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College of Informatics
Graduate School of Information Management

Master

Research on the Benefits of E-Business to the Joint Stock Commercial Bank for Industry and Trade, Nam Dinh Province, Viet Nam

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Research on the Benefits of E-Business to the Joint Stock Commercial Bank for Industry and Trade, Nam Dinh Province, Viet Nam

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ABSTRACT

In recent years, the application of electronic business has become ubiquitous. Electronic business is applied in the most areas of life. It become to an indispensable part in the operation of businesses. According to statistics of Vietnam Ministry of Industry and Trade in 2008, there are 99.9% of Vietnam enterprises have computer and 92% of Vietnam enterprises have internet connection (Vietnam Ministry of Industry and Trade (2008)).

With the wide application rate, the benefits of e-business are not denied. However, what are the specific benefits e-business can be bring? In Vietnam, there is no the study mention it. Thus, in this study, I researched the benefits of e-commerce applications on the banks in the province of Nam Dinh. The research is conducted by sending a questionnaire through the mail for managers, employees, customers of over 140 bank branches in the province of Nam Dinh. SPSS 17.0 software was used to analyze data obtained.

The results indicate the positive relationships among factor: System quality, Service

Keywords: E-business, E-commerce, System quality, Service quality, Customer Satisfaction, Organization performance
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An Quoc Dung, 2010
# Table of Contents

ABSTRACT ................................................................................................................................. i
Acknowledgments ...................................................................................................................... iii
Table of Contents ....................................................................................................................... iv
List of Figures ........................................................................................................................... viii

Chapter 1 Introduction ............................................................................................................... 1
  1.1 Research Background .......................................................................................................... 1
  1.2 Research motive ................................................................................................................. 2
  1.3 Research Purpose ............................................................................................................... 3
  1.4 Research Procedure ......................................................................................................... 3

Chapter 2 Literature Review ..................................................................................................... 6
  2.1 History and Evolution of E-business in the world ................................................................. 6
  2.2 E-Business ......................................................................................................................... 8
  2.3 Evaluation benefits of e-business in banks: ...................................................................... 9
  2.4 Status of E–Business applications in the Commercial Bank in Vietnam: .... 13
    2.4.1 ATM and store card ..................................................................................................... 15
    2.4.2 Electronic funds transfer ............................................................................................ 16
    2.4.3 Inter-bank electronic payment and electronic payment clearing ........................... 16
    2.4.4 Some other electronic banking services .................................................................... 17

Chapter 3 Research Method ..................................................................................................... 19
  3.1 Research model ................................................................................................................. 19
  3.2 Research Hypothesis ....................................................................................................... 20
  3.3 Variables and Measurement of variables ....................................................................... 21
3.3.1 System quality ............................................................... 21
3.3.2 Service Quality .......................................................... 21
3.3.3 Customer Satisfaction ..................................................... 22
3.3.4 Organization performance ............................................. 23
3.4 Data Collection .................................................................. 24
  3.4.1 Data Collection method .................................................. 24
  3.4.2 Measurement Scale ....................................................... 24
  3.4.3 Define people who will be delivered survey ....................... 25
  3.4.4 Sampling method .......................................................... 25

Chapter 4 Research Results ..................................................... 26
  4.1 Sample Description .......................................................... 26
  4.2 Reliability and Validity of Variables .................................... 27
  4.3 Descriptive Statistics of research Variables ............................ 31
  4.4 Hypothesis Test ............................................................... 31
    4.4.1 Linear Regression Analysis for Customer Satisfaction ............ 31
    4.4.2 Linear Regression Analysis for Organization Performance ........ 34
  4.5 Discussion ........................................................................ 37

Chapter 5 Research Conclusion ............................................... 39
  5.1 Findings and Contribution ................................................ 39
  5.2 Implications for theory ...................................................... 39
  5.3 Implications for managers: ................................................ 39
  5.4 Limitation ........................................................................ 39
  5.5 Future Study ..................................................................... 40
Reference ................................................................................ 41
APENDIX A: Research Questionnaire................................................................. 47

PART 1: Demographic .................................................................................. 47

PART 2: Finish your table of questions: ...................................................... 48
List of Tables

Table 1. Items of “System Quality” Factor ................................................................. 21
Table 2. Items of “Service Quality” Factor ............................................................... 22
Table 3. Items of “Customer Satisfaction” Factor .................................................... 22
Table 4. Items of “Organization performance” Factor .............................................. 23
Table 5. Characteristics of Sample Demographics ...................................................... 27
Table 6. Reliability Test ............................................................................................... 28
Table 7. VARIMAX Rotated Component Analysis (Factor-Loading Matrix) ............... 29
Table 8. Percent of Variance Explanation .................................................................. 30
Table 9. Descriptive Analysis for Questionnaire Items .............................................. 31
Table 10. Linear Regression Analysis for Testing H1, H3 ........................................ 32
Table 11. Linear Regression Analysis for Testing H2, H4 .......................................... 35
Table 12. Research Hypotheses and Results .............................................................. 37
List of Figures

Figure 1. Research Process ........................................................................................................... 4
Figure 2. The update D&M model ............................................................................................... 10
Figure 3. E-commerce success model .......................................................................................... 11
Figure 4. The DeLone and McLean IS model based on the IS users in Kota Kinabalu, Sabah, Malaysia .................................................................................................................................................. 12
Figure 5. Research Model ............................................................................................................ 20
Figure 6. Path Coefficients for Research Model between Factors and “Customer Satisfaction” 34
Figure 7. Path Coefficients for Research Model between Factors and “Organization Performance” (Path Significance ***p<0.001, *p<0.05) ......................................................................................................................... 36
Figure 8. Path Coefficients for Research Model .......................................................................... 37
Chapter 1 Introduction

1.1 Research Background

The Internet was officially introduced in Vietnam in 1997. So far, after more than 10 years, it has been widely used and applied in most industries and different areas. The application of the Internet into business operations provides many practical benefits. That's led to the introduction and application of e-business operations of enterprises. Following that trend, Vietnam's banking sector is one of the industry leader in e-business applications in the activities to best meet the needs of customers and increase service quality.

