liquidity indicators, credit risk indicators, and other risk indicators can be calculated respectively. The specific results are as follows Table 2.

Table 2. Weights of Financial Risk Indicators for Bank A

Primary Indicators	Weight	Secondary Indicators	Weight	Composite Weight
Profitability Indicators (B1)	0.1208	Return on Assets (C11)	0.3697	0.0447
		Return on Capital (C12)	0.5396	0.0652
		Cost-to-Income Ratio (C13)	0.0907	0.0110
Capital Adequacy Indicators (B2)	0.2559	Capital Adequacy Ratio (C21)	0.1636	0.0419
		Tier-1 Capital Adequacy Ratio (C22)	0.2727	0.0698
		Core Tier-1 Capital Adequacy Ratio (C23)	0.5637	0.1443
Liquidity Indicators (B3)	0.3531	Liquidity Ratio (C31)	0.7499	0.2648
		Loan-to-Deposit Ratio (C32)	0.2501	0.0883
Credit Risk Indicators (B4)	0.2104	Provision Coverage Ratio (C41)	0.1577	0.0332
		Non-Performing Loan Ratio (C42)	0.6317	0.1329
		Loan Provision Ratio (C43)	0.2106	0.0443
Other Risk Indicators (B5)	0.0598	Operational Risk (C51)	0.0896	0.0054
		Compliance Risk (C52)	0.4079	0.0244
		Anti-Money Laundering Risk (C53)	0.1907	0.0114
		Corporate Governance Risk (C54)	0.3118	0.0186

3.2. Entropy Weight Method

The Entropy Weight Method (EWM) is an objective weighting method widely used in comprehensive evaluation. Its theoretical basis originates from information theory.

The fundamental idea is that the greater the dispersion of an indicator's data, the more information it contains and the smaller its information entropy. Consequently, such an indicator should receive a higher weight in the evaluation system.

Conversely, if the values of an indicator are similar across samples, the data dispersion is small and the entropy value is high. This indicates that the indicator provides limited information and therefore should receive a lower weight.

Thus, the entropy method determines weights based entirely on the characteristics of sample data, avoiding subjective bias and making the evaluation results more objective and reliable.

3.2.1. Data Standardization and Calculation Process

Before calculating entropy weights, the original data must be standardized to eliminate the effects of different units and scales.

For positive indicators (the larger the better):

$$x_{ij} = \frac{x_{ij} - \min x_{ij}}{\max x_{ij} - \min x_{ij}}$$

For negative indicators (the smaller the better):

$$x_{ij} = \frac{\max x_{ij} - x_{ij}}{\max x_{ij} - \min x_{ij}}$$

In the formula, m represents the number of sample data, n represents the number of evaluation indicators, x_{ij} represents the standardized value of the j-th indicator for the i-th sample, while the original data of the j-th indicator for the i-th sample is denoted by x_{ij} . max x_{ij} and min x_{ij} represent the maximum and minimum values of the j-th

indicator across all samples.

Since the calculation of the entropy method involves logarithms, taking the logarithm of a zero value is meaningless. Therefore, all standardized data need to be shifted to the right by 0.0001 units to eliminate the influence of zero values and ensure that the indicator data can be meaningfully computed.

Step 1: Calculate the contribution of the j-th indicator for the i-th sample. The formula is :

$$f_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}}$$

Where x_{ij} represents the standardized value of the j-th indicator for the i-th sample, and m is the total number of samples.

