



เรียนรู้เพื่อรับใช้สังคม

**THE INFLUENCE OF ELECTRONIC BANKING
SERVICE QUALITY AND THE SATISFACTION
OF CUSTOMERS OF MEDIUM BANKS IN CHINA**

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**A THESIS SUBMITTED IN THE PARTIAL
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Customers of Medium Banks in China**

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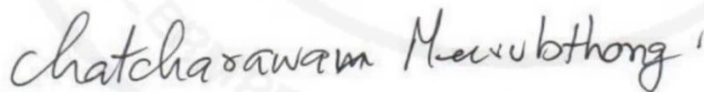
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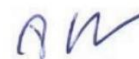
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Abstract

This research focused the study of quality of medium banks' e-banking services and what contributes to its customer satisfaction factors. The objectives of this study were to examine the impact of customer characteristics, e-banking service expectations and bank attitude expectations on customer satisfaction in medium banks. A quantitative research methodology was used in this study. The research type is a survey. The sample size of this study is 400. Descriptive analysis and multiple regression analysis were used to analyze the collected data. The results of this study showed that age, region and education among customer characteristics do not positively affect customer satisfaction in e-banking of medium banks. In hypothesis 1, H1a (age), H1b (region) and H1c (education) are not supported. In terms of the quality of e-banking services, performance, security, website design, reliability and cost positively impact customer satisfaction in medium banks. In hypothesis 2, H2a (performance), H2b (security), H2c (site design), H2d (reliability) and H2e (cost) are supported. In terms of attitude towards banking services, empathy positively affects customer satisfaction in medium banks. In hypothesis 3, H3 (empathy) is supported.

Keywords: E-Banking, Service Quality, Customer Satisfaction, Medium Bank

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Abbreviations

E-banking

Electronic banking

E-service

Electronic service



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Chapter 1

Introduction

1.1 Introduction

With the development and application of Internet technology, the world has entered the digital age (Zouari and Abdelhedi, 2021). During this period, the rapid development of the Internet has led to the growth of many fields, electronic banking came into being, and the traditional model began to shift to cross-channels. Electronic banking is a method of using the Internet to enable customers to conduct financial transactions. The advantages of electronic banking include reduced costs and time spent, paying bills via online channels, transferring money, checking account balances, and carry out other activities at any time through electronic banking (Elmaraash, 2018). The easy access allows for preventing any delays in their transactions made by companies and single users. From the customer's point of view, electronic banking is a reliable and straightforward way to conduct banking business because it can be accessed 24 hours a day, 365 days a year, regardless of geographic location. When banks carry out an omnichannel layout based on information technology, they can better meet customer needs. In this context, the importance of electronic banking is becoming clearer and more evident to the users.

Compared with traditional banks, e-banking has won the favor of customers with its convenience and time-saving advantages. However, in recent years, the quality of e-banking services has been poor, and some problems have led to low customer satisfaction with the quality of e-banking services (Qin, 2019). The first problem is the poor performance of e-banking services, poor security, cumbersome website design, low reliability and high costs, resulting in low customer satisfaction. The second problem is the lack of empathy in the bank's attitude to e-banking leading to low customer satisfaction (Keramati, Ghaneei and Mirmohammadi, 2020). Medium banks are an important part of China's financial system. This is due to the ability that they can supervise and manage the production and operation activities of various sectors and

enterprises of the national economy. As a result, they provide better optimization for the industrial structure and improve the efficiency of the national economy. Considering its effect to the industry and economy, medium banks still retain its soundness and flexibility in operation. In the government work report that medium banks have problems of insecurity, low performance, cumbersome web pages, high cost, lack of reliability and empathy in the service process and attitude, so medium banks need to solve these problems, improve the level of financial services of medium banks, and further consolidate the main position of medium banks (He, 2021). In short, medium banks play a crucial role in China's national economy and is deemed necessary that a study on them must be made.

Minsheng Bank was chosen as a case study. Minsheng Bank is a medium bank and is the first bank that opens China's private capital to enter the financial market. According to Minsheng Bank's report, since its establishment, Minsheng Bank has grown its asset size by more than 50 times, its net profit by more than 260 times, and its market share by about 13 percent, achieving high growth and ranking among the top three in the country in terms of overall competitiveness (Liu, 2019). However, all banks are now investing more in promoting e-banking and striving for a place in emerging businesses. Therefore, in the current situation, Minsheng Bank also needs to expand its market share and enhance its core competitiveness.