One of the top challenges of Vietnam regarding to developing e-business is to build online payment methods for e-business transactions.

The state bank has been using an EDI system, and will soon deploy an inter-bank payment system in the scope of a project of WB. Some banks have been testing ATM systems. For international transactions, many banks has been using SWIFT system, some are doing business with international card issuer like Visa, MasterCard etc. A project of modernizing banks and payment systems by WB is now being involved by the state bank and 4 state-owned banks, 2 share holding banks (Hoàng Minh Cương, 2003).

Gradual transition to automation and machine-to-machine transactions has allowed the banking and finance industry to broaden their services. E-business application projects in banking and finance industry have step by step been applied in Vietnam and harvested satisfactory results. Vietnam Commercial Bank, in trade of State Treasury and
so on shall be leap forwards in the year to come. Yet, in comparison with regional countries, Vietnam is still in the first phase of e-business (Hoàng Minh Cương, 2003). In the world, the application of e-business on banking has gained great achievements. However, Vietnam is now emerging in the early stages of the process (Hoàng Minh Cương, 2003).

Therefore we have conducted the research topic: "Research on the Benefits of E-business to the Joint Stock Commercial Bank for Industry and Trade, Nam Dinh province, Viet Nam" to clarify the benefits of e-business application on the activities of commercial banks in a province of Vietnam.

1.2 Research motive

The application of e-business has many benefits to all activities of companies and organizations, such as:

- Help enterprises get relevant information about on markets and partners
- Reduce production fee
- Reduce fee of sales and marketing
- Help consumers and businesses reduce time and transaction costs significantly by using Internet
- Establish and strengthen relationships of the components involved in the trade process.
- Facilitate accessing to the digital economy (Thương mại điện tử, follow http://vi.wikipedia.org).

On the world, benefits of e-business are well known, but in Vietnam, as state above,
these benefits have not been realized clearly. In addition, e-business implementation in Vietnam has gotten many good results. Specially, e-business implementation in Vietnam commercial banks is still on the first step.

As a result, more research is needed on how to overcome application issues and ensure successful implementation of e-business systems in the Bank.

1.3 Research Purpose

According the discussion above, the purpose of this study is to gain a better understanding of the benefits of e-Business to the Joint Stock Commercial Bank for Industry and Trade at Nam Dinh province, Viet Nam. To demonstrate the purpose the following questions are addressed:

RQ1: How can the benefits of e-Business to the Joint Stock Commercial Bank for Industry and Trade at Nam Dinh province be described?

RQ2: What are situation and the needs of applying e-business at enterprise in the Joint Stock Commercial Bank for Industry and Trade at Nam Dinh province.

1.4 Research Procedure

Like others thesis, the research procedure has 6 steps is showed in the figure 1
First, the research was begun with Define research problem is the benefits of E-business to the Joint Stock Commercial Bank for Industry and Trade, Nam Dinh province, Viet Nam.

After define research problem, Review concepts and theories will be done to understand the whole topic to be studied.

Then, the research is designed to collect data.

Next, data collection is showed.
• After that, analyze data. Then preparation and report writing.
Chapter 2 Literature Review

2.1 History and Evolution of E-business in the world

The development of the World Wide Web, traditional business organizations that had relied on catalog sales had a new sales trend. The businesses recognized that the web was a good place to put customers service information, such as manuals and drivers, as well as a place to help create a consistent corporate image. When the Internet was opened to commercial in 1991 use, E-business became possible. Since that date thousands of businesses had their web sites (History of e-commerce).

At first, the term e-business meant “the process of execution of commercial transactions electronically with the help of the leading technologies such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT)” (History of e-commerce), which gave an opportunity for users to exchange business information and do electronic transactions. These technologies appeared in the late 1970s and business companies and organizations used them to send commercial documentation electronically.

Although the Internet began to general public in 1994, it took approximately four years to develop the security protocols (for example, HTTP) and DSL which allowed rapid access and a persistent connection to the Internet. In 2000 a large of number of business companies in the United States and Western Europe presented their services in the World Wide Web. At this time, people began to define the term e-business as the process of purchasing of available goods and services over the Internet using secure connections and electronic payment services. Although, in 2000 the dot-com collapse led to unfortunate results and many companies disappeared, the "brick and mortar"
retailers recognized the advantages of electronic commerce and began to add such
capabilities to their web sites. By the end of 2001, the largest form of e-business,
Business-to-Business (B2B) model, had around $700 billion in transactions.

E-business sales continued to grow, by the end of 2007, e-business sales accounted
for 3.4 percent of total sales.

Currently there are 5 largest worldwide Internet retailers: Amazon, Dell, Staples,
Office Depot and Hewlett Packard. According to statistics, the most popular categories
of products they sold in the World Wide Web are music, books, computers, office
supplies and other consumer electronics.

History of e-business is a history of a new, virtual world which is evolving
according to the customer advantage. It is a world which we are all building together,
laying a secure foundation for the future generations.
2.2 E–Business

There are many definitions of e-business available. In the simplest sense, electronic commerce merely means the trading of goods and services by electronic technologies, especially by Internet.

According to the World Trade Organization (WTO), "Electronic commerce includes the production, advertising, sales and distribution of products sold and paid on the Internet, but they are physical delivered, including products as well as digital information via the Internet ".

According to E-Commerce Commission of Asia - Pacific Economic Cooperation (APEC), "Electronic business is holding the business via the data communication and digital information technology".

