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Factors for digital banking development in Vietnam in the new context

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Abstract

In the context of digital transformation and the development of information technology, digital banking is becoming an inevitable trend of the Vietnamese banking industry. This article focuses on analyzing the main factors affecting the development of digital banking in Vietnam in the current period. Through synthesizing and analyzing secondary data from previous reports and studies, as well as surveying the opinions of 20 experts in the fields of banking and technology, the article points out 5 important factors: (1) State policies and regulations, (2) Technology infrastructure, (3) Customer needs and behavior, (4) Competitiveness of banks, (5) Cooperation between stakeholders. Research results show the need to improve the legal framework, invest in upgrading infrastructure, improve customer awareness and experience, enhance competitiveness and promote multi-stakeholder cooperation to promote digital banking to develop sustainably. The article not only has academic significance but is also highly applicable, helping stakeholders have a basis to devise appropriate digital banking development strategies in the new context.

Keywords: Digital banking, digital transformation, financial technology, development factors, Vietnam

1. Introduction

In recent years, the Industrial Revolution 4.0 and the explosion of information technology have brought many breakthrough changes in many fields, especially in the banking industry. Digital banking is becoming an inevitable trend and one of the top priorities of banks globally. According to a report by Juniper Research, the number of digital banking users globally is expected to increase from 2.4 billion in 2020 to 3.6 billion in 2024 ^[1]. Digital banking brings many benefits such as increased convenience, reduced transaction costs, improved customer experience and expanded access to financial services for the masses ^[2].

In Vietnam, developing digital banking is also one of the top priorities of the Government and banking industry. The Vietnam banking industry development strategy to 2025, with a vision to 2030, has set the goal of promoting the application of information technology, developing digital banking and enhancing security and safety of banking operations ^[3]. Many commercial banks have deployed mobile banking applications, online payment services and applied new technologies such as artificial intelligence, big data and blockchain into their operations. However, the proportion of people using digital banking in Vietnam is still quite modest compared to other countries in the region and the world. According to a World Bank survey, the proportion of adults with a bank account in Vietnam in 2017 was only 30.8%, much lower than the average of 73.1% in the East Asia-Pacific region. Binh Duong ^[4].

The development of digital banking in Vietnam is also facing many challenges such as unsynchronized technology infrastructure, incomplete legal system, and people's limited demand for using digital banking services. ^[5]. Therefore, it is necessary to systematically research and evaluate the factors affecting the development of digital banking in Vietnam. The research results will help policymakers, banks and related parties have a basis to propose appropriate solutions and strategies to promote faster and more sustainable development of digital banking, contributing to the modernization of digital banking. Realizing financial inclusion and national digital transformation goals.

2. Theoretical basis and research methods

2.1. Theoretical basis

Digital banking is the use of digital technology to provide banking products and services conveniently, quickly and securely through online channels such as internet Banking, Mobile Banking and mobile applications [6]. According to the World Bank's definition, digital banking is "the use of digital technology, especially mobile phones, to expand the reach and scale of key service accounts to target audiences." not yet served or the server is not complete" [7].

Banks differ from banking communication systems in many aspects. First, digital banks use digital technology to provide services, while traditional banks mainly rely on branch networks and direct transactions. Second, digital banking

allows customers to make transactions anytime, anywhere through mobile devices, while banking transmission systems are limited by space and time [8]. Third, digital banks leverage big data and artificial intelligence to analyze customer behavior, problem-solve, produce suitable products and personalized experiences, while traditional banks mainly relies on direct interaction to understand customer needs [9].

From the results of basic research. The author proposes a model to research factors for digital banking development in Vietnam in the new context: (1) State policies and regulations, (2) Technology infrastructure, (3) Demand customer needs and behavior, (4) Competitiveness of banks, (5) Cooperation between stakeholders (Figure 1).

