IMPACT DIGITAL BANKING DEVELOPMENT ON THE BUSINESS EFFICIENCY: A CASE STUDY OF COMMERCIAL BANKS IN VIETNAM

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ABSTRACT

Objective: The article's goal is to explore the policy factors affecting the development of digital banking to improve the business efficiency of commercial banks and policy recommendations for developing digital banking services.

Method: The study applied qualitative and quantitative approaches to process data through SPSS 20.0 and Amos software. The authors surveyed 750 staffs working for 25 commercial banks in Vietnam. This study used descriptive statistical tools, measuring scales with Cronbach’s Alpha for structural equation modeling (SEM).

Results: the article’s value is to measure the policy factors affecting the development of digital banking to improve the business efficiency of commercial banks. From that, the article’s novelty has three key factors influencing the development of digital banking and business efficiency, with a significance of 1.0 percent.

Conclusions: The Fourth Industrial Revolution substantially impacted all aspects of life, and the outbreak of the Covid-19 pandemic worldwide catalyzed the demand for services. The digital platform has been increasing rapidly. As one of the fields that soon caught up with the change of technology, banks quickly approached, changed their business models, organized business, and provided innovative products and services to bring about innovative products and services. Finally, the study's original is to support policymakers and managers of banks in developing digital banking.

Keywords: development, digital, banking, business, and efficiency.

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RESUMO

Objetivo: O objetivo do artigo é explorar os fatores de política que afetam o desenvolvimento da banca digital para melhorar a eficiência dos negócios dos bancos comerciais e as recomendações de políticas para o desenvolvimento de serviços bancários digitais.

Método: O estudo aplicou abordagens qualitativas e quantitativas para processar dados através de SPSS 20.0 e software Amos. Os autores pesquisaram 750 funcionários que trabalhavam para 25 bancos comerciais no Vietnã. Este estudo utilizou ferramentas estatísticas descritivas, medindo escalas com o Alpha de Cronbach para modelagem de equações estruturais (SEM).

Resultados: o valor do artigo é medir os fatores políticos que afetam o desenvolvimento da banca digital para melhorar a eficiência dos negócios dos bancos comerciais. A partir daí, A novidade do artigo tem três fatores-chave que influenciam o desenvolvimento da banca digital e a eficiência dos negócios, com um significado de 1,0%.

Conclusões: A Quarta Revolução Industrial impactou substancialmente todos os aspectos da vida, e o surto da pandemia da Covid-19 em todo o mundo catalisou a demanda por serviços. A plataforma digital tem crescido rapidamente. Como uma das áreas que logo se deparou com a mudança de tecnologia, os bancos rapidamente abordaram, mudaram seus modelos de negócios, organizaram negócios e forneceram produtos e serviços inovadores para realizar produtos e serviços inovadores. Finalmente, o objetivo original do estudo é apoiar os decisores políticos e os gestores dos bancos no desenvolvimento da banca digital.

Palavras-chave: desenvolvimento, digital, banco, negócios e eficiência.

1 INTRODUCTION

Digital transformation is being implemented in all areas of social life, including banking services. In recent years, Vietnamese banks have focused on expanding their services by actively applying electronic technologies to simplify customer service. Fintech companies' development also encourages traditional banks to improve technology. However, besides the positive results, the digital transformation of Vietnamese banks also faces many difficulties and challenges (Dhanya & Velmurugan, 2020; Kaur et al., 2021). A seamless and convenient experience for customers in personalization is based on applying new digital technologies. In that context, mechanisms, policies, and legal frameworks play a significant role, directly affecting the development of banking services. The Industrial Revolution 4.0 and the development of information technology have impacted all areas of socio-economic life. In particular, with the strong growth of financial technology companies (Fintech), transformation into digital banks is a sustainable development direction for banks worldwide and in Vietnam.
Notably, the Covid-19 pandemic has changed the perception and gradually changed the habit of using the banking services of most Vietnamese people on digital platforms. This is both an opportunity and a challenge for banks in Vietnam in developing digital banking.