More generally, E-commerce is defined as both financial and commercial transactions, carried out by electronic means such as electronic data interchange, electronic money transfer and other activities such as send / withdraw cash by credit card.

Electronic commerce under this definition includes many business activities, including commodity trading activities, services, delivery of digital content over networks, electronic money transfer, stock trading, electronic bills of lading, e-auction trade, cooperation design, Internet resources, public trade, marketing directly to consumers and the after-sales service; with trade in goods (such as consumer goods, specialized medical equipment) and trade in services (such as information services, legal services, financial) and other traditional activities (such as healthcare, education) and activities new (like a virtual supermarket).
E-business can be used in 3 primary processes:

Production processes: procurement, ordering and replenishment of stocks, processing of payments, and electronic links with suppliers, production control processes, among others (Philippines: DAI-AGILE, 2000).

Customer-focused processes: promotional and marketing efforts, selling over the Internet, processing of customers’ purchase orders and payments, customer support (Philippines: DAI-AGILE, 2000).


To definite the benefits of e-business, author use the IS success model. But to appreciate with conditional of Viet Nam.

2.3 Evaluation benefits of e-business in banks:

To measure the impact of e-business activities of banks, following Dai-agile (200), E-business can be used in three primary processes, but banks are financial institution, no process production, authors should consider only the impact of e-business to two processes:

- Customer-focused processes;
- Internal management processes.

Specifically to consider the two processes, the authors review the factors affecting customer satisfaction and organization performance.

Moreover, e-business is a type of Information system. So the IS success model can
be used to examine the benefits of e-business on a bank. DeLone and McLean (2003) showed an update to their IS success model at figure 2.

![Figure 2. The update D&M model](image)

In fact, DeLone and McLean (2003, 23) said: “As discussed earlier, quality has three major dimensions: information quality, systems quality and service quality”. However, they removed ‘Individual Impact’ and ‘Organisational Impact’ and replaced them with ‘Net Benefits’; further, they added feedback loops to ‘Intention to Use’ and ‘User Satisfaction’. They also added ‘Intention to Use’ to the model. About the relationship among between factors, DeLone and McLean (2003) showed that service quality and system quality will affect “user satisfaction” or “customer satisfaction”.

Because the D&M IS success model is a framework and model for measuring the complex dependent variable in IS research so it has been widely used to evaluate success. From background of D&M IS success model and from different points of view, other model is proposed to meet the requirements set by several kinds of
information systems. For example, Molla, A., and Licker (2001) proposed an e-commerce success model which based on the D&M IS Success Model, shown at figure 3. Their model showed about the updated D&M IS Success Model can be adapted to e-commerce systems. In their model, “System quality” measures the desired characteristics of an e-commerce system, “Service quality” measures characteristics of service provider and “customers satisfaction” measures characteristics customers ‘opinions of our e-commerce system. Within the e-commerce context, they explained and service quality, system quality have positive effect customer satisfaction.

![E-commerce success model](image)

**Figure 3. E-commerce success model**

Before that, Ruyter et al. (1997) modified the SERVQUAL scale and empirically tested to determine the relationship between service quality and customer satisfaction. They also proved service quality impact on customer satisfaction. Sureshandar et al. (2002) found that service quality and customer satisfaction were highly related. I-Ming Wang and Chich-Jen-Shieh (2006) researched the relationship between service quality
and customer satisfaction. They showed that overall service quality has a significantly positive effect on customer satisfaction.

Afsheen Chitnis (2006) researched Satisfaction Formation Process for Iranian Airline Passengers. This research focused on customer satisfaction, CRM, expectation disconfirmation theory and the SERVQUAL instrument. The result show the strong relationship between service quality and customer satisfaction.

In the research “Impact of System Quality, Information Quality and Service Quality on Performance”, Asniati B. and Roslinah M. (2009) found out the effect of system quality, information quality and service quality on individual performance and organizational performance. This study used a part of DeLone and McLean IS model based on the IS users in Kota Kinabalu, Sabah, Malaysia. Final to test the hypothesizes. The DeLone and McLean IS model based on the IS users in Kota Kinabalu, Sabah, Malaysia can be show in the figure 3. Their result showed relationship among between factors: system quality, information quality and service Quality has affected organization performance.

![DeLone and McLean IS model](image)

Figure 4. The DeLone and McLean IS model based on the IS users in Kota Kinabalu, Sabah, Malaysia
Manuela S. Macinati (2007) researched the relationship between quality management systems and organizational performance in information systems at Italian. He showed that system quality positive effect organizational performance.


2.4 Status of E – Business applications in the Commercial Bank in Vietnam:

The total sales of the world e-commerce, according to the e-Marketer, will surpass US$2.7 billion in 2004. Certain statistics show that the e-commerce sales in Vietnam is around US$20 million per year and there are about 3,000 companies, representing 2% of registered companies in the country, have their websites (Vietnam Ministry of Industry and Trade, 2008). This is really a small number.

The e-banking in Vietnam is the computerization of traditional services, that is, supply of old services through new channels. Because the e-banking services are very new and most customers don’t pay much attention to them, commercial banks in Vietnam are reluctant to launch new services. Only a few banks, such as incombank, Vietcombank, Eximbank ACB, , ANZ and Citybank, supply home - banking services. In addition, customers could get phone-banking service from Techcombank, VCB, ACB, ANZ, HSBC, and Citybank; and mobile-banking service from Incombank, ACB and Techcombank. Some banks are with their websites where they advertise themselves and supply some information about their services. The Bank for Agriculture and Rural Development is bringing a pilot scheme to supply e-banking services (Trần Hồng Huệ,
To serve the e-business, VASC has established the VASC Payment to facilitate electronic payment VASC CA control, provide digital signature and certificates, thereby creating confidence among customers and service suppliers.