In addition, demographic characteristics, such as age, region and education level, may also influence customer satisfaction in e-banking of medium banks (Vijayanand, 2021). In response to the aforementioned findings, it is necessary to examine the influence of the characteristics of e-banking customers on customer satisfaction. Then, regarding the service processes and attitude, an examination on influences of the service quality of medium banks on customer was given as an output. Lastly, based on the retrieved information, suggestions on how to improve customer satisfaction in electronic banking of medium banks were done.

1.2 Problem statement

1) Age, region and education among customer characteristics may influence customer satisfaction in e-banking of medium banks.

2) The low security, poor performance, poor website design, low reliability and high cost of e-banking in terms of services may affect customer satisfaction in e-banking for medium banks.

3) Banks' attitude over e-banking services with lack of empathy may affect to customer satisfaction in e-banking for medium banks.

1.3 Objectives

1) To study the impact of age, region and education among customer characteristics on customer satisfaction with e-banking services of medium banks.

2) To study the impact of e-banking service quality expectations on security, performance, website design, reliability, and cost with regards to customer satisfaction in medium banks.

3) To study the impact of empathy in banking service on customer satisfaction in medium banks.

1.4 Research hypothesis

In order to test the relationship between electronic banking service quality and customer satisfaction of medium banks, the following hypotheses are tested in this study:

Hypothesis 1: Age, region and education among customer characteristics positively affect customer satisfaction in e-banking of medium banks.

Hypothesis 2: The quality of e-banking in terms of service performance, security, website design, reliability and cost positively impacts the satisfaction of medium banks customers.

Hypothesis 3: Banks' attitude towards e-banking services positively affects customer satisfaction in terms of empathy.

1.5 Limitation and delimitation

1.5.1 Limitation

The time available for this study was limited. Due to time constraints, data was collected from a sample of customers from only one medium bank.

1.5.2 Delimitation

The researchers had a short period to collect the data. To obtain the sample size for the calculations, the researchers collected data from multiple sources. The study did its best to retrieve information from different samples through multiple channels. Questionnaires were shared on all possible social media, including other professional survey medias. This study also tried to specify target survey population to obtain a larger sample. Lastly, preparations regarding the questionnaire and special attention to the progress of the survey were presented.

1.6 Definition of Terms

Electronic banking	Refers to a virtual counter set up by banks on the Internet to initiate or process any transfer of funds using electronic technology (Luki and Gaji, 2019).
Internet banking	Internet banking is a banking tool provided to customers, through internet banking, customers can conduct transactions through the bank's website (Nakasi, 2019).

Mobile banking

Mobile banking means that banks use smartphones as carriers to enable customers to use banking services on this terminal (Nakasi, 2019).

Electronic service quality

Electronic service quality is a measure of the extent to which the service provided matches the expectations (needs) of the customer (Chandel and Vij, 2019). Electronic service quality refers to customers' attitude in the process of choosing and consuming electronic services, covering the entire process of service products, service scenarios, and service delivery in the electronic environment (Akkarene and Boukrif, 2020).

Satisfaction

Satisfaction is a psychological state, which refers to a person's subjective evaluation of the quality of a relationship. It is a pleasure after the customer's needs are met, the customer's prior expectations for the product or service, and after the actual use of the product or service. The relative relationship of real feelings obtained. For example, numbers are used to measure this mental state, which is called satisfaction (Yi and Nataraajan, 2018).

1.7 Expectation outputs

For electronic banking, customers are the main competitive target of banks, the study of customer satisfaction with the quality of electronic banking services is an essential information for banks to gain an edge above others. Firstly, shortcomings of mobile banking are identified through factors influencing customer satisfaction on quality of electronic banking services. The information used for several reasons, namely: To provide suggestions for banks to improve, promote the business development and improvement of electronic banking, maintain the relationship with customers, and improving profitability. Secondly, through the analyses and improvement suggestions made by medium banks, other banks can learn and promote the joint development of domestic banks. Thirdly, the theoretical model developed in this paper enriches the research on the impact of electronic banking service quality on customer satisfaction in medium banks and provides theoretical references for future scholars' research.

