International Journal of Education, Business and Economics Research (IJEBER)

ISSN: 2583-3006

Vol. 5, Issue 2, March -April 2025, pp 164-176

To cite this article: Tran Thi Hai Yen (2025). The Impact Of Fintech On The Business Model Of Banks In Vietnam. International Journal of Education, Business and Economics Research (IJEBER) 5 (2): 164-176

THE IMPACT OF FINTECH ON THE BUSINESS MODEL OF BANKS IN VIETNAM

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https://doi.org/10.59822/IJEBER.2025.5213

ABSTRACT

This research focuses on clarifying the impact of Fintech on Vietnam's banking sector by analyzing both theoretical and practical aspects of Fintech, while also examining the relationship between financial technologies and banking operations in the context of digital transformation. The research has compiled statistical data on the growth of Fintech and the changes in banking business models before and after the Fintech boom. Furthermore, the study identifies factors influencing the sustainable development of the banking industry in the digital era, including technological innovation, regulatory frameworks, risk management capabilities, and the trend of collaboration between banks and Fintech firms for mutual growth. Finally, based on the theoretical and practical foundations established, the research proposes several policies and solutions to help Vietnamese banks adapt to the evolving digital financial market. Investing in technology, enhancing cybersecurity capabilities, refining regulatory frameworks, and fostering stronger collaboration with Fintech companies are key strategies to ensure that traditional banks not only survive but also thrive in the digital age. These solutions will serve as the foundation for Vietnam's banking sector to continue innovating, optimizing operations, and fully leveraging the benefits of financial technology in the future.

KEYWORDS:- Banking, Fintech, Financial Market, Vietnam.

1.0 INTRODUCTION

Vietnam's banking sector has been undergoing a profound transformation under the influence of Fintech from 2014 to 2024. The rapid development of financial technology has not only created numerous opportunities for innovation but also posed significant challenges to the traditional banking model. Fintech has contributed to financial inclusion, improving access to banking services for the population, particularly in rural areas and among unbanked customers (World Bank, 2022). At the same time, the rise of digital payment platforms, peer-to-peer (P2P) lending, and blockchain

technology has reshaped banking operations, compelling traditional banks to adapt to maintain their competitive edge(Gomber et al., 2018).However, the rise of Fintech has also placed Vietnam's banking industry in a position where it faces numerous risks. Fierce competition from Fintech companies has reduced the revenue of traditional banks in key areas such as payments and lending. Additionally, risks related to cybersecurity, financial fraud, and regulatory gaps present significant challenges for the banking sector. Given this situation, studying and evaluating the dual impact of Fintech is essential to propose appropriate solutions.

This research focuses on clarifying the impact of Fintech on Vietnam's banking sector by analyzing both theoretical and practical aspects of Fintech, while also examining the relationship between financial technology and banking operations in the context of digital transformation. The research has compiled statistical data on the growth of Fintech and the changes in banking business models before and after the Fintech boom. Furthermore, the study identifies factors influencing the sustainable development of the banking industry in the digital era, including technological innovation, regulatory frameworks, risk management capabilities, and the trend of collaboration between banks and Fintech firms for mutual growth. Finally, based on the theoretical and practical foundations established, the research proposes several policies and solutions to help Vietnamese banks adapt to the evolving digital financial market. Investing in technology, enhancing cybersecurity capabilities, refining regulatory frameworks, and fostering stronger collaboration with Fintech companies are key strategies to ensure that traditional banks not only survive but also thrive in the digital age. These solutions will serve as the foundation for Vietnam's banking sector to continue innovating, optimizing operations, and fully leveraging the benefits of financial technology in the future.

