

## Development of Internet Banking in Cambodia

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### Abstract

Internet banking has become the focus of development of most commercial banks given the popularity of network technology and the rapid development of the Internet. In early 2008, commercial banks in Cambodia gradually began to promote electronic banking network and integrate and innovate the business with technical characteristics through the development of the internet. Comparative and case analyses are conducted to elaborate the background and significance of this study. The research results obtained online and from domestic scholars were also summarized. This study summarizes the basic connotation and development course of internet banking and analyzes the development of online banking in Cambodia by performing comparison with that in China to promote the development of Internet banking in Cambodia. This study found that the Cambodia Internet Bank attained significant progress after several years of rapid development. However, problems, such as safety mechanism and risk supervision, continue to exist in the development process. This study offers suggestions to strengthen the hardware and software environment and enhance the construction of online banking management system and other measures.

**Keywords:** Cambodia; internet banking; development issues

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## **INTRODUCTION**

Internet technology continues to develop since the establishment of Security First Network Bank (SFNB) in the United States in 1995. The establishment of SFNB facilitated the rapid development and popularization of network banking at a global scale. Internet banks developed rapidly for the past 21 years. Such a development was not only used as a competition strategy for commercial banks, but it also reflects the core competitiveness of commercial banks at present.

The development of internet banking in Cambodia started in 2008, which is later by 10 years than those in other countries. Thus, the development of internet banking in Cambodia could learn from the advanced experience of Europe, the United States, and other countries in terms of policy guidance. However, a number of problems continue to exist after several years of development. These problems include social credit environment, the network itself, technology for preventing risks, lack of innovative product capabilities, network banking, and other issues. This study solves these problems and analyzes the deep problems of the development process of internet banking in Cambodia. This study also aims to find solutions to these issues.

Several studies on online banking have been conducted at home and abroad, but most of them are concentrated in some countries. Existing studies that studied Cambodia are limited and not sufficiently comprehensive enough to provide concrete and feasible policy suggestions for the development of Cambodian internet banking. Therefore, the present study takes Cambodian internet banking as research object to examine the similarities and differences between Cambodian and Chinese internet banks, summarize the experience of China's internet banking, and provide policy recommendations for the development of online banking in Cambodia. Ai Ruth .

## **LITERATURE REVIEW**

The rapid rise of the Internet and the popularity of e-commerce development, making the internet banking has sprung up all over the world. This paper takes Cambodia as incision, analyzes the development of internet banking here, sums up its advantages and the impact of it, lists the problems in real life, and puts forward some effective suggestions by comparing with China. I have accessed to a large amount of information in order to make the article more convincing, including the domestic and foreign journals, magazines, books, and some economic sites.

A journal from BMC Cancer by Amin and Mohanty (2013) say that The Virtual Bank is an important tool to all countries, especially in developing countries. This application provides a web-based system for annotating, importing and searching mesothelioma cases. Morente and Mager (2016) say in their article that the European social economy have responded to some need by the promotion of an integrated platform of intelligent banks. In this regard, I think each bank in the network must have some fundamental similarities and be using the same standardised and validated procedures.

Using internet banking has brought many benefits for customers. They can access their bank accounts to check money or conduct transactions whatever the time of day or day of week. Series of previous transactions like checking account, paying bills, transferring money, writing checks etc. required customers have go to bank, then it can easily perform through bank's website(Li, 2014). This study illustrates the network economy appeared and became popular, more and more electronic economic products like internet banking are not just information's channel but also transaction framework (Parwani and Schmandt, 2008).

In the article by Park and An (2016), I get a lot of data about the network bank how to run

in a virtual environment, this paper has a detailed description for the profit of Internet banking model. In addition, the writers put forward their own opinion on the influence and function of the network economy to the modern economy. Terho(1996) gave me the idea of comparative analysis in their paper. It reports on the opening of the Security national bank, an Internet-based bank supported by the United States government. Security measures used by the bank to protect account holders' data.