Some e-banking services in Vietnam


Customers could use various services on a 24/7 basis. For example, the ACB home banking sector offers fund transfer, bill payment, money transfer, along with bank statements on request.

B. Phone-banking: For example, the Techcombank with help from the IT Center under the Post and Telecommunications Institute has built the Techcombank Voice Assess System to supply information by phone.

C. Mobile-banking: ACB and Techcombank have launched this service in recent years. Information is encoded before sending to the mobile devices and only authenticated customers could decode it. Customers can also use mobile phone to instruct the bank to make payment or trade in stocks.

D. Internet-banking: This is a channel through which customers could get banking services any time and anywhere. However, security of this service is not high enough, which makes it less popular.
E. Bank kiosk: Some banks have made plan to open stations in public places where customers are provided with electronic facilities to get banking services.

There are many form of E-business applied in Commercial Banks such as: Internet Banking, SMS Banking, E-statements, E-Alerts, ATMS, mobile Banking……, but in Vietnam focus 4 forms:

2.4.1 ATM and store card

Before 2000, Vietnam had only two branches of the foreign banks ANZ which had automatic transaction system with small scale. From 2001, state-owned banks began taking part in the self service market. There are now 7 banks (BIDV, ICB, VCB, SACOMBANK, ANZ, AGRIBANK, HSBC) which have the total number of 900 ATM machines all over the country.

The benefit of ATM machine is that customers can withdraw money without complicated formalities. The main function of ATM machine now is withdrawals. In the future, ATM will provide some other functions such as account transfers, deposits, stamp purchases and so on.

In Vietnam, there are now four banks – Vietcombank (VCB), Asia Commercial Bank (ACB), Eximbank, Bank for Investment and Development of Vietnam (BIDV), which are allowed officially to issue international credit card. Vietcombank is the leader in this area. From 1996, Vietcombank issued Master Card officially and now Visa Card and Dinersclub are also issued. Moreover, ACB has also fairly firm development especially in issuing and paying Visa Card, Master Card. ACB has provided domestic credit card thank to the combination with the supermarket system of Saigon Coop and
Saigon Tourist.

2.4.2 Electronic funds transfer

All the four state-owned banks (as mentioned above) wire money transfer, therefore, the payment problem among customers having open account in a bank system have met the customers’ needs. They can have express transfer if they want. The time to transfer e-money is reduced considerably from a week to 2 or 3 days and even one day with express transfer. As a result, of all the payment facilities, the payment order related to electronic funds transfer occupies very high rate with 90% of the total sales by the payment facilities.

2.4.3 Inter-bank electronic payment and electronic payment clearing

On May, 2002, the State Bank of Vietnam put its inter-bank electronic payment system into official operation. Members must not exchange directly paper documents but electronic documents when making payment transactions because the elements of paper documents are coded into electronic data and accessed through computer networks.

Compared to old money transfer system, inter-bank electronic payment system has evident advantages in both technological aspect and service. Banks need not spend much on this system and the execution time is short. Therefore, after one year, the inter-bank electronic payment system had made about one million of payment transactions safely with the total value of 600.000 billions VND.

The payment among the banks is done online, via the inter-bank electronic
payment system. Commercial banks, local processing centre, national payment centre and the main transaction office of the State Bank create a seamless flow of information, ensuring accuracy, safety and meeting the State Bank’s need for controlling the capital reserve instantly. Besides, these create infrastructure which is very important to enlarge banking service in Vietnam in the future.

2.4.4 Some other electronic banking services

Besides electronic banking services, the banks provide some other electronic banking services such as home-banking, PC banking, mobile banking. Some banks such as VCB, Viettinbank, ACB… have their own websites to introduce about their services.

The appearance of mobile banking service marks the development of e-business. This service is very suitable with the Vietnam market. With the increase in the number of mobile subscribers and people who use bank accounts, mobile banking allows customers to access their private accounts or make payment transactions in the agencies of mobile banking through sending messages to the banks. There are now three banks: Incombank, ACB and Techcombank, however, this service will develop much more in the future.

Moreover, more and more banking services are provided by the banks. There are four banks with home-banking service and six banks with Internet-banking service. In case the customers want to use these services, they only need register in branch banks. The banks provides them username and password which are used to search information or make transactions with the banks on websites.

Electronic signature is also one online payment facility. Its appearance enhances
the safety in electronic transactions.

It can be seen that thank to electronic service; the competitive capacity of banking sector has been improved partly in the process of the international economy integration. By applying technology, especially electronic commerce which simplifies the formalities with the help of the Internet, this service offers the customers many benefits.
Chapter 3 Research Method

3.1 Research model

The evaluation of the benefits of E-business system affecting a stock bank can be considered in several aspects. However, when combining all the above researches, my thesis reviews in two aspects: That is the benefits affecting on “organization performance”, “Customer Satisfaction”. The factor Customer Satisfaction can refer to the factor User Satisfaction of the IS success model - the most commonly-used model which is used in evaluating the effectiveness of an information system. Regarding the influencing factors of the E-business system, I use factors of the updated IS success model. Relating to two quality factors (System Quality and Information Quality).

Relating to two quality factors (System Quality and Information Quality), I use the System Quality factor, because the E-business systems, which are applied in the banks of Nam Dinh province, have default good information quality. In other words, it’s unnecessary to mention the constructs about Completeness, Ease of Understanding, Personalisation, Relevance, and Security (Joze K., Julia F., Agela S., 2002). Therefore, the factors influencing the E- business system include the System Quality, and Service Quality. Their relationships and their mutual impacts of these factors are introduced in some studies in the section 2.3.
The model that we have conceptualized is shown in Figure 5.