Step 2: Calculate the information entropy of the indicator e_j. The formula is:

$$e_j = -K \sum_{i=1}^{m} f_{ij} \times lnf_{ij}$$

Where K is a constant, $K = \frac{1}{ln\, m}$

Step 3: Calculate the utility value, i.e., the entropy redundancy d_j. The formula is:

$$d_j = 1 - e_j$$

Step 4: Calculate the weight of the indicator w_j . The formula is

$$w_j = \frac{d_j}{\sum_{j=1}^{n} d_j}$$

3.2.2. Calculation of Weights Using the Entropy Method

The original data are standardized, yielding the following results in Table 3:

Table 3. The results

Indicator	2021	2022	2023	2024
Return on Assets (C11)	0.3343	0.0010	1.0010	0.8343
Return on Capital (C12)	1.0010	0.2368	0.5765	0.0010
Cost-to-Income Ratio (C13)	0.7681	1.0010	0.5407	0.0010
Capital Adequacy Ratio (C21)	0.8024	1.0010	0.2065	0.0010
Tier-1 Capital Adequacy Ratio (C22)	0.7565	1.0010	0.1908	0.0010
Core Tier-1 Capital Adequacy Ratio (C23)	0.7728	1.0010	0.4728	0.0010
Liquidity Ratio (C31)	0.0010	0.1304	1.0010	0.0317
Loan-to-Deposit Ratio (C32)	1.0010	0.5066	0.2482	0.0010
Provision Coverage Ratio (C41)	0.0010	0.3894	0.6761	1.0010
Non-Performing Loan Ratio (C42)	1.0010	0.7677	0.6343	0.0010
Loan Provision Ratio (C43)	0.0010	0.6541	0.9194	1.0010
Operational Risk (C51)	1.0010	0.5263	0.1977	0.0010
Compliance Risk (C52)	1.0010	0.7937	0.3585	0.0010
Anti-Money Laundering Risk (C53)	1.0010	0.6253	0.2409	0.0010
Corporate Governance Risk (C54)	1.0010	0.7961	0.7073	0.0010

Based on the entropy method, the weights of each secondary indicator are calculated, yielding the following summary Table.4:

Table 4. Summary of Secondary Indicator Weights

Secondary Indicator	ej	dj	Wj
Return on Assets (C11)	0.7330	0.2670	0.0604
Return on Capital (C12)	0.6942	0.3058	0.0691
Cost-to-Income Ratio (C13)	0.7731	0.2269	0.0513
Capital Adequacy Ratio (C21)	0.6862	0.3138	0.0709
Tier-1 Capital Adequacy Ratio (C22)	0.6787	0.3213	0.0726
Core Tier-1 Capital Adequacy Ratio (C23)	0.7637	0.2363	0.0534
Liquidity Ratio (C31)	0.3457	0.6543	0.1479
Loan-to-Deposit Ratio (C32)	0.6924	0.3076	0.0695
Provision Coverage Ratio (C41)	0.7465	0.2535	0.0573
Non-Performing Loan Ratio (C42)	0.7820	0.2180	0.0493
Loan Provision Ratio (C43)	0.7835	0.2165	0.0489
Operational Risk (C51)	0.6713	0.3287	0.0743
Compliance Risk (C52)	0.7401	0.2599	0.0588
Anti-Money Laundering Risk (C53)	0.6988	0.3012	0.0681
Corporate Governance Risk (C54)	0.7870	0.2130	0.0481

3.3. Calculation of Combined Weights Based on the Additive Synthesis Method

The additive synthesis method combines subjective weights and objective weights:

$$w_j = \lambda a_j + (1-\lambda) b_j$$

Where $\lambda, (1-\lambda)$ weight coefficients, also called preference coefficients;

a_j—— Subjective weight (AHP)

b_j—— Objective weight (entropy method)

w_j—— Combined weight by the additive synthesis method

The additive synthesis method is used to calculate the combined weight of each indicator. The preference coefficient λ is set to 0.5, indicating that the subjective and objective weights of the secondary indicators are equally important. The calculation results are shown in Table 5.