Almost retail banks in many countries have maintained approach which goes to office directly to conduct transactions. However, the dramatically development of internet technology changed the way to communicate with banks in personal financial services (Wong, 2011). Organization, especially in banking field, they also use information system to enhance internal business activities and promote as well as offer services through internet to their customers (Wilder, 2015). At the same time, whether it is the description of the problem of internet banking, or the proposed measures can not be separated from the dialectical thinking and comparative consciousness, so I learned a lot of analysis methods and got a lot of inspiration

From the above literatures, I get a lot of useful information, data and ideas for my paper. It helps me to examine the advantages and disadvantages of modern network economy from a macro perspective that the development of internet banking based on the international perspective, and on the specific issue of the analysis of the Internet banking articles bring me a lot of inspiration to analyze Cambodia. In addition, the comparison between the traditional economy and the network economy also gives a better demonstration of the comparison of the network bank in Cambodia and in China for me.

## **DEVELOPMENT OF INTERNET BANKING IN CAMBODIA**

### **1. INTRODUCTION AND METHODOLOGY**

This study focuses on the development of online banking in Cambodia. This study summarizes the experiences of developed countries or regions, analyzes the problems, and suggests countermeasures to improve the development of Cambodian internet banking.

In this study, we conduct comparative analysis to collect data on the development of internet banking in China. These data are then compared with the development of Cambodian internet banking to determine the experience of internet banking development in Cambodia. We also applied case analysis method. This article chooses Cambodia's Aceda Bank as a case for comparative analysis in terms of business category, business scale, and other aspects of analysis and research.

### **2. DEVELOPMENT AND IMPACT OF INTERNET BANKING**

#### **2.1 Connotation and development of internet banking**

##### **2.1.1 Meaning of internet banking**

This study defines internet banking from two angles. The first angle defines internet banking to banking transactions conducted through the internet or banking institutions that provide financial products. The second definition states that internet banking mainly refers to banking institutions that provide card, investment, and other financial services through the internet, including traditional banking business, and financial products offered commercial banks based on emerging technology.

##### **2.1.2 Motivation of development of internet banking**

The emergence of internet banking changed the previous business organization model, as well as the traditional settlement payment scheme. These changes are attributed to the following reasons.

### 2.1.2.1 Strengthen the competitiveness of banks

Since the 1970s, the majority of developed countries began to relax their control of the banking industry by reducing the conditions imposed by banking institutions. Multinational commercial banks then began to set up branches in other countries and open up the market business thereby increasing the intensity of competition of limited financial markets. With the continuous progress of science and technology, non-financial institutions in society began to provide investment and financing services to customers. The scale of such an expansion eroded the existence of traditional commercial banks. To compete with non-financial institutions, traditional commercial banks were forced to engage in fierce price and marketing competition. However, given the limitation of high operating costs, competing financial enterprises over the internet proved difficult. The emergence of internet banking significantly reduced the operating costs of commercial banks, which enabled traditional commercial banks to be compared with financial companies in the internet.

### 2.1.2.2 Increased profit margins

Traditional commercial banks open the sub-branch outlets to coverage key areas and open up the surrounding customer groups to seize market share. However, this approach requires huge manpower, finances, and material resources, thereby leading to a dramatic increase in operating costs and reduced profitability of commercial banks in a short time. Internet banking can help traditional banks actively develop high-quality customer, reduce the number of sub-branch outlets, and further improve the bank's profit margins.

### 2.1.2.3 High-tech support

Throughout the development of the banking industry, the application of new and sophisticated technology will often enable banks to carry out financial product innovation and provide customers with quality services (Table 1). At present, internet technology is widely used in financial business to change a bank's clearing and payment system, improve the efficiency of a bank, and expand the scope of banking business. Commercial banks also develop new financial products to shorten the development cycle of financial products and enable banks to design financial products that meet the needs of the public at the shortest time possible.