2.0 LITERATURE REVIEW

The evolution of fintech in Vietnam is rooted in the transformative changes brought about by advancements in information and communication technologies. By the end of 2021, Vietnam had 31 commercial banks, with 19 listed on official stock exchanges. Among these, eight major banks were selected for stock return analysis, representing a substantial portion of the banking sector's total authorized capital and assets. According to Arner, Barberis, and Buckley (2016), Fintech represents a paradigm shift in global finance, and Vietnam is no exception. The regulatory environment has played a significant role in this transformation, with key initiatives such as Decision No. 2655/2019/QĐ-NHNN, which promotes information technology strategy in banking, and Decree No. 80/2016/NĐ-CP, which addresses electronic payments and e-wallets, further enhancing the fintech landscape. Historically, traditional Vietnamese banks have primarily served urban populations, often neglecting rural areas and small businesses due to high fees and limited branch networks. This created a gap in financial services for many citizens, particularly those who are unbanked or under banked. As of 2022, approximately 70% of Vietnam's population remained unbanked, highlighting the critical need for innovative solutions to improve financial inclusion (World Bank, 2022). The rise of fintech has provided an avenue for addressing these challenges by simplifying access to essential banking services through digital platforms, which are particularly appealing to low-income individuals in rural regions. The digitalization of banking has introduced both opportunities and challenges for traditional financial institutions. While banks recognize the benefits of adopting new digital technologies, they face obstacles related to strategy, management,

and the implementation of digital transformation initiatives. The fintech sector, with its focus on leveraging modern technology such as AI and cloud computing, has emerged as a vital player in reshaping the Vietnamese financial landscape, driving competition and prompting banks to innovate to maintain their market positions. Fintech has emerged to bridge this gap by offering cost-effective digital services to underserved communities (Nguyen & Le, 2021).

Fintech has emerged as a transformative force within the financial services sector, significantly impacting traditional banking models in Vietnam (Pham, Nguyen, & Le, 2021). The rapid advancement of technology and the increasing adoption of digital solutions have led to notable trends in the fintech landscape. In Vietnam, fintech companies are increasingly collaborating with traditional banks to enhance digital banking platforms. This partnership enables the provision of digital financial services while complying with existing banking regulations, thereby promoting stability in the financial sector. Such collaborations have allowed banks to leverage fintech innovations to improve their service offerings and operational efficiency.

Regulatory Developments

The regulatory environment for fintech in Vietnam is evolving, with a focus on ensuring financial security while fostering innovation. The State Bank of Vietnam (SBV) is actively considering regulations for areas such as peer-to-peer (P2P) lending, which currently operates in a largely unregulated space(State Bank of Vietnam, 2019). Additionally, the development of a fintech regulatory sandbox reflects the government's commitment to creating a conducive environment for fintech innovation while managing associated risks.

Rise of Digital Payment Solutions

The COVID-19 pandemic has accelerated the adoption of contactless and digital payment solutions in Vietnam. Fintech firms have played a crucial role in facilitating seamless transactions, which has significantly improved customer convenience and accessibility. This shift towards digital payments is expected to continue, as consumers increasingly favor the convenience of fintech solutions over traditional banking methods.

Financial Inclusion Initiatives

Fintech is instrumental in promoting financial inclusion in Vietnam, particularly for underserved populations. By providing essential banking services such as payments and lending to low-income individuals in rural areas, fintech companies are addressing gaps left by traditional banks. This trend is vital for enhancing access to financial services and supporting economic development in the country.

Adoption of Innovative Financial Products

The fintech sector in Vietnam is characterized by the introduction of innovative financial products that cater to the evolving needs of consumers. Fintech solutions often offer lower costs, greater convenience, and enhanced user experiences compared to traditional banking products. This competitiveness challenges banks to adapt and improve their service offerings in order to retain customers.

Impact on Traditional Banking Models

The emergence of financial technology (Fintech) has significantly transformed traditional banking models in Vietnam, forcing banks to adapt their operations and strategies to remain competitive. This impact can be categorized into several key areas, including operational efficiency, customer experience, and financial performance.