In Vietnam, many banks have started to deploy digital banking services. Most banks in Vietnam have a digitalization strategy and digital banking development orientation. All banks consider digital transformation to be of vital importance. Therefore, up to 80% of banks have been building development strategies based on 4.0 technologies, and 90% have developed service application services on the internet and mobile. In addition, many banks are starting to implement digital banking at the level of processes and communication channels, but only a few are shifting to digitalization at the data platform (Junger & Mietzner, 2020; Onyia & Tagg, 2011; Saputra et al., 2023). With the problems analyzed above, the authors researched policy factors affecting the development of digital banking to improve the business efficiency of commercial banks in Vietnam and policy recommendations for the development of digital banking post-Covid-19 pandemic.

2 LITERATURE EMPIRICAL REVIEW

2.1 BUSINESS EFFICIENCY (BE)

There are many views on the business performance of commercial banks. Efficiency is a commonly used category to assess an entity's ability to maximize its revenue output given input costs or efficiency (Ananda et al., 2020; De Leon, 2019). Efficiency is the ability to optimally combine inputs to produce a unit of output. When evaluating a bank's business performance can be based on two criteria: absolute efficiency and relative efficiency. Total business efficiency: measured by business results minus the costs spent to achieve that result. This assessment reflects the size, volume, and profit gained in a particular condition, time, and place (Jebarajakirthy & Shankar, 2021; Mbah & Obiezekwem, 2019; Wen, 2020). Relative business efficiency: evaluated based on the comparison ratio between output results and input factors. Simply put, where a business compares inputs and outputs, the relative business efficiency is determined as follows: Efficiency = output/input (Balasubramanian, 2018; Chauhan et al., 2019). This assessment is more convenient when comparing organizations of different sizes, spaces, and over different periods.
2.2 DEVELOPMENT OF DIGITAL BANKING (DB)

Digital Banking is a form that digitizes all activities and services performed at regular bank branches. More specifically, all the operations and manipulations you perform at a traditional counter are digitized and integrated into a digital banking application (Mbama & Ezepue, 2018; Mendoza et al., 2020). With this application, you do not need to travel or wait at a bank branch and still be able to perform financial transactions. User activities and all banking activities, such as risk management, capital sources, product development, etc., are also digitized in digital banking. Result of digital banking is a form of banking that digitizes all activities and services of a traditional bank on a website or mobile application platform (Nazaritehrani & Mashali, 2020; Sardana & Singhania, 2018; Mehdiaabadi et al., 2020). Today, when the world has entered the 4.0 era, digital banking has become an inevitable trend to support the development of the global economy and trade. Digitizing 100% of the process, all customer relationships with the bank are handled online and automatically.

2.3 LEGAL ON ELECTRONIC TRANSACTIONS (ET)

Perfect the legal framework for developing and supervising financial - banking services to meet digital transformation requirements and supplement the legal framework system to suit these new models and services (Gupta & Bansal, 2011; Chawla & Joshi, 2019; Ramli et al., 2021). The digital transformation process requires a synchronous and standardized technical infrastructure, facilitating the interconnection and seamless integration between industries and other fields, thereby jointly exploiting and forming a digital ecosystem to provide multi-utility services to customers (Lokesha & Hawaldar, 2018; Farida & Subroto, 2019; T, H. K. (2023). A synchronous and highly compatible infrastructure will allow for connecting, exploiting, and sharing database resources, including national population databases, enterprise databases, industries, and economic sectors. Thus, the authors proposed the hypothesis below.

\[ H1: \text{Legal on electronic transactions affecting the development of digital banking.} \]
\[ H2: \text{Legal on electronic transactions affecting business efficiency.} \]

2.4 INFRASTRUCTURE ON DATA AND ENSURING SECURITY (ES)

Improve infrastructure and information technology systems, and research and apply new technologies. The digital transformation process requires a synchronous and
standardized technical infrastructure, facilitating the interconnection and seamless integration between industries and other fields, thereby jointly exploiting and forming a digital ecosystem to provide multi-utility services to customers (Al Khasawneh et al., 2018; Megargel et al. 2018). A synchronous and highly compatible infrastructure will allow for connecting, exploiting, and sharing database resources, including national population databases, enterprise databases, industries, and economic sectors. The development of digital infrastructure is a launching pad for digital transformation to promote digital banking to contribute to the development of the whole economy in the new period (Mehmet, 2016; Wibella et al., 2018; Kasiisii et al., 2023). To adapt to the contemporary context, banks are forced to look for solutions to build safe and secure digital infrastructure to transform business models to adapt to difficult conditions. In addition, the bank needs to develop products and services to meet the market's new needs, closely connect with partners, and improve innovation capacity and market competitiveness (Mufarih et al., 2020). Thus, the authors proposed the hypothesis below.