Table1. The relationship between banking financial instruments, product innovation and related technologies

| Start time         | Innovative content               | The core tools and technical                           |
|--------------------|----------------------------------|--|
| 1950s              | credit card                      | magnetic stripe  |
| in the early 1960s | automatic transfer               | telephone  |
| 1969               | ATM ( Automatic Teller Machine ) | Mechatronics Technology                                |
| 1970s              | POS ( Point of Sale )            | computer, communications                               |
| 1973               | automatic payment technology     | communication, computer                                |
| 1980s              | derivatives                      | High - speed computing computer, telecom communication |
| 1990s- so far      | online banking                   | internet, security control                             |

## **2.2 The impact of internet banking on traditional banks**

Unlike traditional commercial banks, internet banks use new ideas and new methods to open up the market business, establish a new business relationship with customers, and promote institutional reforms in the traditional commercial banks. These innovations bring challenges and new opportunities that significantly affect the development of financial systems.

### **2.2.1 Changes in the business model**

Business strategy changes. When an internet bank eliminates the limitation of time and space through the use of latest information technology, the bank can offer global banking services, absorb a large number of customer bases, and expand their market share. Internet banks also increase the intensity of competition between commercial banks, which forces commercial banks to change their business strategy. The majority of research on the spending preferences of consumers facilitated the development of financial products for the public, design of client and bank websites that provide good user experience, integrate banking services and online shopping and other functions, and create online shopping, billing, payment and other "one-stop" service model. These services enable commercial banks to adapt to the current competitive environment. Pricing strategy also changes. Given the fierce market competition, internet banks can significantly reduce operating and transaction costs. Thus, commercial banks can reduce fees and other banking charges and even implement a free pricing strategy to seize the market.

### **2.2.2 Reduce business operating costs**

From the perspective of microeconomics, the total cost of online banking includes fixed costs and variable costs. The proportion of variable costs is small given the nature of online banking. Thus, the proportion of fixed costs is large. When the number of internet banking customers increases, the unit cost which shouldered by the bank will be reduced and the marginal cost of internet banking will be low, thereby decreasing the cost of network bank transaction to an amount lower than the traditional commercial banks.

### **2.2.3 Information service level and quality**

According to MasterCard International, "the widespread popularity of the internet is making the financial business transfer from a fixed point of sale way to anytime and anywhere." Through the use of developed information technology, internet banks can directly contact customers at anytime and anywhere and provide safe, high quality, and convenient service. Internet banking can also publish the relevant policies of the bank through mobile client or other tools.

### **2.2.4 Re-division and positioning of customer groups and business scope**

Internet banking was developed by internet technology. The nature of this industry determines the main network for those who have high level of knowledge and familiar with modern technology. Young people are generally well-educated, possess the ability to create social wealth, have high income levels and good development prospects. This population group is the customer base that network banks should actively pursue. Internet banking can gain lucrative profits from these young groups, but the scale of commercial banks should also be improved. In addition, traditional commercial banks can only operate in a fixed location and cannot arbitrarily change the place of business. By contrast, bank customers are mobile. A customer who leaves his or her original living environment cannot personally go to other bank outlets for business. They may become clients of other banks. The emergence of online

banking can continue to provide services for customers who migrate to other regions and will not change because of location changes.

### 2.2.5 Provision of competitive financial products

The current bank competition does not only refer to service competition, but also to competition in internet banking. The level of use of internet information technology related to the network banking services and the change of operating costs enable banks to stand out from fierce market competition.

## 3. DEVELOPMENT AND PROBLEMS IN ONLINE BANKING IN CAMBODIA

### 3.1 Development of online banking in Cambodia

The internet banking industry in Cambodia started at the end of 2008. The Foreign Trade Bank of Cambodia launched online banking business through "peer transfer," which constructed the Cambodian network banking business model. The Cambodian Development Bank, Cambodian Agricultural Bank, Cambodian Policy Bank, and other foreign banks have then set up a bank home page on the internet to promote the financial services of Cambodian Development Bank to other countries and to provide business guidance for network users. By the end of 2015, customers of Cambodian foreign trade network banking reached more than 20,000 households. At present, almost all banks have set up their own home page. Some banks started the basic network of financial services (Table 2).