Disruptive Innovation in Banking

Fintech is viewed through the lens of Disruptive Innovation Theory, which posits that new technologies can disrupt established markets by providing simpler, more accessible solutions that gradually replace existing services. Traditional banks are compelled to enhance their operational efficiency and improve customer experiences to combat this disruption [6]. For instance, the introduction of mobile payments and peer-to-peer (P2P) lending platforms has streamlined transaction processes and increased competition within the sector, often leading to reduced profit margins for banks.

Operational Efficiency and Strategic Adaptation

To adapt to the competitive pressures posed by Fintech, traditional banks have adopted various strategic responses. Many banks have opted for collaboration with Fintech firms to leverage their technological innovations, thus creating synergistic benefits that allow for the enhancement of service delivery and customer reach. In Vietnam, such collaborations have become increasingly common, enabling banks to maintain financial stability while embracing innovation.

Customer Experience and Behavior Change

The rise of Fintech has also altered customer interactions with banking services, prompting a shift in customer behavior towards greater use of digital platforms. Factors such as perceived ease of use, customer trust, and the overall usefulness of Fintech services play a critical role in shaping customer intentions to adopt these technologies. As customers increasingly prefer the convenience of digital banking solutions, traditional banks must enhance their own digital offerings to improve customer satisfaction and retain their client base.

Financial Performance Metrics

The influence of Fintech on traditional banking performance can be measured through key financial indicators, including return on assets (ROA), return on equity (ROE), and net interest margins (NIM). Research indicates that banks that successfully integrate Fintech solutions can not only maintain but potentially improve their competitive position in the market, leading to better financial performance overall[16]

Challenges Faced by Banks

The rapid growth of fintech companies in Vietnam presents significant challenges for traditional banks, particularly in the areas of competition and operational efficiency. As of 2021, Vietnam was home to 154 fintech firms, with a predominant focus on payment services, which has intensified the competitive landscape for banks. This evolution necessitates banks to adapt their business models to maintain relevance and market share.

Technological Adaptation

One of the primary challenges for banks is the urgent need to invest in technology and streamline their operational models. Many banks are currently burdened by outdated systems and processes that hinder efficiency and increase operating costs. To effectively compete with agile fintech companies, banks must adopt new technologies such as artificial intelligence, blockchain, and data analytics to enhance their service offerings and improve customer experience.

Lending Process Reformation

Another significant hurdle is the reform of the lending process. Traditionally, banks have required extensive documentation and lengthy approval times, which contrasts sharply with the rapid and simplified lending processes employed by fintechs. To remain competitive, banks need to develop more efficient loan processing systems while adhering to regulatory requirements, a task that is not easily accomplished and may require substantial time and resources.

Building Competitive Credit Scoring Models

Moreover, banks face the challenge of creating sophisticated credit scoring models that leverage big data analytics. This approach is crucial for enhancing their competitiveness against fintech companies that utilize innovative methods for assessing creditworthiness. The investment in and development of such models demand significant financial and operational commitments, which may strain existing resources.

Regulatory Environment

The evolving regulatory landscape also poses challenges for banks. While recent modifications in Vietnam's regulatory frameworks aim to balance innovation with investor protection, banks must navigate these changes to adapt their operations without compromising compliance. This adaptability is essential for banks to thrive in a market increasingly influenced by fintech innovations.

Technological Advancements

The future of fintech in Vietnam is poised for significant transformation due to ongoing technological advancements. With the adoption of Banking 3.0 and the integration of technologies such as Artificial Intelligence (AI), Big Data, and Analytics, the operations of both fintech companies and traditional banks are expected to evolve markedly over the next five years. As fintech startups increase, the synergy between technology and finance will further enhance the customer experience, streamline operations, and foster innovation in product offerings.

Government Support and Regulatory Framework

The Vietnamese government is actively fostering the growth of fintech through supportive policies and initiatives. The establishment of the Fintech Steering Committee is a crucial step toward creating a comprehensive legal framework for fintech startups, which aims to promote ecosystem development while ensuring regulatory oversight. However, challenges remain in the form of limited regulations governing fintech activities, which the government is working to address through various decrees and strategies, such as Decision No. 942/QD-TTg, which outlines a strategy for e-government development.