\[ H3: \text{Infrastructure on data and ensuring security affecting the development of digital banking.} \]

\[ H4: \text{Infrastructure on data and ensuring security affecting business efficiency.} \]

2.5 HUMAN RESOURCES TO PROMOTE INNOVATION (PI)

To accelerate the digital transformation process, it is necessary to have a team of high-quality human resources with knowledge and qualifications in information technology and skills in digital transformation. Therefore, the training and fostering of understanding and skills in digital transformation for human resources in the banking industry should be given due attention (Riza & Hafizi, 2019). Human resource development is the key to successful digital transformation. Forming high-quality human resources ready to meet digital transformation. Technology is changing and developing with leaps and bounds, but the real change is in the technology part and the focus of human evolution (Sharma & Sharma, 2019; Williams, 2021; Suwadi et al., 2023). High-quality human resources improve the bank's labor productivity thanks to the skills and knowledge, along with the working experience of the staff. High-quality human resources will complete the assigned work well, be creative, and learn new ways to achieve the best labor productivity, improving business efficiency. Thus, the authors proposed the hypothesis below.
H5: Human resources to promote innovation affecting the development of digital banking.
H6: Human resources to promote innovation affecting business efficiency.
H7: The development of digital banking affects the business efficiency of commercial banks.

The authors built the SEM model from the theoretical basis and related studies.

![Figure 1: A research model for factors affecting the development of digital banking and the business efficiency](source)

Figure 1 shows factors affecting the development of digital banking and the business efficiency of commercial banks in Vietnam. Besides, three factors include legal on electronic transactions, infrastructure on data, and ensuring security and human resources to promote innovation. Finally, foreign direct investment affects the green economy. Finally, the development of digital banking affects the business efficiency of commercial banks in Vietnam.

3 METHODOLOGY AND DATA

In this study, a combination of two research methods was used: qualitative research and quantitative research.

3.1 QUALITATIVE RESEARCH

In this article, the authors had qualitative research carried out by theoretical review and one-on-one interviews to identify academic gaps, proposing a theoretical model and preliminary scale, carried out in 2 phases (Hair et al., 2021).
Stage 1: The authors proposed a research model. This phase aims to expand the research model by discovering new factors and relationships in the impact chain of digital banking development, knowledge acquisition, product innovation, service, and business performance (Hair et al., 2021).

Stage 2: Adjust the scale of the elements in the model. Most of the rankings of the factors are inherited from studies abroad, so for the scale to be suitable for the practical context, it is necessary to carry out a hand-to-hand discussion method with 15 experts knowledgeable about banking. These experts have deep experience and knowledge in digital banking. They represent 15 directors of major banks in Vietnam. They all agreed with the scale and added some ideas to the survey (Hair et al., 2021).

3.2 QUANTITATIVE RESEARCH

In this article, the authors summarized the three phases of the quantitative research as follows:

Phase 1: The authors carried out exploratory research using the quantitative research method with the tool of model testing by Structural equation modeling (SEM) to predict the models' relationships with the advantage of sample size 100, the survey subject. Supervisors are branch managers of commercial banks in Vietnam. After conducting exploratory research, the authors conducted preliminary and formal quantitative analyses to confirm the relationships in the research model. Besides, the authors processed through SPSS 20.0 and Amos software with descriptive statistical tools, measuring scales with Cronbach's Alpha, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). Structural equation modeling (SEM) based on data was collected through a questionnaire using the 5-level Likert scale with the corresponding level: Level 1 completely disagrees, level 2 disagrees, level 3 is neutral, level 4 is agreed, and Level 5 completely agrees. (Hair et al., 2021).