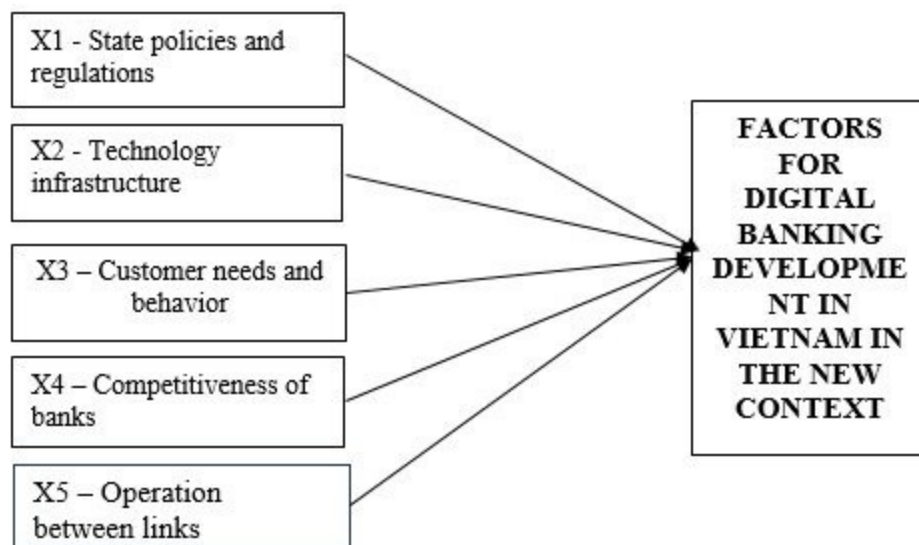


Fig 1: Research model of digital banking developments in Vietnam in the new context

2.2. Research methods, analysis and evaluation

Secondary data collection method: We conduct an overview of reports, research, and scientific articles at home and abroad on the current situation and factors affecting digital banking development. Main data sources include reports from the Government, State Bank, World Bank, scientific articles in prestigious journals, and market research reports.

Primary data, compiled from survey results of 150 experts, commercial banking enterprises and representatives of state management agencies, companies.

Expert opinion survey method: We conducted a survey of the opinions of 20 experts using the convenient sampling method, including leaders of state management agencies, commercial banks, and fintech companies and researchers. Semi-structured in-depth interviews were conducted to find out opinions about the current situation, influencing factors and solutions to promote digital banking.

Data analysis method: Qualitative data was analyzed using content analysis method with the support of NVIVO software, including steps of data coding, classification and synthesis of main themes, and build a model of impact factors. Quantitative data on digital banking development is analyzed using descriptive statistics with SPSS software.

3. Research results and discussion

3.1. Current status of digital banking development in Vietnam

Secondary data analysis results show that digital banking in Vietnam has made significant developments in recent years. According to a report by the State Bank, by the end of 2022, 95% of commercial banks have developed mobile banking services and 78% have applied eKYC in opening accounts remotely [10]. The proportion of transactions via electronic channels has increased from 50% in 2016 to 80% in 2022 [11]. However, the proportion of adults with bank accounts is only 50%, much lower than the average of 80% in ASEAN countries [12].

3.1.1. State policies and regulations

100% of experts emphasized the importance of this factor. An expert said: "Policies on electronic payments, digital transformation, cybersecurity and personal data protection play a fundamental role. However, the current legal framework is still incomplete, but crossed and not accessed." Another expert said: "The government needs to have policies to encourage innovation, test new technology (management sandbox) and reasonable support between banks and fintech."

3.1.2. Technology infrastructure

Experts agree that this is the key factor. An expert commented: "Quality internet connection, mobile network and payment infrastructure are essential foundations. Vietnam needs to develop 5G network deployment, data centers, cloud computing and security technology." confidential to meet the bank's request number." Another expert said: "By joining "big" technology companies like VNPT, Viettel will create important leverage to develop infrastructure."

3.1.3. Customer needs and actions

Most experts believe that customer acceptance is the decisive factor. According to experts: "The COVID-19 epidemic has changed habits and promoted the need to use digital banking. However, many people are still afraid about security, science and lack of technology skills." Expert G proposed: "Banks need to further research the other needs of each segment, invest in user experience and key financial education."

3.1.4. Bank competitiveness

Experts say: "Digital banking requires a change in thinking, business model and culture of banks. Banks need to be proactive, attract talent and coordinate with art partners to increase competitiveness." Expert I commented: "Large banks have advantages in capital and trade, but Small banks are more active and creative in developing digital banking."

3.1.5. Stakeholder Rationality

All experts emphasized the importance of collaboration. According to experts: "Banks, fintechs, carriers, retailers and technology companies need to link up to create a comprehensive financial ecosystem. Universities and

research institutes also need to participate to provide knowledge and human resources." Expert L said: "Reasonable distribution among ministries and branches such as the State Bank of Vietnam, the Ministry of Information and Communications and the Ministry of Industry and Trade is essential to create a unified management framework."

In summary, the research results show that although Vietnam's digital banking has made significant progress, there are still many formulas. The development of digital banking is influenced by many factors from macro aspects such as policies and infrastructure to micro aspects such as banking energy and customer needs. In particular, government policy and multi-party cooperation are considered important foundations providing other factors. On this basis, we will propose solutions and policy recommendations to promote banking development in the next section.

3.2. Factors affecting digital banking development in Vietnam

3.2.1. Results of Cronbach's Alpha test

Cronbach's Alpha test results: Observed variables with total correlation coefficient < 0.3 will be eliminated from the model. The standard for the scale to meet requirements is when Cronbach's Alpha > 0.6 (Ho 2012). With 150 official samples and 05 criteria of the survey questionnaire, the variables met reliability requirements, the full scale coefficient Cronbach's Alpha = $0.932 > 0.6$ is within a good measurement level, the total variable correlation coefficients of the variables measuring this factor are > 0.3 , all observed variables are accepted and will be used in the next factor analysis (Table 1).