3.2 Research Hypothesis

H1: The system quality of e-business in the banks has a positive relationship to customers satisfaction

H2: System quality of e-business in the banks has a positive relationship to organization performance

H3: The Service quality of e-business in the banks has a positive relationship to customers satisfaction

H4: The Service quality of e-business in the banks has a positive relationship to organization performance
3.3 Variables and Measurement of variables

3.3.1 System quality

Since 1985, Srinivasan developed and validated items of “System quality” factor. This thesis summarizes the items of measurement as those shown in the Table 1. All of the item measure will be using 5-point scale: Strongly disagree, disagree, undecided, agree, and strongly agree.

Table 1. Items of “System Quality” Factor

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Content of Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>SyQ1</td>
<td>The system contains accurate data.</td>
</tr>
<tr>
<td>Quality</td>
<td>SyQ2</td>
<td>The system contains all needed data for related business processes.</td>
</tr>
<tr>
<td></td>
<td>SyQ3</td>
<td>The data in the system reflects current process statuses.</td>
</tr>
<tr>
<td></td>
<td>SyQ4</td>
<td>The system response time is short.</td>
</tr>
</tbody>
</table>

“Item* represents System quality”

3.3.2 Service Quality

About “Service quality” factor, Parasuraman, Zeithaml and Berry (see Parasuraman et al., 1985) proposed SERVQUAL instrument for the measurement of the perceived Service Quality. It includes ten determinants or dimensions of ser-vice quality: reliability, access, understand-ing of the customer, responsiveness, com-petence, courtesy, communication, credi-bility, security, and tangible considera-tions. This thesis summarizes the items of measurement as those shown in the Table 2. All of the item measure will be using 5-point scale: Strongly
disagree, disagree, undecided, agree, and strongly agree.

Table 2. Items of “Service Quality” Factor

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Content of Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Quality</td>
<td>SeQ1</td>
<td>The Commercial Bank has up-to-date hardware and software (tangible);</td>
</tr>
<tr>
<td></td>
<td>SeQ2</td>
<td>The CRM System is dependable (reliability);</td>
</tr>
<tr>
<td></td>
<td>SeQ3</td>
<td>Commercial Bank’s employees give prompt service to users (responsiveness);</td>
</tr>
<tr>
<td></td>
<td>SeQ4</td>
<td>Commercial Bank has users’ best interests at heart (empathy).</td>
</tr>
</tbody>
</table>

“Itema represents Service quality”

3.3.3 Customer Satisfaction

Since 1983, Bailey and Pearson developed and validated items of “Customer Satisfaction” factor. This thesis summarizes the items of measurement as those shown in the Table 3. All of the item measure will be using 5-point scale: Strongly disagree, disagree, undecided, agree, and strongly agree.

Table 3. Items of “Customer Satisfaction” Factor

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Content of Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>CS1</td>
<td>The degree of congruence between what the user wants or requires and what the information products and services provided is high</td>
</tr>
</tbody>
</table>
CS2  Commercial Bank provides complete services.
CS3  Customers can access information about the bank, the bank’s services easily
CS4  The customers have positive feelings of assurance or certainty about the systems services.
CS5  Commercial Bank’s employees have the knowledge to do their job well (competence).

“Item a represents Customer Satisfaction”

3.3.4 Organization performance

According to Richard et al. (2009), “Organization performance” factor has three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (economic value added, total shareholder return, etc.). In recent years, Organization performance is understand broader that is financial performance (e.g. shareholder return), customer service, social responsibility, employee stewardship. This thesis summarizes the items of measurement as those shown in the Table 4. All of the item measure will be using 5-point scale: Strongly disagree, disagree, undecided, agree, and strongly agree.

Table 4. Items of “Organization performance” Factor

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item a</th>
<th>Content of Item</th>
</tr>
</thead>
</table>

23
Organization performance OP1 Financial performance is always in sight

OP2 Customer was satisfying with customer service of banks

OP3 The banks were done social responsibility.

OP4 The banks’ managers manage employee effected

3.4 Data Collection

3.4.1 Data Collection method

In this thesis, I suggest that the research was done by sending mail-survey to experts who have implemented and experienced E-business at Commercial bank in Namdinh province in four weeks. Mail survey are therefore used as a primary source of information for data collection due to the fact that it gives the opportunity to collect quantitative data which can be analyzed using descriptive and inferential statistics.

In part one of the mail-survey, participants were required to fill-in personal information in order to understand their gender, age, current job, current position.

After finishing part 1, participants were required to fill-out the remaining questions in part 2 which contain items the same as content of the table at 3.3.

3.4.2 Measurement Scale

About measurement scale, I referenced from several relevant prior research studies. In my thesis, the whole adopted items were modified for the context if necessary, paraphrased to suit a five-point, for example of Likert-type scale includes:
1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree


3.4.3 Define people who will be delivered survey

About population, I suggest to send email to managers, staffs, customers of commercial banks in Namdinh province, Vietnam.

3.4.4 Sampling method

About sampling method, I suggest to use random sampling method in my thesis. It is one of the probability methods which include other method such as systematic sampling, and stratified sampling (Zorayda Ruth Andam, 2003). On Random sampling, each tester of the population has known chance of being selected. In case large populations, it is often difficult to identify every member of the population, so the pool of available subjects becomes biased (Zorayda Ruth Andam, 2003).
Chapter 4 Research Results

In the 123 questionnaire were sent, there are 107 resent. But in this, there are 11 responses aren’t satisfactory. Finally, we were left 96 effective samples.

I use software SPSS 17.0 package to analyze and test the hypotheses of this study. The statistical analysis methods and results adopted are as follows:

4.1 Sample Description

The detail description of samples or the respondents’ personal data, such as their gender, age, current job, current position will be analyzed. Every construct of the data will be analyzed in percentage, frequency distribution in order to know the sample distribution.