Financial Inclusion and Market Growth

Fintech has the potential to significantly impact financial inclusion in Vietnam by providing essential banking products to underserved populations, including low-income individuals in rural areas. The rapid growth of digital payment solutions and the increasing demand for financial services among Vietnam's young, tech-savvy population suggest that fintech will play a vital role in enhancing access to financial products and services. Non-cash payment transactions have already surged, with projections estimating that transaction values will reach $40 billion by 2025.

Collaboration between Fintech and Banks

Looking ahead, collaboration between fintech companies and traditional banks is likely to become more prevalent. By leveraging each other's strengths, these entities can create a mutually beneficial relationship that enhances operational efficiency and meets evolving customer needs. As fintech continues to disrupt the financial landscape, banks are expected to partner with startups to launch innovative products that respond to changing consumer preferences, thereby maintaining competitiveness in an increasingly digital economy.

Challenges and Opportunities

While the growth of fintech presents numerous opportunities, it also poses challenges, particularly in building user trust and navigating regulatory hurdles. The ability of fintech companies to gain customer confidence in their digital financial products will be crucial for their sustained growth. Additionally, the increasing interest from domestic and foreign investors in the fintech ecosystem creates potential avenues for mergers and acquisitions, further driving market expansion.

3.0 RESEARCH MODEL

Based on previous studies and the current situation, the regression model is chosen as the foundation to examine the factors affecting the performance of commercial banks. This model helps to generalize how the emergence of Fintech has influenced commercial banks transitioning from traditional business models to digital transformation.

The regression model is structured as follows:

$$\boldsymbol{Y = \beta_0 + \beta_1 * NPL + \beta_2 * DLR + \beta_3 * ETA + \beta_4 * TCTR + \beta_5 * LOANTA}$$

Dependent variable:

Y: Return on Equity (ROE)

Independent variables:

NPL: Non-Performing Loan Ratio
ETA: Equity to Total Assets Ratio
TCTR: Cost-to-Income Ratio
DLR: Deposit-to-Loan Ratio
LOANTA: Loan-to-Total Assets Ratio

These variables are detailed in Table 3.1, including their expected signs in the model.

Table 3.1: Expected Signs of Variables in the Model

Variable	Description	Measurement	Expected Sign
Dependent			
ROE (Y)	Return on Equity (Net profit after tax over owner's equity)		
Independent			
NPL	Non-Performing Loan Ratio	Overdue loans / Total loans	-
ETA	Equity to Total Assets Ratio	Equity / Total assets	-
TCTR	Cost to Income Ratio	Operating expenses / Total income	-
DLR	Deposit to Loan Ratio	Deposits / Loans	-
LOANTA	Loan to Total Assets Ratio	Loans / Total assets	-

The data used in this study is collected from audited financial statements of commercial banks in Vietnam. The data is carefully analyzed and selected to ensure accuracy and relevance to the research topic.

The necessary financial indicators for the model are calculated and aggregated annually using quantitative methods with Stata 12 software. Panel regression techniques are employed to analyze the impact of five factors—Non-performing loan ratio (NPL), Equity to total assets ratio (ETA), Cost-to-income ratio (CIR), Deposit to loan ratio (DLR), and Loan to total assets ratio (LOANTA)—on the performance of commercial banks in Vietnam. The aim is to identify the most significant variables contributing to the model. Additionally, the study utilizes regression analysis by running both Fixed Effects (FEM) and Random Effects (REM) models, in combination with descriptive statistical methods to clarify the issues under investigation. Furthermore, the Hausman test is applied to determine which model, Fixed Effects or Random Effects, is more appropriate for this research.

The author proceeds to identify a suitable regression model by considering the time constraints and the specific characteristics of each bank. Given that the dataset is structured in a panel data format, two commonly used models are the Fixed Effects Model (FEM) and the Random Effects Model (REM). To determine the most appropriate model for analyzing the relationship between variables, the author employs the Hausman test.