Table 1: Cronbach's Alpha test

Observed variables	Coefficient of correlation of total variables	Cronbach's Alpha if variable type	Full-scale Cronbach's Alpha
X1	0.915	0.955	0.932
X2	0.777	0.915	
X3	0.784	0.861	
X4	0.908	0.936	
X5	0.789	0.876	

3.2.2. Test for heteroskedasticity and correlation

Observed variables were extracted into 16 factors at Eigenvalues = 1.733 (> 1). The factor analysis results are reasonable, the total variance extracted reaches 84.386% ($> 50\%$) of the variation of the data, this is the result. Acceptable variables are extracted into factors at the same time.

Check the assumption that the independent variables do not have multicollinearity

The variance magnification factor $VIF < 2$, shows that multicollinearity does not occur and there is no strong correlation between independent variables [13].

3.2.3. Results of EFA exploratory factor analysis

Evaluate the scale through EFA exploratory factor analysis: KMO coefficient = 0.855 ($0.5 < KMO < 1$). The Chi-Square statistic of Bartlett's test has a value of 2711.114 with a significance level of $Sig. = 0.000$, showing that the observed variables are correlated with each other. The results of EFA analysis showed that the total variance extracted reached 84.386% ($> 50\%$), demonstrating that these 5 extracted

factors explained 84.386% of the variation in the data. iEigenvalues is $1.733 > 1$, so the scales have convergent validity (Table 2).

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin test for sample adequacy		0.855
Bartlett's test of sample configuration	Equivalent to Chi Square	2711,114
	DF	171
	Sig.	0.000

The results of exploratory factor analysis (EFA) show that the groups of exploratory factors are consistent with the research model.

3.2.4. Linear regression analysis

Linear regression analysis shows that there is no multicollinearity phenomenon. Multicollinearity statistics with the variance inflation factor VIF of the independent variables in the model are all less than 2, proving that there is no multicollinearity phenomenon. route (Table 3). As a

result, all variables have statistically significant Sig values. = 0.000 (< 0.05). Thus, there are 05 factors influencing the

development of digital banking in Vietnam (Beta).

Table 3: Linear regression test

Model	Unstandardized coefficients		Standardized coefficient	Coefficient (t)	Coefficient (Sig.)	Multicollinearity Statistics (Collinearity Statistics)		
	Coefficient (B)	Standard deviation	Beta coefficient			Tolerance	Variance Inflation Factor (VIF)	
first	(Constant)	.056	.304		.184	.854		
	X1	.245	.045	.320	5,423	.000	.829	1,206
	X2	.188	.045	.249	4,214	.000	.829	1,207
	X3	.200	.043	.266	4,601	.000	.868	1,153
	X4	.129	.044	.186	2,945	.004	.725	1,380
	X5	.208	.057	.233	3,659	.000	.715	1,398

- *Linear function*, From the above results, we have a linear equation expressing the influencing factors (Xi) on Y- Efficiency of digital banking development in Vietnam, as follows:

$$Y = 0.506 + 0.245 * X1 + 0.188 * X2 + 0.200 * X3 + 0.129 * X4 + 0.208 * X5$$

Thus, the linear regression model built according to equation Y does not violate the necessary assumptions in linear regression. Therefore, the hypotheses are accepted at the 5% statistical significance level.

3.2.5. Discuss research results

Research results show that digital banking in Vietnam has had positive developments in recent times, reflected in the rate of users, number of transactions and investment by banks. However, compared to other countries in the region and the world, the level of development of Vietnam's digital banking is still a significant gap. This situation reflects the challenges and limitations of Vietnam's digital banks, requiring the efforts of relevant parties to overcome.

Factor X1 - State policies and regulations are the most influential factors. Proving that this is an important foundation, guiding and motivating the development of digital banking. However, current policies are not really synchronized and do not support the banking digital transformation process well. This poses an urgent need to complete the legal framework, especially in areas such as electronic transactions, customer information protection, network security and risk management. In addition, innovation incentive mechanisms such as regulatory sandbox also need to be applied more widely to promote cooperation between banks and fintechs.

Factor X2 - Regarding technological infrastructure, Vietnam has made significant progress in telecommunications infrastructure and mobile networks. However, the quality and stability of internet connections, especially in rural and remote areas, remain a barrier to expanding the scope of digital banking services. Investment in network security infrastructure and data centers is also not commensurate with the increasing speed of cyber attack risks and customer data protection requirements. More active participation of large telecommunications and technology enterprises is expected to create an important breakthrough in this field.