1.8 Conclusion

Electronic banking creates many advantages for medium banks, such as low cost and time saving. As presented, it is necessary to study electronic banking of medium banks. Through the study, the researcher is going to find out the effect of electronic banking service quality on customer satisfaction of medium banks, while helping Minsheng Bank improve its competitiveness against other players in the industry. The study period is from August 2021 to May 2022.

Chapter 2

Literature Review

The objective of this study is to identify the factors of customer satisfaction that influence the quality of electronic banking services in medium banks. Then the researcher is going to review electronic banking, service quality of electronic banking and customer satisfaction. In the last part, a theoretical framework is developed as a guideline for doing research.

2.1 Electronic banking

To understand electronic banking, the researcher is going to define it. After that, the researcher is going to elaborate on the characteristics and classification of e-banking. In addition, the last part of this section is going to list some advantages of electronic banking.

2.1.1 Definition of electronic banking

Electronic banking refers to a virtual counter set up by banks on the Internet to initiate or process any transfer of funds using electronic technology (Luki and Gaji, 2019). This literature provides theoretical support for the study of the definition of electronic banking.

With the rapid development of Internet channels, traditional banking business has been impacted, and banks' online channel business has gradually replaced traditional offline business. As a new type of banking service, internet banking has quickly become the focus of attention in the international financial community. D'Andrea and Limodio (2019) pointed out that internet banking is a product of the combination of "Internet" and "banking," banks conduct business through the establishment of a web version of internet banking, customers can access electronic banking using personal computers and other smart devices. This is because the definition of e-banking has been further refined to give it a more independent status.

It is clear that electronic banking can be defined as Internet banking because it is widely considered an Internet-based banking business. Electronic banking is mainly aimed at individual customers and small and medium enterprises. Electronic banking does not require on-site guidance from bank staff. Moreover, electronic banking also provides services to customers through network technology (Pasha and Ahmadian, 2019). This literature provides theoretical support for understanding the definition of electronic banking. With the presented information, it is clearly distinct between electronic banks and traditional banks.

Mayanja (2020) defined electronic banking as Internet technology to provide services to customers, which include: account opening, inquiries, transfers, wealth management, etc. It is designed to allow customers to easily manage time deposits, personal investments while staying at home.

Electronic banking is based on the Internet as a public resource, while also utilizing related technologies to create a safe, convenient, and friendly connection between a bank and its customers (Sulaiman and Abdelkarim, 2019).

This study examines the impact of e-banking service quality on customer satisfaction. As a result, it is necessary to clarify the definition of e-banking. The definition of electronic banking reveals that electronic banking is a virtual counter set up by banks on the Internet to initiate or process any transfer of funds using electronic technology. Hence, this study will focus on customer satisfaction along with the quality of electronic banking services offered by medium banks, since customers can use its functions through electronic banking.

2.1.2 Services of Electronic banking

This section is going to focus on the main services offered by e-banking, including real-time transfer, check bills and purchase of financial products.

1) Real-time transfer

A transfer is a form of bank monetary settlement in which money is received and paid through a bank transfer from the paying account to the receiving account without

using cash directly. Real-time transfers mean that there is no time lag in transferring funds. But to achieve that is a steep task. Currently there are some exceptional cases due to the different processing speeds of the receiving banks. For example, accounts are not received immediately during holidays and busy network hours. Real-time transfers usually mean that the funds are accepted within ten minutes, so real-time describes a fast arrival time, not an immediate arrival. With real-time transfers, funds can be transferred directly from the user's bank card to the website account without any manual confirmation. Using this service, customers can safely and quickly send funds to either local or remote company and other personal entities as well.

2) Check bills

After opening an electronic banking application or website, customers first log in to their personal electronic banking and open a bill for their account. Then, customers select the respective period that they want for bill checking. Through electronic banking, customers can view their recent payment history.

3) Purchase of financial products

After logging in to electronic banking, customers can click on financial management to inquire about products. In this case, Minsheng Bank has non-break-even financial management (Anying series). This kind of financial product is an asset variety with a high yield and controllable risk. It ensures high returns through flexible portfolio allocation of money market tools and bonds. Customers can purchase wealth management products according to their needs through electronic banking.