The Hausman test evaluates the following hypotheses:

Null hypothesis (H_0): The Random Effects Model is more appropriate than the Fixed Effects Model.

Alternative hypothesis (H_1): The Fixed Effects Model is more appropriate than the Random Effects Model.

Based on the test results, if the p-value is less than 0.05, the null hypothesis is rejected, indicating that the Fixed Effects Model is more suitable and should be selected for further analysis. Conversely, if the p-value is greater than 0.05, the null hypothesis is accepted, suggesting that the Random Effects Model is more appropriate and will be used for the study.

4.0 RESEARCH RESULTS

The dataset consists of 20 observations with key statistics presented in Table 4.1.

Variable	Number of Observations	Mean	Standard Deviation	Median	Minimum Value	Maximum Value	Skewness	Kurtosis
ROE	20	14.27	5.54599	13.25	7	25.5	0.533	2.141
NPL	20	2.136	1.599386	1.59	0.77	6.81	2.051	5.899
ETA	20	6.726	3.088831	5.77	3.68	15.36	2.001	6.11
TCTR	20	11.3365	1.898823	11.085	9.2	15.5	0.749	2.524
DLR	20	77.65	6.983251	78	62	90	-0.294	2.749
LOANTA	20	72.75	5.59017	73	62	83	-0.956	2.327

Table 4.2. Autocorrelation Matrix of Independent Variables

```
. corr ROE NPL ETA TCTR DLR LOANTA
(obs=20)
```

	ROE	NPL	ETA	TCTR	DLR	LOANTA
ROE	1.0000					
NPL	-0.6335	1.0000				
ETA	0.4922	-0.1313	1.0000			
TCTR	0.4717	-0.2958	0.7886	1.0000		
DLR	0.4721	-0.4388	-0.1597	-0.3187	1.0000	
LOANTA	0.0281	-0.2682	-0.4570	-0.6191	0.7931	1.0000

(Source: Author's calculations using Stata 17 software)

The results from Table 4.2, which presents the matrix of pairwise correlation coefficients among the variables in the model, indicate that the variable NPL (Non-performing Loan Ratio) shows the strongest correlation with the performance indicator ROE (Return on Equity). In contrast, the other variables exhibit weaker correlations with ROE. The results also reveal that, since all correlation coefficients are below 0.8, it can be concluded that multicollinearity is not serious and the degree of multicollinearity among the variables is relatively low.

However, to provide a more robust confirmation that multicollinearity is not a significant concern, the author conducted a Variance Inflation Factor (VIF) test. The obtained results are as follows:

Table 4.3. Multicollinearity Test of Independent Variables in the Model 40

```
. vif
```

Variable	VIF	1/VIF
TCTR	**5.35**	**0.186783**
LOANTA	**4.87**	**0.205482**
DLR	**3.48**	**0.287324**
ETA	**3.05**	**0.327703**
NPL	**2.01**	**0.496745**
Mean VIF	**3.75**	

(Source: Author's calculations using Stata 17 software)

The Variance Inflation Factor (VIF) is a commonly used indicator to test for multicollinearity in a regression model. If the VIF value exceeds 10, it indicates the presence of severe multicollinearity; conversely, if the VIF value is less than 10, multicollinearity is not considered to be a serious issue. Based on the calculated results, Table 4.3 shows that the VIF values for the variables—Non-performing Loan Ratio (NPL), Equity to Total Assets Ratio (ETA), Cost-to-Income Ratio (CIR), Deposit to Loan Ratio (DLR), and Loan to Total Assets Ratio (LOANTA)—are all below 10. Therefore, it can be concluded that there is no serious multicollinearity present.

Hence, based on both the VIF test and the correlation matrix, it can be affirmed that the research model does not exhibit any significant multicollinearity among the independent variables.