The demographics of participants: (1) Gender, (2) Age, (3) Current job, (4) Current position is shown in table 5.

As shown in Table 5, our samples include 62.5% Male and 37.5% Female. There is a marked difference in the percentage between male and female.

In 96 respondents, the percentage of the respondents for age between less than 30, 30-39, 40-50, and over 50 are 30.2%, 31.3%, 17.7%, and 20.8%, respectively, so most of the respondents in this study are about 30-39 years old (31.3%%).
Table 5. Characteristics of Sample Demographics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Item</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>60</td>
<td>62.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>36</td>
<td>37.5</td>
</tr>
<tr>
<td>Age</td>
<td>&lt; 30</td>
<td>29</td>
<td>30.2</td>
</tr>
<tr>
<td></td>
<td>30 – 39</td>
<td>30</td>
<td>31.3</td>
</tr>
<tr>
<td></td>
<td>40 – 50</td>
<td>17</td>
<td>17.7</td>
</tr>
<tr>
<td></td>
<td>Over 50</td>
<td>20</td>
<td>20.8</td>
</tr>
<tr>
<td>Current job</td>
<td>Businessman</td>
<td>43</td>
<td>44.8</td>
</tr>
<tr>
<td></td>
<td>Officer</td>
<td>35</td>
<td>36.5</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>18</td>
<td>18.7</td>
</tr>
<tr>
<td>Current position</td>
<td>Staff</td>
<td>44</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td>Middle Manager</td>
<td>24</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>Manager</td>
<td>11</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>17</td>
<td>17.7</td>
</tr>
</tbody>
</table>

4.2 Reliability and Validity of Variables

To examine the reliability and validity of variables, I suggested to use factor analysis and Cronbach’s Alpha.

Factor analysis used to identify factors that statistically explain the variation and co-variation among measures. Factor loading of an item must be greater than 0.5. Eigen value needs to be greater than 1; the difference between two Eigen value needs to be greater than 0.3.

Reliability used to a measure when similar results are obtained over time and across situation. Broadly defined, reliability is the degree to measures are free from error and therefore yield consistent results. Usually reliability is measured by Cronbach’s α; if it is
greater than 0.7, then it means that there exists high degree of reliability, if less than 0.35, then it means that the reliability is relatively low, and this coefficient needs to be deleted.

Firstly, I measure the reliability of the measurement for the four factors, including. Factors with Cronbach’s α below 0.5 will be deleted. Cronbach’s α is to test whether the measures are free from error. Throughout the test we find out that all of the Cronbach’s α are greater than 0.983, meaning that the factors have high reliability. The result is shown in the Table 6.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Items</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>System quality</td>
<td>4</td>
<td>0.997</td>
</tr>
<tr>
<td>Service quality</td>
<td>4</td>
<td>0.983</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>5</td>
<td>0.993</td>
</tr>
<tr>
<td>Organization performance</td>
<td>4</td>
<td>0.992</td>
</tr>
</tbody>
</table>

After examine the reliability of the items, factor analysis is used to identify the structure of relationships among respondents (or items) by examining the correlations between the respondents (or items). With the factor analysis, we can identify the separate dimensions of the structure and then determine the extent to which each variable is explained by each dimension. Once the dimensions and the explanation of
each variable are determined, we can do summarization and data reduction.

First, in order to assess construct validity and identify the unique dimensions of each construct, factor analysis with VARIMAX rotation was employed. Construct validity checks the extent to which a construct measures the variable of interest. In other words, it should demonstrate relatively high correlations between items of the same construct (convergent validity) and low correlations between items of constructs that are expected to differ (discriminant validity).

Table 7 shows the results of the VARIMAX rotation on the original 17 items constrained to 4 factors.

Table 7. VARIMAX Rotated Component Analysis (Factor-Loading Matrix)

<table>
<thead>
<tr>
<th></th>
<th>System quality</th>
<th>Service quality</th>
<th>Customer Satisfaction</th>
<th>Organization Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyQ1</td>
<td>0.663</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SyQ2</td>
<td>0.657</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SyQ3</td>
<td>0.647</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SyQ4</td>
<td>0.657</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SeQ1</td>
<td></td>
<td>0.740</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SeQ2</td>
<td></td>
<td>0.712</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SeQ3</td>
<td></td>
<td>0.711</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SeQ4</td>
<td></td>
<td>0.686</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS1</td>
<td></td>
<td></td>
<td>0.820</td>
<td></td>
</tr>
<tr>
<td>CS2</td>
<td></td>
<td></td>
<td>0.832</td>
<td></td>
</tr>
<tr>
<td>CS3</td>
<td></td>
<td></td>
<td>0.838</td>
<td></td>
</tr>
<tr>
<td>CS4</td>
<td></td>
<td></td>
<td>0.823</td>
<td></td>
</tr>
<tr>
<td>CS5</td>
<td></td>
<td></td>
<td>0.838</td>
<td></td>
</tr>
</tbody>
</table>
From result of the table 7, we can see that all items’ factor loading are high (greater than 0.647) so there is no items is eliminated. Then, eigen value as well as cumulative percent of variance explanation are shown in the Table 8:

Table 8. Percent of Variance Explanation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalue</th>
<th>Percent of Variance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System quality</td>
<td>3.963</td>
<td>99.077</td>
</tr>
<tr>
<td>Service quality</td>
<td>3.804</td>
<td>95.107</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>4.868</td>
<td>97.366</td>
</tr>
<tr>
<td>Organization Performance</td>
<td>3.901</td>
<td>97.529</td>
</tr>
</tbody>
</table>

From the Table 8, we can see that All the Eigen values are greater than 1. However, we also see:

For System quality factor, percentages of variance explained by the factors were greater than 99% for 4 items are analyzed.