Table 2 Comparison of internet banks in Cambodia's commercial banks

| Bank                           | Build time | Main function  | Service characteristics  | Security measures   |
|--------------------------------|------------|--|--|---|
| Foreign Trade Bank of Cambodia | Dec 2008   | <b>Account management:</b> including account information inquiry, detailed inquiry, registered account management, suspend account, and electronic statements.<br><b>Transfer remittance:</b> easy to achieve city account transfer, remote transfer.<br><b>Payment:</b> pay the daily life such as the water, electricity, telephone charges through the internet bank. | For personal internet banking: personal account management, check account balance.<br>For corporate internet banking: corporate account management, online payment, online transfer and so on. | SSL;<br>Two-factor authentication (2FA);<br>security payment tool: U-shield |
| Development Bank of Cambodia   | Feb 2010   | <b>Display function:</b> bank history, in-line news, financial products (foreign exchange, gold, stock and other brands).<br>Provide mobile banking, SMS bank information.<br><b>Account management:</b> check account balance.  | Mainly for account inquiries from personal internet banking and corporate network bank.  | No  |
| Agricultural Bank of Cambodia  | Sep 2011   | <b>Display function:</b> Bank history, in-line news, financial product introduction (foreign exchange, gold, deposit interest rate, stock and other price);<br><b>Account management:</b> query personal account balance.  | Mainly for personal account balance inquiries.   | No  |

Source: According to the collected data.

### 3.1.1 Functions of Cambodian internet banking

At present, the function of Cambodian internet banking includes receiving customer complaints, public information, comprehensive functions, inquiries about personal accounts, transfer, and agency payment of public charges.

### 3.1.2 Type of Cambodian internet banking

Cambodian internet banking services can be divided into personal internet banking and corporate internet banking. These functions are shown in Table 3.

Table 3 Cambodian internet banking types and their functions

| Type   | Functions                                       |  |  |
|--|---|--|--|
| Personal internet bank                                   | Account service                                 | Account information query  | Query personal account such as the deposit account, account balance, transaction details and other information.                                  |
|  |   | Personal account transfer  | Immediate transfer of funds between the same names in the individual account.  |
|  |   | Agency payment   | On behalf of the payment of mobile phone calls, fixed calls, electricity and other project costs.  |
|  |   | Personal account management  | Easily complete the account association, account loss and transfer limit settings.   |
|  | Information Services                            | Interest rates advice  | Inquiry about Cambodian currency deposits, foreign currency savings deposit rates, loan interest rates and historical interest rate information. |
|  |   | Foreign exchange information   | Inquiry about foreign currency of foreign trade bank, real-time exchange rate, financial knowledge Q&A, operating guidelines, etc.               |
|  | Other services                                  | Change the password of the internet bank immediately.  |  |
| Update personal online banking registration information. |   |  |  |
| Enterprise internet bank                                 | Account query                                   | Query real-time balance of the account, the day trading, historical transactions, historical balance, remittance and other information.  |  |
|  | On behalf of the wages and agents reimbursement | Pay wages, staff reimbursement and other services by network such as the bulk commission, licensing model customization, appointment uniforms, etc.  |  |
|  | Oriented account payment                        | Provide services for customers such as authorization mode customization, strict control of operating authority, tracking the transfer transaction status, arrival time query, real-time EMAIL payment notice, booking payment, transaction data download, customer message interaction, regular remind password update, etc. |  |
|  |   | Strictly manage and limit the payee information.   |  |
|  |   | The payee can submit the payment order to the payer. The rapid payment will be achieved after the payer authorize.   |  |

### **3.1.3 Internal management of Cambodian banks**

The internal management approach of traditional banks is not suitable for today's internet banking. Internet banking requires not only the human resources management, but also management of network business, operations, and risks.