Factor X3 – Customer needs and behavior. Research results also show that customer needs and behavior are key factors determining the success of digital banking. Although the

COVID-19 pandemic has boosted the demand for online banking services, the rate of acceptance and regular use of digital banking by Vietnamese people is still quite low. Key barriers include security concerns, lack of trust, lack of digital skills and cash habits. To overcome this, banks need to invest in research on the distinct behavior and needs of each customer segment, provide user-friendly features and experiences, and build trust through good security and make more efforts in financial education and digital skills for the community.

Factor X4 - Bank competitiveness, experts' opinions reflect that the current situation of banking digital transformation in Vietnam is uneven and lacking in depth. Differences in financial potential, human resources and innovative thinking are barriers that make it difficult for banks to meet customers' increasing demands for digital banking services. To improve competitiveness, banks need to drastically change their business models, apply new technologies such as AI, Big Data, Blockchain, invest in developing technology talent and cooperate more closely with fintech companies and third party service providers.

Factor X5 - Cooperation between stakeholders, research results emphasize the role of multi-stakeholder cooperation in promoting digital banking development. Close coordination between the Government and relevant ministries and branches is necessary to create a unified management framework, avoiding policy overlaps and conflicts. Linkages between banks, fintech companies, network operators, retailers and universities and research institutes need to be promoted more strongly. This cooperation not only creates innovative solutions and business models, but also contributes to developing high-quality human resources and building a comprehensive digital banking ecosystem.

In summary, this study has pointed out achievements, limitations and important factors affecting the development of digital banking in Vietnam. These findings not only contribute to enriching the theoretical basis of digital banking, but also have important practical implications for policymakers, banks and stakeholders in Build strategies and solutions for digital banking development. However, this study still has certain limitations, such as the narrow scope of the expert survey and the lack of in-depth analysis of quantitative relationships between factors. This is also a suggestion for future research directions.

4. Some solutions to improve digital banking operations in Vietnam

Firstly, Complete the legal framework for banking banks:

Review, amend and supplement legal documents related to electronic transactions, network security, protection of user rights and risk management to create a synchronous, unified and consistent legal framework with international information; Expand and deploy the control testing mechanism (regulatory sandbox) to encourage banks and fintechs to test new models and products safely and effectively; Develop a mechanism to share information and data between banks, credit institutions and management facilities to improve the effectiveness of risk supervision and management.

Second, Consulting on technology infrastructure development:

Promoting 5G network development, expanding coverage and improving internet connection quality, especially in rural and remote areas; Encourage investment in building data centers, cloud computing infrastructure and blockchain to meet the data storage and processing needs of a number of banks; Increase investment in cybersecurity, build monitoring centers, apply cybersecurity efforts and promote international cooperation in this field.

Third, Improve customer awareness and experience:

Deploy financial education and digital skills programs for people, especially low-income customer groups, the elderly and people in regional areas. countryside; Require banks to provide clear and transparent information about service fees, rights and obligations of customers when using digital banking; Encourage banks to apply new technology such as artificial intelligence, virtual/augmented reality to improve user experience, personalize service and 24/7 customer support.

Fourth, Strengthen banks' competitive energy:

Support banks, especially small and medium-sized banks, to access capital and technology to promote quantitative transformation and develop technology infrastructure. information; Promote cooperation between banks and fintech and technology companies in building open platforms, sharing data and providing serial services to customers; Developing high-quality human resources in financial technology through cooperation with universities, training facilities and attracting talent from abroad.

Fifth, Promote cooperation between relevant stakeholders:

Strengthen coordination between the State Bank, the Ministry of Information and Communications, the Ministry of Industry and Trade and relevant ministries and branches in building and developing strategies, digital banking provision policy; Establish interdisciplinary working groups to resolve arising issues and distribute them appropriately among management agencies; Develop mechanisms to encourage cooperation between banks, fintech, telecommunications and universities and research institutes in research and development of new technologies; Actively participate and cooperate with international organizations and regional forums to learn experiences and attract resources to develop digital banking.

5. Conclusion

From an overview of the theoretical basis and current situation of Vietnam's digital banking activities, the study has analyzed in depth 05 groups of factors affecting Vietnam's

digital banking activities. Among them, the factor groups of State policies and regulations (X1) and Cooperation between related parties (X5) are the most influential, followed by the factor group of Customer needs and behavior (X3). and the group of factors (X4), (X2) all affect Vietnam's digital banking operations in the new context.

From the research results, the author proposes a number of solutions to improve Vietnam's digital banking operations, as follows: Firstly, Improve the legal framework for digital banking; Second, Consulting on technology infrastructure development; Third, Improve customer awareness and experience; Fourth is Strengthening the competitive energy of banks; Fifth, promote cooperation between stakeholders.

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