To determine whether the Fixed Effects model or the Random Effects model is more appropriate for analyzing the factors affecting the liquidity of firms in the fisheries sector, the author employs the Hausman test to address this issue.

The results of the Hausman test are presented and interpreted in Table 4.4 as follows:

Table 4.4. Fixed Effect and Random Effect Test using Hausman Test

```
. hausman fe re
```

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
NPL	1.028856	-1.27778	2.306637	.
ETA	-.6106581	.4782005	-1.088859	.0602104
TCTR	-.1245478	.2126564	-.3372042	.
DLR	.7452838	.6420982	.1031856	.5773439
LOANTA	.3326341	-.5408416	.8734757	.749922

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

chi2(**5**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **17.30**
Prob > chi2 = **0.0040**

(Source: Author's calculations using Stata 17 software)

The results indicate that the P-value (Prob > chi²) of the model is 0.004, which is less than 0.05. With a 95% confidence level, the null hypothesis (H_0) is rejected. It is therefore concluded that, for the proposed model in this study, the Fixed Effects Model (FEM) is more appropriate and better explains the impact of Fintech on the banking business model. As a result, the author will adopt the Fixed Effects Model (FEM) for this research.

The results obtained from the Fixed Effects Model (FEM) are presented in Table 4.5 as follows:

Table 4.5. Fixed Effect Model – FEM

Fixed-effects (within) regression — Number of obs = **20**
Group variable: **NHTM** — Number of groups = **4**

R-squared:
Within = **0.8390**
Between = **0.0492**
Overall = **0.0035**

Obs per group:
min = **5**
avg = **5.0**
max = **5**

F(**5,11**) = **11.47**
corr(u_i, Xb) = **-0.7894** — Prob > F = **0.0005**

ROE	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
NPL	1.028856	.559474	1.84	0.093	-.2025377	2.26025
ETA	-.6106581	.4105819	-1.49	0.165	-1.514343	.2930265
TCTR	-.1245478	.5547856	-0.22	0.826	-1.345623	1.096527
DLR	.7452838	.6083862	1.23	0.246	-.5937651	2.084333
LOANTA	.3326341	.8016852	0.41	0.686	-1.431863	2.097131
_cons	-64.47883	20.9662	-3.08	0.011	-110.6251	-18.33254
sigma_u	9.8623945					
sigma_e	1.7203517					
rho	.97047077	(fraction of variance due to u_i)				

(Source: Author's calculations using Stata 17 software)

Based on the results in Table 4.5 (Fixed Effects Model), the regression model is rewritten as follows:

Y = -64.478 + 1.02*NPL* - *0.61*ETA – 0.124*CIR* + *0.745*DLR + 0.332*LOANTA

Comparison between research results and initial expectations:

Table 4.6. Research Results Compared to Expectations

Variable	**Description**	**Measurement**	**Expected Sign**	
Dependent				
ROE (Y)	Return on Equity (Net profit after tax over owner's equity)			
Independent				
NPL	Non-Performing Loan Ratio (Ratio of overdue loans to total loans)	Overdue loans / Total loans	-	+
ETA	Equity to Total Assets Ratio	Equity / Total assets	-	-
TCTR	Cost to Income Ratio	Operating expenses / Total income	-	-
DLR	Deposit to Loan Ratio	Deposits / Loans	-	+
LOANTA	Loan to Total Assets Ratio	Loans / Total assets	-	+

From the results in Table 4.5, it can be observed that among the variables in the model, the Non-performing Loan Ratio (NPL) is statistically significant at the 5% level and has the strongest influence on the impact of Fintech on the banking business model. This suggests that the rapid growth of Fintech companies—especially peer-to-peer (P2P) lending platforms—may lead some customers to overborrow, thereby increasing credit risk within the banking system. These findings highlight that while integrating Fintech into banking business models (such as through digital credit scoring systems using big data and advanced technologies) can improve credit evaluation accuracy and help reduce non-performing loans, and while digital payment platforms and e-wallets can facilitate easier loan repayments for customers, insufficient control and oversight can significantly increase systemic credit risk. Therefore, this result did not entirely align with the author's initial expectations.