### **3.1.4 Credit level and publicity of Cambodian internet banking**

Internet banking is a new concept in Cambodia. Cambodia's population quality, cultural foundation and economic base are relatively backward. The country has poor social credit base and backward financial concept that cannot keep up with the development of network technology. These aspects affect the rapid development of the internet and restrict the development of internet banking in Cambodia. The main publicity of online banking of Cambodian commercial banks is traditional. The scope of publicity is relatively narrow. The main publicity demonstrates the use of internet banking methods and the use of television advertising.

### **3.1.5 Security of Cambodian internet banking**

The internet banking services of Cambodia Foreign Trade Bank uses two-factor authentication (2FA), Secure Sockets Layer (SSL) technology, and protects customers' online security by encrypting information and providing authentication.

### **3.1.6 Human resources of Cambodian internet banking**

The management system of Cambodian internet banking is still affiliated with commercial banks, especially in human resources management, which is still in accordance with the traditional operational model. Human resource management forms a mixed type of management model affected by the network banking development model.

## **3.2 Comparison of the development of internet banking between China and Cambodia**

The differences between the development of internet banking in China and Cambodia include development background, scale, business type, security and business philosophy. These differences are shown in Table 4.

## **3.3 Problems of Cambodian internet banking development**

### **3.3.1 Security issues**

The development of internet banking is facing a number of security issues. these issues include computer hardware security, such as computer server damage and network terminal loss; computer software security, such as failure if internet banking websites to run normally and unscientific design of network software; and network virus attacks, such as instances of hackers attacking bank websites by manufacturing computer viruses to prevent banking services from functioning properly. These specific activities are as follows:

A. Internet fraud. The main form of internet fraud is setting up a false bank website and guiding customers into the pre-designed false commercial website. Another form is the production of malicious programs or design spyware.

B. Network hacker attacks. Hackers attack the information systems of bank websites through internet fraud. By stealing bank account and password or tampering with the data obtained from the bank information system, hackers directly transfer the bank's or customer's funds to gain a huge amount of compensation. Such an act causes commercial banks and customers immeasurable loss.



Table 4 China and Cambodia internet banking development contrast

|                               | <b>China</b>   | <b>Cambodia</b>  |
|-------------------------------|--|--|
| <b>Start time</b>             | mid-1990s  | End of 2008  |
| <b>Development background</b> | <p>In 1996, China Merchants Bank launched the online financial services business: to achieve personal financial services counters, ATM and national networking;</p> <p>In 1997, Industrial and Commercial Bank of China established the bank's home page: promoting the financial services business, providing business guidance;</p> <p>So far, all banks have established home page: to provide financial services, security has reached the international standardization, technology is relatively mature.</p> | <p>At the end of 2008, Cambodia Foreign Trade Bank launched the internet banking service business: personal transfer;</p> <p>By the end of 2015, Cambodian commercial banks, foreign banks and joint venture banks had established 26 websites, accounting for 81.5% of the total number of existing banks in Cambodia and more than 20,000 customers.</p> |
| <b>Scale of development</b>   | The scale is large. All the size of the city can use. Business is comprehensive, product variety; provide online Q&A, consultation and other network banking business.   | The scale is small, only in large cities, adapt to high cultural population.   |
| <b>Business category</b>      | is divided into basic functions (including account management, online remittance, online payment, etc.) and specific functions (including VIP room, online payment and settlement agents, online payment, online credit, online bills and senior account management)   | Business is less. The products and services provided are mostly based on the core system of commercial banks, the network of banking services and products are the most basic.   |
| <b>Security</b>               | Password service, enhanced certificate storage security, dynamic password card, advanced technology protection, double password control, transaction limit control, client password security detection   | Has not yet established a national standard CA verification center, the only network payment security tool is "U shield"   |
| <b>Business philosophy</b>    | The most fundamental purpose of the business philosophy is to reduce the operating costs, is "to maximize profits," the strategic decision-making and business approach is entirely market-oriented.   | Business philosophy is to meet customer needs, to prioritize banking product sales. Business is mainly to maintain customer satisfaction, attract customers, and capture market.   |

C. The spread of network viruses. Criminals manufacture computer viruses to transfer the bank funds of customers. This act also undermines the integrity of the banking data system thereby causing serious economic consequences.