Phase 2: The authors had a group conduct preliminary research to test the model and the scale of factors. This study was conducted by collecting market data through a survey with a larger sample size of 400 bankers working in digital technology. Then, test Cronbach's alpha coefficient and analyze EFA (exploratory factor analysis) to evaluate the scale to ensure convergent and discriminant value. With the results of this stage, the authors adjusted the ranking for the last time before moving to stage 3 (Hair et al., 2021).
Phase 3: The authors officially conducted research to test the measurement and theoretical models. Using CFA (confirmatory factor analysis) to test the measurement model of research factors, test Cronbach's alpha coefficient. Then use SEM analysis to test the theoretical model and proposed hypotheses. Then, Bootstrap tries to push the model again. With actual survey data, 750 bankers work for 30 commercial banks in Vietnam. After checking the information, the number of valid votes was 685, accounting for 91.33 percent. This is the official data that the authors put into running the model. Finally, the authors tested the goodness of fit of the model. The model fit is suitable to the sample size for observed variables in the model following Chi-square/df (CMIN/df) < 3 is fine, < 5 is sometimes acceptable; CFI > 0.9; GFI > 0.9; TLI > 0.9; RMSEA < 0.08; PCLOSE > 0.05 (Hair et al., 2021).

4 EMPIRICAL RESULTS
4.1 ANALYSIS OF THE STATUS OF DIGITAL BANKING DEVELOPMENT IN VIETNAM

The Covid-19 epidemic has severely affected the global economy, including Vietnam. From another perspective, the Covid-19 outbreak is considered a blow to the world. Therefore, some commercial banks take advantage of the opportunity to continue investing in developing digital banking services following this trend. It is easy to see that the potential of these trends for young users is vast. Over the past, commercial banks in Vietnam have actively and proactively implemented digital transformation and achieved positive results.

Only a few banks are shifting to digitalization in the data platform. In addition, many banks are starting to implement digital banking at the level of processes and communication channels. Besides the advantages, the development of digital banking is challenging: the legal framework, which forms the basis for digital banking operations and development, is still lacking. For example, the digital payment segment is developing quickly due to technological advances, but the legal regulations have not kept up, making commercial banks afraid to apply new technologies and services outside the allowed framework.

The recent fraud cases related to digital payment activities are becoming increasingly sophisticated and complex. The ability to prevent fraud in digital banking transactions has always interested commercial banks, but it still cannot create peace of
mind for customers. Besides, the technology race in the banking industry with digital banking projects also contributes to many risks in security in general and insecurity of user information in particular. Vietnam's digital environment's capacity to secure financial data is still limited.

The development trend of digital banking in banking activities in Vietnam is creating changes in value for participants. Moreover, users when are not aware of the risks in online banking transactions, disregarding the security of personal information, students, employees... leasing information, creating conditions for criminals to develop ghost accounts, causing difficulties in the investigation; transactions, fraud tricks are increasingly sophisticated and challenging to detect. Finally, Vietnamese people still have the habit of using cash for payment. The practice of non-cash payment is now widespread only in central provinces and cities - where there are good technological infrastructure conditions, while in remote and remote areas, non-cash payment is not used; cash is still in the planning stage. In the coming time, for digital banking to become an indispensable development need of commercial banks, it is necessary to focus on the following recommendations.