Table 5. Calculation Results of Combined Weights Using the Additive Synthesis Method

Secondary Indicator	Combined Weight (Additive Synthesis Method)	Ranking
Return on Assets (C11)	0.0525	8
Return on Capital (C12)	0.0671	6
Cost-to-Income Ratio (C13)	0.0311	15
Capital Adequacy Ratio (C21)	0.0564	7
Tier-1 Capital Adequacy Ratio (C22)	0.0712	5
Core Tier-1 Capital Adequacy Ratio (C23)	0.0988	2
Liquidity Ratio (C31)	0.2063	1
Loan-to-Deposit Ratio (C32)	0.0789	4
Provision Coverage Ratio (C41)	0.0452	10
Non-Performing Loan Ratio (C42)	0.0911	3
Loan Provision Ratio (C43)	0.0466	9
Operational Risk (C51)	0.0398	12
Compliance Risk (C52)	0.0416	11
Anti-Money Laundering Risk (C53)	0.0398	13
Corporate Governance Risk (C54)	0.0334	14

3.4. Financial Risk Evaluation Criteria for Bank A under Basel II

This study does not employ a ranking and classification approach based on a large-scale sample of banks. Instead, it establishes the benchmark intervals for each indicator according to the current regulatory requirements of the State Bank of Vietnam and the core supervisory standards of Basel II. In addition, real financial data from 10 large commercial banks in Vietnam in recent years are selected. By comparing regulatory thresholds, industry average levels, and the overall operational characteristics of the banking system, the reasonable range distribution of each indicator is determined.

On the basis of the above regulatory standards and industry data, each indicator is divided into five evaluation levels, namely “Excellent, Good, Medium, Low, and Poor”, and the evaluation linguistic set used in this study is constructed accordingly. This linguistic evaluation set can more accurately reflect the risk characteristics of the Vietnamese banking industry under the Basel II framework, and provides a scientific and unified discrimination basis for the subsequent risk evaluation model.

Table 6. Evaluation Standard Linguistic Set for Financial Risk of Bank A

Primary Indicators	Secondary Indicators	Excellent	Good	Medium	Low	Poor
Profitability Indicators (B1)	Return on Assets (C11)	≥1.5%	1.0–1.5%	0.7–1.0%	0.4–0.7%	≤0.4%
	Return on Equity (ROE)	≥15%	12–15%	10–12%	7–10%	≤7%
	Cost-to-Income Ratio (C13)	≤35%	35–45%	45–55%	55–65%	≥65%
Capital Adequacy Indicators (B2)	Capital Adequacy Ratio (C21)	≥12%	10–12%	8–10%	6–8%	≤6%
	Tier-1 Capital Adequacy Ratio (C22)	≥11%	9–11%	7–9%	6–7%	≤6%
	Core Tier-1 Capital Adequacy Ratio (C23)	≥10%	8–10%	6–8%	4.5–6%	≤4.5%
Liquidity Indicators (B3)	Liquidity Ratio (C31)	≥50%	40–50%	30–40%	20–30%	≤20%
	Loan-to-Deposit Ratio (C32)	≤70%	70–80%	80–85%	85–90%	≥90%
Credit Risk Indicators (B4)	Provision Coverage Ratio (C41)	≥180%	150–180%	120–150%	80–120%	≤80%
	Non-Performing Loan Ratio (C42)	≤1%	1–2%	2–3%	3–5%	≥5%
	Loan Provision Ratio (C43)	>200%	150%-200%	100%-150%	50%-100%	<50%

4. Results Analysis and Discussion

Based on the empirical evaluation results, the financial risk profile of Bank A mainly manifests in three key dimensions: liquidity risk, capital adequacy risk, and credit risk, each showing different characteristics during the period from 2021 to 2024.

First, from the perspective of liquidity risk, the liquidity ratio and the loan-to-deposit ratio are key indicators reflecting the bank’s short-term funding capacity and credit expansion pace. The results show that Bank A’s liquidity ratio remained relatively stable during the observation period, fluctuating from 51.51% in 2021 to 56.07% in 2023 and then slightly declining to 51.56% in 2024. Overall, the ratio remained above 50%, indicating that the bank maintained a relatively adequate level of liquid assets to cover short-term liabilities. However, the loan-to-deposit ratio increased steadily from 63.60% to 72.50% over the same period, representing an increase of nearly nine percentage points. Although this level is still below the commonly accepted regulatory threshold of 75%, the continuous upward trend suggests that a larger proportion of deposit resources has been allocated to lending activities. As a result, the bank’s liquidity buffer may gradually narrow, reducing its flexibility in responding to unexpected liquidity shocks. Therefore, while the overall liquidity level remains sufficient, the structural allocation of funds warrants further attention.