D. Security vulnerabilities of operating systems. Security vulnerabilities exist because of imperfections of the bank's operating system and the continuous progress of computer

technology. These vulnerabilities provide objective conditions for the invasion and transmission of network hackers and viruses. In addition, most consumers who cannot keep up with the trend of technological progress or lack sufficient computer knowledge cannot timely update the operating systems of their computers and related software. This lack of sufficient knowledge also provides opportunity for obtaining bank or customer information by criminals.

E. Failure of network system. The internet banking system is paralyzed once the hardware and software equipment of commercial banks fails or damaged. Network system failure will bring huge losses, especially for multinational commercial banks.

F. Mistakes and damage of employees within the bank. Given the simple professional knowledge structure of banking staff, knowledge structure is not updated timely, which then becomes compound talent. Given the uneven quality of staff, knowledge structure becomes an obstacle to the development of internet banking.

### **3.3.2 Regulatory issues of risk system**

A. Regulatory legal system should be improved. At present, the international regulations used for internet banking payment are the "Model law on Electronic Commerce," which is developed by the United Nations Commission on International Trade Law, and the "Declaration on Global Electronic Commerce," which is signed by the World Trade Organization. Given its specific national circumstances, Cambodia has not adopted these two international conventions as a legal system for payment in online banking. Cambodian internet banks use the existing financial legal system and its corresponding industry standards.

B. Mandated bodies or agencies for supervision and regulation are not clearly determined, particularly legislative and law enforcement.

### **3.3.3 Social credit environment should be strengthened**

Cambodia's social credit system has not yet been established and the country's internet banking lacks credit environment. In terms of network economy, the speed of obtaining information and the optimal allocation of information are not high. The network level of the electronic payment related departments, such as customs, taxation, and transportation, does not match the requirements of the banking network. This situation restricted the development of online banking business.

### **3.3.4 Lack of innovation in online banking products**

Cambodia's online banking business is singular and lacks accurate market segmentation and clear market positioning, which severely limit the development of online banking. Product substitution is strong and lacks personalized, humane aspect. The level of personalized service needs should be further enhanced.

## **4. STRATEGY FOR IMPROVING THE CAMBODIAN INTERNET BANKING**

### **4.1 Strengthen the hardware and software security environment**

#### **4.1.1 Use of network firewall software**

Commercial banking institutions can use the network firewall as bank protection shield. This security measure can be achieved by setting filtering rules, rules check, and application of gateway. A firewall should be set up between the external internet and the internet banking technology payment gateway to intercept the intrusion of external network hackers or the spread of Trojan viruses. This approach can also maintain the internal security of online banking and ensure the security of banks and customers. The use of internet banking client should be recorded or clients should log on to the online banking website to enable the

examiner to review relevant information and filter out information that threatens the security of the internet bank. Finally, filtering rules should be set to ensure that the firewall is based on the source address and destination address, application, protocol and each IP packet's port filters and blocks information that do not conform to the rules. Commercial banks should also timely update the network firewall hardware and software settings and improve the technical level of the firewall to prevent security vulnerabilities.

#### **4.1.2 Use of encryption technology**

Commercial banks can use encryption technology to encrypt the information transmitted in the network and ensure the security of the customer accounts and passwords, bank internal data, network payment and other information. Encryption involves re-encoding the bank private information from network transmission through a cryptographic algorithm in encryption algorithm. Network information will then be encoded, which will be interpreted by commercial banks that have the correct key. This technology will prevent the occurrence of leaked events. At present, commercial banks can encrypt the transmission information from three levels, namely, link layer, network layer, and application layer, to ensure the security of network information.