The Equity to Total Assets Ratio (ETA) also has an impact on the model and carries the expected sign. This indicates that applying Fintech in banking business models is meaningful, as Fintech

contributes to increasing banks' equity by facilitating the development of digital banking services and electronic payments, thereby enhancing the banking business model and increasing revenues. Fintech also supports banks in optimizing risk management and attracting more investors. However, if not managed carefully, the adoption of Fintech may introduce technological and cybersecurity risks that could negatively affect banking operations.

The Deposit to Loan Ratio (DLR) is also shown to affect the model. If banks can efficiently utilize mobilized funds, operational efficiency may improve. Additionally, the application of digital technologies in monitoring and adjusting capital flows can help mitigate potential risks, such as sudden deposit withdrawals due to unexpected market events—for instance, customers shifting funds to securities or failing to repay loans upon maturity.

According to the results of the model, the remaining two variables—Cost-to-Income Ratio (CIR) and Loan to Total Assets Ratio (LOANTA)—are not statistically significant at the 5% level in the research model. However, due to limitations in time and the number of observations, there is not yet sufficient statistical evidence to confirm whether these factors have a significant impact on the influence of Fintech on the banking business model.In addition, the author evaluates the R-squared (R^2) value to measure the extent to which the dependent variable is explained by the independent variables. The model yields an R-squared value of 0.839, indicating that the model explains 83.9% of the variation in Return on Equity (ROE) through the variables: Non-performing Loan Ratio (NPL), Equity to Total Assets Ratio (ETA), Cost-to-Income Ratio (CIR), Deposit to Loan Ratio (DLR), and Loan to Total Assets Ratio (LOANTA).

These results align with prior research (Chen, Wu, & Yang, 2019; Phan et al., 2023), which suggests that Fintech adoption enhances efficiency but requires robust oversight to mitigate credit and cybersecurity risks.

With the topic *"The Impact of Fintech on the Business Model of Vietnamese Banks,"* the research applied a quantitative analysis method to assess the factors influencing the post-tax profitability (ROE) of commercial banks. The analyzed factors include: Non-performing Loan Ratio (NPL), Equity to Total Assets Ratio (ETA), Cost-to-Income Ratio (CIR), Deposit to Loan Ratio (DLR), and Loan to Total Assets Ratio (LOANTA). The study focused on identifying key influencing factors through the analysis of 4 commercial banks using 20 observational variables. From these activities, the research draws assessments and proposes recommendations to enhance business performance and help banks adapt their business models to the opportunities and challenges posed by Fintech.

The study shows that bank performance is inversely related to the Equity to Total Assets Ratio and the Loan to Total Assets Ratio. This implies that higher capitalization may lead to lower returns on equity, and a higher loan-to-asset ratio may reduce operational efficiency. These findings highlight that the emergence of Fintech in banking operations brings significant advantages but also introduces potential risks. Fintech optimizes the credit scoring process through digital technology and big data, thereby improving customer assessment accuracy and reducing non-performing loans,

which mitigates credit risk. However, without proper oversight, excessive lending—especially via P2P lending platforms—can increase credit risk substantially.

Additionally, Fintech enables banks to more easily reach new customers via digital banking, online lending, and e-payment platforms, thus expanding market reach and improving efficiency. Nevertheless, without ensuring adequate security and data protection, this expansion may lead to technological and cybersecurity risks, affecting the reputation and stability of the banking system.

The study also notes a limitation in that it focuses solely on quantitative variables derived from publicly available financial statements, without incorporating practical factors such as employee skill levels, staff age, and other relevant real-world elements. Since Fintech is a potential driver of business performance, the successful application of digital technology requires both understanding and adaptability from employees at all levels in the face of constant change.

In conclusion, while the development of Fintech presents numerous opportunities, it must be accompanied by careful monitoring and control to mitigate underlying risks.

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