Second, regarding capital adequacy risk, capital adequacy ratios serve as an important safeguard for banks in absorbing unexpected losses. The results indicate that Bank A’s capital adequacy ratio increased slightly from 11.40% in 2021 to 11.98% in 2022, but subsequently declined in the following two years. By 2024, the capital adequacy ratio had fallen to 9.06%, while the Tier 1 capital adequacy ratio and the core Tier 1 capital adequacy ratio decreased to 8.74% and 6.40%, respectively. Although these indicators still meet the regulatory minimum requirements, the decline suggests that the capital buffer has been significantly reduced. This trend

reflects that the pace of capital replenishment has lagged behind the expansion of risk-weighted assets. On the one hand, the bank's internal capital accumulation capacity weakened as the return on capital gradually declined from 14.29% to 13.23%. On the other hand, the bank has not actively utilized external capital instruments, such as preferred shares or perpetual bonds, to strengthen its capital base. Consequently, the bank's ability to absorb potential financial risks has weakened to some extent.

Finally, in terms of credit risk, the analysis mainly focuses on asset quality and the adequacy of risk provisioning. The non-performing loan (NPL) ratio of Bank A increased from 1.71% in 2021 to 2.01% in 2024, indicating a gradual rise in credit risk exposure. Meanwhile, the provision coverage ratio declined from 148.96% to 108.67%, and the loan provision ratio decreased from 2.68% to 2.19%. These changes suggest that the growth rate of loan loss provisions has not kept pace with the increase in non-performing loans, thereby weakening the bank's capacity to absorb potential credit losses. In particular, the provision coverage ratio in 2024 approached the regulatory minimum requirement of 100%, which implies that if the NPL ratio continues to increase, the bank may face a situation in which provisions are insufficient to cover expected losses. This trend may reflect certain weaknesses in credit risk management, including loan approval procedures and post-loan monitoring. Therefore, strengthening asset quality management and improving the adequacy of risk provisioning should become key priorities in the bank's future risk management strategy.

Overall, the empirical results indicate that although Bank A maintains relatively stable liquidity conditions, the continuous rise in the loan-to-deposit ratio, the decline in capital adequacy indicators, and the deterioration of credit risk indicators collectively highlight potential vulnerabilities in the bank's financial risk structure. In order to enhance financial stability, Bank A should further optimize the balance between credit expansion and liquidity management, strengthen capital replenishment mechanisms, and improve credit risk control and provisioning policies. These measures would help enhance the bank's resilience against potential financial shocks and promote sustainable development in the long term.

5. Conclusion

This study constructs a comprehensive financial risk evaluation framework for Vietnamese commercial banks by integrating the Analytic Hierarchy Process (AHP) and the Entropy Weight Method (EWM). Based on Basel II regulatory standards and the supervisory requirements of the State Bank of Vietnam, a multi-level financial risk evaluation index system was developed covering profitability, capital adequacy, liquidity, credit risk, and other operational risks. By combining subjective expert judgment with objective data-driven weighting, the proposed model improves the reliability and scientific validity of financial risk evaluation.

The empirical analysis of Bank A indicates that liquidity conditions remain relatively stable, while potential risks mainly stem from the decline in capital adequacy indicators and the gradual deterioration of credit asset quality. The continuous increase in the loan-to-deposit ratio and the decline in provisioning coverage also suggest that the bank's risk-buffer capacity has weakened to some extent.

Therefore, Bank A should further strengthen capital replenishment mechanisms, improve credit risk management, and optimize the balance between liquidity management and credit expansion. The evaluation framework proposed in this study provides a useful analytical tool for financial risk monitoring and may serve as a reference for risk management practices in Vietnamese commercial banks.

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