This study examines the impact of e-banking service quality on customer satisfaction and the need to understand e-banking services. Electronic banking services are banking services enabled by the Internet to provide for a better customer experience through information exchange. The main services of electronic banking rely on the Internet to achieve the following: transfer money to customers, check bills, and purchase financial products online (Chauhan, Yadav and Choudhary, 2022).

2.1.3 Classification of electronic banking

1) Divided by an access port

According to the access port, electronic banking can be divided into internet banking and mobile banking (Nakasi, 2019).

Firstly, Internet banking, it represents a banking tool provided by banks for customers to use. Through Internet banking, customers can use the Internet to conduct many monetary and non-monetary transactions through the bank's website. Secondly, mobile banking refers to the utilization of smartphones as carriers by banks to enable customers to use banking services on this terminal. In mobile banking, four requirements are concerned, including: smartphones, the Internet, mobile applications, and mobile banking service. In brief, for a sense of classification, the PC port refers to internet banking, and the mobile port refers to mobile banking.

With the advent of the digital economy in China, digital transformation affects all aspects of the economy. Online business in the financial industry is showing constant surge. Moreover, number of online users is continuously increasing, and the scale of the electronic banking market is also continually expanding. In the financial services sector, customers' choice of electronic banking services is rising and has evolved into an important channel (Jerene and Sharma, 2020). To further clarify on the topic, the literature further illustrates the importance of electronic banking services.

Through electronic banking, customers can transfer money and check accounts, as well as buy wealth of financial products displayed on the website. With electronic banking becoming more prominent and essential to the growth in this digital era, so it served as the subject of this study.

2) Divided by organizational form

Regarding different forms of organization, electronic banking can be divided into two classes, which are branch electronic banking and pure electronic banking (Zhang, 2018).

Firstly, branch electronic banking is a new way of utilizing the Internet as a

medium for traditional bank. The method makes use of developed business based on original bank and shifts its operations into online services. The Internet plays an auxiliary role in developing banking business, which is an extension of traditional banking services on the Internet. Secondly, pure electronic banking is a bank set up according to customers' needs for internet banking services, without specific branches and business counters. So, it typically only comprises of one website.

This study examines the impact of e-banking service quality on customer satisfaction. As a result, it is necessary to understand the characteristics of e-banking. In China, electronic banking provided by medium banks is classified as pure electronic banking. This is because pure electronic banking is based on the needs of internet banking services of the people. With the information given, it can be seen that electronic banking offered by medium banks in China is able to offer what the Chinese citizen needs and in turn, became the main electronic banking service for the Chinese.

3) Characteristics of electronic banking in China's medium banks

Medium banks in China have low market share in electronic banking which might be due to uneven regional development. According to the China Banking Industry Report, from the perspective of transaction size, the top three banks in China in terms of electronic banking transactions of medium banks are Industrial and Commercial Bank of China, Agricultural Bank, and Minsheng Bank (Huang and Tian, 2019). Further clarification on the topic could be explored through the mentioned literature as well as further theoretical support for the study of characteristics of Chinese medium banks' electronic banking.

In China, state-owned banks have more financial strength and attached importance to the development direction of financial networking (Nazaritehrani and Mashali, 2020). They invest more in the development of electronic banking, started earlier, comprised of more useful functions, and have higher credibility. Therefore, state-owned banks have a higher market share in the electronic banking sector. However, the market share of electronic banking of medium banks in China is still low, and

moreover, the phenomenon of uneven business entities is undeniable. In addition, from the geographical point of view, it also has a particular influence on the medium bank's electronic banking. East China and South China are more economically developed compared to other parts. Information technology penetration rate and population quality are higher, and electronic banking development for medium banks is more favorable. However, Western China and Northern China are relatively slower in development, resulting in uneven development between the electronic banking regions of medium banks.