For Service quality factor, percentages of variance explained by the factors were greater than 95% for 4 items are analyzed.

For Customer Satisfaction factor, percentages of variance explained by the factors were greater than 97% for 5 items are analyzed.

For Organization Performance factor, percentages of variance explained by the factors were greater than 97% for 4 items are analyzed.
4.3 Descriptive Statistics of research Variables

Use mean and standard deviation to describe my research variables: System quality, Service quality, Customer Satisfaction and Organization Performance.

Table 9. Descriptive Analysis for Questionnaire Items

<table>
<thead>
<tr>
<th>Factors</th>
<th>Items</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std.Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyQ1</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.4792</td>
<td>1.03598</td>
</tr>
<tr>
<td>SyQ2</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.4792</td>
<td>1.03598</td>
</tr>
<tr>
<td>SyQ3</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.4896</td>
<td>1.01561</td>
</tr>
<tr>
<td>SyQ4</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.4792</td>
<td>1.03598</td>
</tr>
<tr>
<td>SeQ1</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.6563</td>
<td>0.85628</td>
</tr>
<tr>
<td>SeQ2</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.6563</td>
<td>0.89240</td>
</tr>
<tr>
<td>SeQ3</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.6042</td>
<td>0.87635</td>
</tr>
<tr>
<td>SeQ4</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.6146</td>
<td>0.89877</td>
</tr>
<tr>
<td>CS1</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.8750</td>
<td>0.96518</td>
</tr>
<tr>
<td>CS2</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.8750</td>
<td>0.98675</td>
</tr>
<tr>
<td>CS3</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.8542</td>
<td>0.96223</td>
</tr>
<tr>
<td>CS4</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.8750</td>
<td>0.98675</td>
</tr>
<tr>
<td>CS5</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>2.8750</td>
<td>0.98675</td>
</tr>
<tr>
<td>OP1</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.1250</td>
<td>1.01825</td>
</tr>
<tr>
<td>OP2</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.1667</td>
<td>0.99119</td>
</tr>
<tr>
<td>OP3</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.1563</td>
<td>1.01906</td>
</tr>
<tr>
<td>OP4</td>
<td>96</td>
<td>1.00</td>
<td>5.00</td>
<td>3.1667</td>
<td>1.01221</td>
</tr>
</tbody>
</table>

4.4 Hypothesis Test

4.4.1 Linear Regression Analysis for Customer Satisfaction
The results of linear regression analysis for factors (System quality, Service quality) influencing Customer Satisfaction are shown in the Table 12. That model includes two hypotheses (H1, H3):

H1: The system quality of e-business in the banks has a positive relationship to customer satisfaction

H3: The Service quality of e-business in the banks has a positive relationship to customers satisfaction

Table 10. Linear Regression Analysis for Testing H1, H3

<table>
<thead>
<tr>
<th>Factors</th>
<th>Standardized Coefficients $\beta$</th>
<th>t-value</th>
<th>R2</th>
<th>Adj-R2</th>
<th>F value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>System quality</td>
<td>0.725***</td>
<td>1.625</td>
<td>0.802</td>
<td>0.798</td>
<td>188.651</td>
<td>.000</td>
</tr>
<tr>
<td>Service quality</td>
<td>0.196*</td>
<td>1.765</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: Customer Satisfaction

***p<0.001, **p<0.01, *p<0.05

The final model shown in the Table 10 had a very good overall fit ($F = 188.651$, $p = 0.000$). And at significant level 0.05, all factors have significant positive relationships with Customer Satisfaction. Therefore, we conclude that hypotheses H1, H3 are supported hypothesis. We also can see in the table that the adjusted R2 value for three factors influencing customer loyalty is 0.798, meaning that the explanation ability of the independent constructs is good for our dependent variable, Customer Satisfaction. Among factors (System quality, Service quality), the most important one to explain the
influence on Customer Satisfaction is Service quality ($\beta = 0.725$); the second will be System quality ($\beta = 0.196$). And the regression model is illustrated as follow:

$$CS = 0.196SyQ + 0.725SeQ + e$$

Where: CS represents for Customer Satisfaction

SyQ represents for System quality

SeQ represents for Service quality

The results also can be seen in the Figure 6 below. It illustrates the estimated coefficients and their significance in the structural model between Factors and “Customer Satisfaction”
4.4.2 Linear Regression Analysis for Organization Performance

The results of linear regression analysis for two factors (System quality, Service quality) influencing Organization Performance are shown in the Table 1. That model includes two hypotheses (H2, H4):

H2: System quality of e-business in the banks has a positive relationship to organization performance

H4: The application of e-business in the banks has a positive relationship to organization performance

Figure 6. Path Coefficients for Research Model between Factors and “Customer Satisfaction”

(Path Significance ***p<0.001, *p<0.05)
Table 11 Linear Regression Analysis for Testing H2, H4

<table>
<thead>
<tr>
<th>Factors</th>
<th>Standardized Coefficients β</th>
<th>t-value</th>
<th>R2</th>
<th>Adj-R2</th>
<th>F value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>System quality</td>
<td>0.270**</td>
<td>4.505</td>
<td>0.754</td>
<td>0.748</td>
<td>142.354</td>
<td>.000</td>
</tr>
<tr>
<td>Service quality</td>
<td>0.629***</td>
<td>4.086</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: Organization Performance

***p<0.001, **p<0.01, *p<0.05, +p < 0.1

The final model shown in the Table 12 had a very good overall fit (F = 142.354, p = 0.000). And at significant level 0.05, all factors have significant positive relationships with Organization Performance. Therefore, we conclude that hypotheses H2, H4 are supported hypothesis. We also can see in the table that the adjusted R2 value for three factors influencing customer loyalty is 0.748, meaning that the explanation ability of the independent constructs is good for our dependent variable, Organization Performance. Among factors (including System quality, Service quality), the most important one to explain the influence on Organization Performance is System quality (β = 0.270 and the last one is Service quality (β = 0.629). And the regression model is illustrated as follow:

\[ \text{OP} = 0.270\text{SyQ} + 0.629\text{SeQ} + \epsilon \]