### 4.2 ANALYSIS OF DESCRIPTIVE STATISTICS AND CRONBACH’S ALPHA

<table>
<thead>
<tr>
<th>Code</th>
<th>Contents</th>
<th>Mean</th>
<th>Cronbach's Alpha if Item Deleted</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB1</td>
<td>Automating the process, reducing staff at the counter</td>
<td>3.3796</td>
<td>0.944</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>Enhance security with advanced 3-layer security technology</td>
<td>3.3431</td>
<td>0.896</td>
<td>0.953</td>
</tr>
<tr>
<td>DB3</td>
<td>Digital banking helps banks expand their operations and increase competitiveness</td>
<td>3.2730</td>
<td>0.953</td>
<td></td>
</tr>
<tr>
<td>BE1</td>
<td>Evaluating the rate of return on equity (ROE)</td>
<td>2.3139</td>
<td>0.886</td>
<td>0.902</td>
</tr>
<tr>
<td>BE2</td>
<td>Evaluating the rate of return on total assets (ROA)</td>
<td>2.3752</td>
<td>0.840</td>
<td></td>
</tr>
<tr>
<td>BE3</td>
<td>Net profit margin ratio (NIM)</td>
<td>2.3533</td>
<td>0.902</td>
<td></td>
</tr>
<tr>
<td>BE4</td>
<td>Awards for banking technology, products, and services</td>
<td>2.3956</td>
<td>0.865</td>
<td></td>
</tr>
<tr>
<td>ET1</td>
<td>Current legal regulations related to electronic transactions, signatures, electronic documents</td>
<td>3.3401</td>
<td>0.804</td>
<td></td>
</tr>
<tr>
<td>ET2</td>
<td>Legal framework, it is necessary to speed up the research and development of the law on electronic transactions</td>
<td>3.4949</td>
<td>0.813</td>
<td>0.856</td>
</tr>
<tr>
<td>ET3</td>
<td>Building a legal corridor on data protection, protecting user data privacy</td>
<td>3.2978</td>
<td>0.848</td>
<td></td>
</tr>
<tr>
<td>ET4</td>
<td>Completing the legal framework to accelerate the digital transformation of banks</td>
<td>3.3241</td>
<td>0.803</td>
<td></td>
</tr>
</tbody>
</table>
Table 1 showed that all items have Cronbach's Alpha if the item deleted is more than 0.6. The survey results show that most banks have been building or planning to build a digital transformation strategy, of which more than 50% have approved a digital transformation strategy or integrated it into the digital transformation strategy, business development/information technology; more than 50% of banks are building a digital transformation strategy to increase business efficiency.

4.3 TESTING FACTORS AFFECTING THE DEVELOPMENT OF DIGITAL BANKING AND THE BUSINESS EFFICIENCY

Table 2: Testing factors affecting the development of digital banking and the business efficiency

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Standardized Estimate</th>
<th>S.E</th>
<th>C.R</th>
<th>P</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB &lt;- PI</td>
<td>0.553</td>
<td>0.031</td>
<td>17.589</td>
<td>***</td>
<td>Accepted</td>
</tr>
<tr>
<td>DB &lt;- ES</td>
<td>0.094</td>
<td>0.028</td>
<td>3.346</td>
<td>***</td>
<td>Accepted</td>
</tr>
<tr>
<td>DB &lt;- ET</td>
<td>0.188</td>
<td>0.036</td>
<td>5.268</td>
<td>***</td>
<td>Accepted</td>
</tr>
<tr>
<td>BE &lt;- PI</td>
<td>0.157</td>
<td>0.023</td>
<td>6.801</td>
<td>***</td>
<td>Accepted</td>
</tr>
<tr>
<td>BE &lt;- ES</td>
<td>0.066</td>
<td>0.018</td>
<td>3.793</td>
<td>***</td>
<td>Accepted</td>
</tr>
<tr>
<td>BE &lt;- ET</td>
<td>0.062</td>
<td>0.021</td>
<td>2.900</td>
<td>0.004</td>
<td>Accepted</td>
</tr>
<tr>
<td>BE &lt;- DB</td>
<td>0.206</td>
<td>0.025</td>
<td>8.141</td>
<td>***</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Source: Authors collected and processed from SPSS 20.0, Amos (2023)

Table 2 shows three factors affecting the development of digital banking to improve the business efficiency of commercial banks in Vietnam, with a significance of
1.0 percent. Besides, the development of digital banking affects commercial banks' business efficiency, with a value of 1.0 percent. These results showed that the banking industry's digital transformation allows reaching target customer groups at a lower cost. With the same approach strategy, applying technology with a more significant reach of customers, calculating the cost of this activity per customer will save many costs and contribute to commercial banks' business efficiency.

Besides, this activity has been quite slowly implemented. Still, most of it is formal and has not brought about commensurate efficiency: In recent years, commercial banks Prioritize resources for dealing with bad debt problems, ensuring liquidity... The core banking system is relatively outdated and not qualified to integrate digital applications based on extensive data or convert but does not purchase all features. Most banks have not yet deployed cloud computing regarding data integration due to sensitive data characteristics and complex and inconsistent data systems.