#### **4.1.3 Use of CA certification system and authentication technology**

First, the bank has to use a CA certification system. CA certification can ensure the authenticity, accuracy, and security of bank customer information. The bank should ensure the authenticity of the sender through digital signature technology. The use of authentication technology, such as the use of retina, fingerprints, and passwords to identify the true identity of bank customers, can also be adopted.

#### **4.1.4 Use of access control and other technical measures**

First, access control technology, including controls for autonomous access, mandatory access, and role-based access, can be used. Second, audit monitoring technology can be strengthened. Third, data should be backed up to ensure that it can be recovered.

### **4.2 Strengthen the construction of online banking management system**

#### **4.2.1 Establish and improve the safety management system**

##### **4.2.1.1. Establishment of bank secrecy system**

The first step is strengthening the confidential awareness of bank employees and the confidentiality responsibility of the internal staff of the bank. The second step is establishing confidential inspection mechanism.

##### **4.2.1.2 Establishment of daily management and maintenance system for computer hardware and software**

First is the maintenance of computer hardware, including equipment registration, the establishment of access to the registration system and regular or irregular inspection. Second is the computer software maintenance, including the confidentiality in software development process, regular cleaning of specific information and timely updates of software.

##### **4.2.1.3 The establishment of a safe leadership system management system**

The first aspect is the establishment of the classification and authority system. The person should be responsible for the user's audit, establishment, authorization, and deletion. Bank employees should rotate regularly or irregularly. The third aspect is decentralization of operation authority. Important jobs or work tasks should be performed by two or people so

that employees can monitor each other.

The second aspect is the establishment of leadership system for network security. The leading group for network security is responsible for entire network security. This aspect shows the importance of network security work from the highest management level. The technology support center for network security is responsible for technical support work for network bank security and provides technical guidance for the entire bank. The network security committee is responsible for the development of specific internet banking security management system and specific rules to form a complete set of complete and perfect management system. The network security implementation team is responsible for specific network security inspection work. This team identifies and summarizes the analysis of network operation problems in the process and provides a reference for the leading group and the commission to develop a security system.

The third aspect is the establishment of major events reporting system. When major issues of hacking occur, such as cyber fraud or disclosure of bank data, online banking administration should promptly report the actual situation to the top management and relevant departments of the commercial bank. Such an approach enables top leaders or competent authorities to grasp the work and develop appropriate management strategy.

#### **4.2.2 Improvement of the relevant legal system**

Given Cambodia's specific national conditions, the country should develop a legal system that conforms to the development of online banking system and supplements the original revision of the existing financial system regulations. International cooperation should be established with governments and relevant agencies around the world to exchange experience in the development of online banking, develop regulatory laws for international banking data flow, and further promote the integrity of the legal system.

#### **4.2.3 Clear regulation subjects**

Based on the experience of developed countries such as Europe and the United States, the Cambodian government should regard the Cambodian National Bank as the main body of supervision and regulation of the internet banking to monitor internet banking rules and regulations. These regulations should also be issued by national banks as a document to prevent conflicts caused by the rules and regulations from multiple departments.

#### **4.3 Strengthen the construction of social credit environment**

Cambodia should actively build a good social credit environment. To achieve this, Cambodia should actively promote the normal development of business transactions, establish the enterprise and individual credit rating system, and achieve sharing of social resources. Cambodia's financial industry should study the new situation of cross-border commercial banks. Multinational commercial banks rely on its strong capital, advanced management methods, new financial products, university application of information technology, and excellent service quality to assess the quality of social credit. Cambodian banks should also assess the situation, propose scientific and systematic development strategies consistent with the national conditions of the network banking. Cambodia has to speed up the pace of construction of online banking.