Where: OP represents for Organization Performance

SyQ represents for System quality
SeQ represents for Service quality

The results also can be seen in the Figure 7 below. It illustrates the estimated coefficients and their significance in the structural model between Factors and “Organization Performance”

![Diagram of E-business of Bank and System Quality](image)

**Figure 7. Path Coefficients for Research Model between Factors and “Organization Performance” (Path Significance ***p<0.001, *p<0.05)**

“Research on the benefits of E-business to the Joint Stock Commercial Bank for Industry and Trade, Nam Nam Dinh province, Viet Nam”. Figure 8 is derived from the research framework with beta coefficients filled.
About results of hypothesis, as well as the conclusion of hypotheses supporting are shown in the table 12.

Table 12. Research Hypotheses and Results

<table>
<thead>
<tr>
<th>Research Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The system quality of e-business in the banks has a positive relationship to customers satisfaction</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: System quality of e-business in the banks has a positive relationship to organization performance</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: The Service quality of e-business in the banks has a positive relationship to customers satisfaction</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: The application of e-business in the banks has a positive relationship to organization performance</td>
<td>Supported</td>
</tr>
</tbody>
</table>

4.5 Discussion

From the result of the research, we can indicate the benefits E-business to the Joint
Stock Commercial Bank for Industry and Trade. The special is the influence of the System Quality and Service Quality on the Customer Satisfaction and Organization Performance.

- For the two factors, System Quality and Service Quality which has positive effect on factor of “Customer satisfaction”, factor Service Quality have more significant.
- For the two factors, System Quality and Service Quality which has positive effect on factor of “Organization Performance”, factor System Quality have more significant.
Chapter 5 Research Conclusion

5.1 Findings and Contribution

My thesis researches benefits of E-business to the Joint Stock Commercial Bank for Industry and Trade, Nam Dinh province, Viet Nam. The results indicate that two factors (System quality, Service quality) have significant positive relationships with Customer Satisfaction and Organization.

5.2 Implications for theory

In Viet Nam, many banks have already started using application of e-business. Of course, it has many benefits. But, Viet Nam has no the same research be for so the thesis is the first research about the issue. In the thesis, author use the IS success model to indicate the benefits of e-business, which again confirms the correctness of the IS success model a for evaluating information system.

5.3 Implications for managers:

In practice, this conclusion helps banks’ managers/ owners in Nam Dinh province can assess levels of priority among the benefits of E-business to the Joint Stock Commercial Bank for Industry and Trade accurately. It is also a basis for decision that should invest in e-business or not? In order to make sure that the investment in e-business will be make many benefits.

5.4 Limitation
Until today, there is little specific empirical research addressing this issue. Firstly, the number of commercial banks in Nam Dinh province stills few. This led to number of samples is limited. Secondly, the use of survey questions via email affected the quality of the sample, because it cannot be controlled whether the respondents via email are people in need of questioning or not.

5.5 Future Study

Because of the limitations of this study, we suggest the following ideas that further study could do.

The first is to expand research by increase the sample, conduct research in the many different cities. In the future, e-business will has more application in the banks and the other industries. So the author can research about one of the models, applications of e-business, effect on the banks or enterprises.

The second is to combine survey via email with direct interview.

The lastly is to expand the scope of the respondents. It’s not only the IT workforce, but it may be also customers, salespeople and enterprise’s managers or owners.
Reference


In late 1999 there will be one more joint-venture between the Vietnam Bank for Investment and Development and the Bank for Foreign Trade of Laos.


[27] Statpac “Survey Sampling Methods”


[34] Vietnam Ministry of Industry and Trade (2008); “Vietnam E-Commerce Report”


APENDIX A: Research Questionnaire

PART 1: Demographic

Participants are asked to choose answers to examine the benefits of e-business in the commercial banks in Nam Dinh province, Vietnam. After reading and choosing question, you are required to answer following questions:

1. Sex

   □ Male           □ Female

2. Ages

   □ Below 30       □ 30 - 39       □ 40 - 50       □ Over 50

3. Current job

   □ Businessman    □ Officer       □ Other ___

4. Current position:

   □ Staff          □ Middle Manager □ Manager       □ Other ___
PART 2: Finish your table of questions:

Then, you are required to fill-out below questions. To answer those questions, circle with the most appropriate on the scale provided.

**5-point Scale:**

1. Strongly disagree  3. Undecided  5. Strongly agree
2. Disagree  4. Agree

Example: 1 2 3 4 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>Content of Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Quality</td>
<td>The system contains accurate data.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The system contains all needed data for related business processes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The data in the system reflects current process statuses.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Service Quality</td>
<td>The system response time is short</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>----------------</td>
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<td>---</td>
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</tr>
<tr>
<td></td>
<td>The Commercial Bank has up-to-date hardware and software (tangible);</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The CRM System is dependable (reliability);</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Commercial Bank’s employees give prompt service to users (responsiveness);</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Commercial Bank has users’ best interests at heart (empathy).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Commercial Bank’s employees have the knowledge to do their job well (competence);</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>The degree of congruence between what the user wants or requires and what the information products and services provided is high</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Commercial Bank provides complete services.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Customers can access information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
about the bank, the bank’s services easily

The customers have positive feelings of assurance or certainty about the systems services.

Commercial Bank’s employees have the knowledge to do their job well (competence).

Financial performance is always in sight

Customer was satisfying with customer service of banks

The banks were done social responsibility.

The banks’ managers manage employee effected