With the market assessed as potential, supported by the State Bank, implementing digital banking is early. Commercial banks currently face many difficulties and challenges related to capital, raising risks similar to banks/financial institutions worldwide. Vietnamese commercial banks are still facing competition with technology companies in monetary/payment services.
Figure 2 showed that the assessment factors affecting the development of digital banking to improve the business efficiency of commercial banks in Vietnam: CMIN/DF = 2.237 (<5.0), GFI = 0.954 (>0.800), TLI = 0.986 (>0.900), CFI = 0.989 (> 0.900) and RMSEA = 0.043 (<0.08). Besides, the increasingly popular development of technology requires industries and fields to change to meet this demand. Banking products applying digital technology have objective meaning, which is a practical competitive advantage for the banking industry in the future.

Vietnam has great potential for digital banking development. Vietnam's banking system moving towards digital banking is both an opportunity, a challenge, and a driving force for the development of the banking industry. Digital banking is a type that has many differences from new banks, different from traditional banking models from the method of product production, legality, customer service, etc., which requires banks to give some policy recommendations for the development of digital banking to improve the business efficiency of commercial banks in Vietnam. Besides, the Std. Deviation has a value of approximately 1.0. This data is perfect for the following research, and the authors had Cronbach's Alpha if the item deleted is more than 0.6. Thus, it can be affirmed that digital transformation has been implemented decisively and synchronously by the State bank and credit institutions and has initially achieved encouraging results.

Table 3: Testing Bootstrap for critical factors affecting the development of digital banking to improve the business efficiency

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SE</th>
<th>SE-SE</th>
<th>Mean</th>
<th>Bias</th>
<th>SE-Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB ← PI</td>
<td>0.039</td>
<td>0.001</td>
<td>0.551</td>
<td>-0.002</td>
<td>0.001</td>
</tr>
<tr>
<td>DB ← ES</td>
<td>0.028</td>
<td>0.000</td>
<td>0.093</td>
<td>-0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>DB ← ET</td>
<td>0.037</td>
<td>0.001</td>
<td>0.184</td>
<td>-0.004</td>
<td>0.001</td>
</tr>
<tr>
<td>BE ← PI</td>
<td>0.025</td>
<td>0.000</td>
<td>0.155</td>
<td>-0.002</td>
<td>0.001</td>
</tr>
<tr>
<td>BE ← ES</td>
<td>0.021</td>
<td>0.000</td>
<td>0.065</td>
<td>-0.002</td>
<td>0.000</td>
</tr>
<tr>
<td>BE ← ET</td>
<td>0.023</td>
<td>0.000</td>
<td>0.060</td>
<td>-0.002</td>
<td>0.001</td>
</tr>
<tr>
<td>BE ← DB</td>
<td>0.028</td>
<td>0.000</td>
<td>0.208</td>
<td>0.002</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Source: Authors collected and processed from SPSS 20.0, Amos (2023)

Table 3 shows that the testing Bootstrap for critical factors affecting the development of digital banking improves business efficiency with 2000 samples with a significance of 1.0 percent.
4.4 RESULT DISCUSSION

Digital banking is a type that has many differences from the traditional banking model, from legal implementation methods to customer service requires banks to actively learn from experience and build a roadmap to develop. This study analyzes the current situation of digital banking implementation in Vietnamese commercial banks, identifies the influencing factors, and proposes some solutions/recommendations for digital banking development as follows:

(1) Human resources to promote innovation affecting the development of digital banking with a significance of 1.0 percent and a standardized estimate is 0.553. Thus, commercial banks continue to research and develop a roadmap to shift the model to a digital bank: Determine the development strategy of digital banking because this is a common trend of banks worldwide to achieve sustainable goals. In the current context, commercial banks need to gradually improve their governance capacity instead of investing in expanding the network of physical transaction points, which is difficult and expensive by building a development roadmap. Commercial banks continue the development of digital banking, also known as branchless banks.