#### **4.4 Improve the ability of network banking product innovation**

Internet banking is a form of customer service based on the original business processing system. Cambodia's commercial banks service a single population, which seriously restricts the development of internet banking. Cambodia internet banking should seize the opportunity

to learn from the advanced experiences of Chinese commercial banks. They should accurately divide customer groups and they should be aware that different customer groups have different group characteristics, consumption habits and consumption concept. Customers who use internet banking systems have strong group characteristics. They have higher-level knowledge, stronger financial strength, and attention to service quality. Internet banking should develop market development services strategy which is based on the situation of customer, and should continue to pursue business innovation to build the core competitive advantage. In addition, banks should vigorously promote business innovation in the internal dynamics for the bank's sustainable development.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The emergence and development of internet banking depends on the rapid development and progress of global information technology. This development is an important opportunity for traditional commercial banks to break through their own business restrictions, innovate business model, and achieve economies of scale. Internet banking is an important support for the rapid development of internet economy and e-commerce. Therefore, Cambodia's commercial banking institutions should seize the important opportunities for the development of internet banking, quickly promote their own business and business model changes, accelerate the development of network financial products, and improve the financial development system to make due contributions for the country's economic growth. Internet banking develops rapidly under the background of weak global economic growth. This phenomenon is inevitable, which is mainly reflected in following points.

The first reason is high technology content. Commercial banks complete the main business activities through the internet and computer equipment. Thus, commercial banks do not need to rent or build too much office space, which can also reduce the number of hiring staff and administrative costs. Operation and management costs can also be reduced by paperless transactions. Moreover, online banking services system and intensive network management should be formatted to integrate the bank's retail, settlement, transfer and credit card business, changes in the past service decentralized business model, and to provide one-stop service for bank customers. Given the speed of internet, internet information can greatly provide efficient service and decision-making. Customers save waiting time through real-time network transfer, which improves customer satisfaction. Similarly, decision-making information helps bank management staff through the timely and rapid collection and organization of management and decisions information by internet. This approach can ensure the correctness of the decision-making and improve decision-making efficiency.

The second reason is that the service advantages are obvious. First, bank customers will be able to transfer, settle, repayment, payment and conduct other activities anytime, anywhere through the internet through the use of international network, which are not limited by time and space. These functions significantly improve the convenience of customer life and may break through the restrictions between different languages. These functions reduce customer inconvenience of communication, attract more customers to use the internet banking business, and expand the size of the network bank users. Second, network banks should provide more comprehensive, flexible and diverse financial products and services. Network banks collect network business information from customers, and analyze large data to research on the age and the level of cultural needs of customers. Banks provide the appropriate services, such as online banking, shopping, investment, financing based on the actual needs of customers. Third, the internet can achieve real-time communication with customers through network instant messaging tools, which allow banks to answer customer questions timely, provide more programmatic and standardized customer service, avoid unpleasant service because of

the bank staff sentiment of business level changes, and maintain and enhance the good reputation and image of internet banking.

The development of Cambodia's internet banking started in 2008. Cambodia's internet banking developed more than 10 years later than those in other countries. Therefore, the development of internet banking in Cambodia can learn from the advanced experience of Europe, the United States, and other countries. However, several problems continue to exist, such as the poor social credit environment, the network itself, technology prevention risks, the lack of innovative capabilities, network banking safety. This study analyzes the problems in the development process of Cambodian internet banking, and recommends solutions.

In view of the problems in the development process of Cambodian internet banking, this study suggests countermeasures on how to improve the network bank of Cambodia, mainly from the aspects of hardware and software technology. First, the hardware and software security environment should be strengthened. This measure includes the use of network firewall software, encryption technology, adoption of the CA certification system, authentication technology, access control technology, and other technical measures to establish a sound and reliable network banking hardware environment. Once implemented, consumers will recognize the functions of commercial banks to protect consumer rights. The construction of online banking management system should be strengthened. This approach includes establishing and improving safety management systems, improving the relevant legal system, focusing on the cultivation of talent, and strengthening the supervision of the network finance. These approaches will create a safe software environment for the system, protect the internal operation of internet banks, and expand the scale and scope of network banking.

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