The banking industry has faced many vital challenges in the digital transformation process. The first is the challenge of the synchronization and suitability of the current legal regulations related to electronic transactions, signatures, electronic documents, electronic customer identification and authentication, and the sharing of electronic records, data and customer information security, and business processes with the practical application of digital technology in banking activities. Secondly, the challenge of synchronizing and standardizing technical infrastructure facilitates interconnection and seamless integration between the banking industry and other industries and fields to form an ecosystem, providing multi-utility services to customers. Third, the challenge comes from changing awareness, habits, and consumer behavior, ensuring security and safety, and mobilizing and allocating resources for digital transformation.

(2) Legal on electronic transactions affecting the development of digital banking with a significance of 1.0 percent and standardized estimate is 0.188. Thus, commercial banks continue to implement the allocation of resources to develop new technologies: In the annual budget plan, retail banks need to consider the proportion of investment expenditures with expenditures, cutting costs that are not really necessary reserve resources for technology investment should also be
considered. It is required to identify actual, worthy investment costs, coupled with potential future revenue expectations, step by step applying modern technology to banking operations, creating a premise for the transformation into digital banking. Researching these technologies will take a lot of time, and there is a roadmap, so an initial solution that can cooperate with technology companies and/or invest in technology startups is a possible direction to consider.

Perfecting relevant legal regulations, helping promote digitalization and application, and creating a favorable transaction environment for people and businesses through digital channels and electronic methods. Specifically, in terms of the legal framework, it is necessary to speed up the research and development of the law on electronic transactions to replace or amend and supplement the Law on Electronic Transactions to create a legal basis for ministries and sectors. Early promulgated a Decree on electronic identification and authentication and built a legal corridor on data protection and user data privacy protection in the network environment.

(3) Infrastructure on data and ensuring security affecting the development of digital banking with a significance of 1.0 percent and a standardized estimate is 0.094. Thus, commercial banks continue building a centralized database of the bank, facilitating more accessible and more complete data collection and access by departments; and assigning access rights to confidential information. Building a team of sensitive human resources is necessary, along with capital preparation. Strengthening training on knowledge, skills, and risk management culture for bank staff, communicating and guiding customers to use products, and preventing risks. For risk management tools, such as investing in stress testing, implementing complete lines of defense, and investing in data quality and reporting, first and foremost, meet current needs. Now and then, more standardized to prepare functionality for the digital banking-oriented future.

Regarding data, it is necessary to complete the construction of a national database on the population as soon as possible; there is a mechanism to allow the banking industry to connect, exploit and share information online from this database to serve the comparison and verification of customer identification information by electronic means. Finally, develop intelligent banking products and services, including e-wallets, in parallel with building the connected ecosystem: For e-wallets, the ecosystem covers many areas, increasing the number of payment acceptance points, overcoming technology limitations,
and improving security solutions for users to use with peace of mind. Promoting links with retail websites to integrate e-wallet payment gateways on sales websites, especially e-commerce sites with many followers, can help expand the customer base and interact thanks to integrated commerce shopping and e-wallet payments.

5 CONCLUSIONS

Digital transformation helps banks to overcome challenges, create competitive advantages, proactively adapt and develop sustainably. Digital transformation will help banks transform their operating models, apply modern technology and digitize on digital platforms, thereby helping exploit data effectively to increase customer experience and engagement. In the context of Industry 4.0, identifying argument shifting as an inevitable trend, many banks have considered developing a digital banking model as a goal in their business strategy, not merely an information technology project information and creating a digital transformation strategy suitable to the characteristics of each bank.

The article's novelty has three key factors affecting the development of digital banking and business efficiency, with a significance of 1.0 percent. This study used descriptive statistical tools, measuring scales with Cronbach's Alpha for structural equation modeling (SEM). According to the survey results, the authors surveyed 750 staffs working for 25 commercial banks in Vietnam. This is also reliable scientific evidence to support policymakers and managers of banks in developing digital banking in digital transformation.

However, there are also difficulties and challenges of digital transformation in the banking industry. Legacy software is the most challenging thing to overcome on the road to digitization in the banking sector in legacy systems and system integration challenges. Security is one of the banking sector's most critical concerns for digital transformation. Customers may be present at bank branches in-person to perform complex transactions. Finally, the technology of banking systems providing online banking services must be constantly updated to have an appropriate level of security.
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