Electronic banking in medium banks in China is primarily focused on businesses. In comparison to the state-owned banks, the state-owned banks have been more comprehensive, covering the scope and popularity of all relevant companies. However, looking at the actual demand, the functions used by customers are mostly concentrated in basic banking services such as balance inquiry and transfer, meaning fewer customers are interested in buying financial products and services. Two hypotheses to these findings could be drawn. First, the result related to the lack of customers' mastery of medium banks' electronic banking. Second, the matter is related to customers' orientation to electronic banking, i.e., customers have not yet equated electronic banking with traditional counters. In addition, in terms of hardware facilities for using medium banks' electronic banking, PC (Personal Computer) is currently the leading way to log into medium banks' electronic banking.

This study examines the impact of e-banking service quality on customer satisfaction in medium-sized banks in China. As a result, it is necessary to identify the characteristics of e-banking services provided by medium-sized banks in China. Although there are only a handful of studies on the topic of electronic banking services provided by medium banks in China, it can be seen that medium banks in China suffers from uneven regional development, low market share, and concentration on their main business in electronic banking (Hu, 2020). Larger banks have a higher and competitive electronic banking market share. Medium banks have a lower e-market share and are

not as competitive. Therefore, medium banks electronic banking cannot pose a threat to larger banks' electronic banking. But still, the financial industry is organically linked and complementary. The electronic banking of medium banks is an important part of China's financial system. A diversified ecosystem requires large bank electronic banking to cooperate with medium bank electronic banking system. Therefore, to form a diversified financial ecosystem, it is necessary to study the electronic banking system of medium banks.

2.1.4 Advantages of electronic banking

This section is going to go over the advantages of electronic banking, which include reduced transaction cost, high efficiency, convenience and security. For more clarification, literatures mentioned within these subtopics should be referred to.

1) Reduced transaction costs

Electronic banking has cost advantages (Takkar, 2019). Electronic banking could help reduce costs due to its digitalization through network analysis and integration, complete with information screening. This not only saves time but also reduces transaction costs.

The emergence of electronic banking has enabled investors to avoid the cost of setting up business outlets and helped consumers find appropriate financial products in an open and transparent environment. It also reduces the information asymmetry between the two and dramatically reduces transaction costs that will occur between the processes.

2) High efficiency

Electronic banking can be more efficient (Josephine, 2021). Electronic banking is efficient because it can be access if there is a computer and the Internet available. In contrary to traditional banking, electronic banking does not require cumbersome steps. Upon comparing the two, electronic banking is faster and more efficient.

3) Convenience

Compared with traditional services, the most significant advantage of electronic

banking is convenience (Sahut, 2021). Electronic banking is convenient because electronic banking users of electronic banking can effectively check bills, transfer funds and purchase financial products at any time. Moreover, it could also help save customers' time, facilitates customers, reduces costs for businesses, and achieves a win-win situation for both individual users and banks.

4) Security

Electronic banking services are safer (Mogos and Jamail, 2021). In order to ensure the security of transactions, electronic banking online services adopt electronic signatures, electronic certificates, key encryption, and other advanced computer technologies to encrypt the data transmission process. Moreover, by achieving high level of security, electronic banking can maximize customer interests and capital security.

This study examines the impact of e-banking service quality on customer satisfaction in medium banks. As a result, it is necessary to identify the advantages of e-banking. Many scholars have discussed the advantages of electronic banking services. It is undeniable that traditional banking has high transaction costs, low efficiency, low convenience, but with high security. While e-banking has four main advantages (see Table 2.1), including low transaction costs, high efficiency, high convenience, and even higher security (Cui, 2019). These advantages make customers switch from traditional banking to electronic banking. Therefore, this study takes full advantage of these strengths to further develop the services of electronic banking.

Table 2.1 Advantages of traditional banking and e-banking services in China (Cui, 2019)

Item compared	Traditional Banks	Electronic banking
Transaction Cost	High	Low
Efficiency	Low	High
Convenience	Low	High
Security	High	Higher

2.2 Customer Satisfaction

This section is going to define customer satisfaction and then elaborates on the topic of customer satisfaction in electronic banking to further understand and gain insights on the topic.

2.2.1 Definition of customer satisfaction

Customer satisfaction is a perception that can be understood as a feeling of pleasure after receiving a service or purchasing a product, which the customer elicits by comparing the actual performance of the product or service with the expectations that the customer knows (Otto, Szymanski and Varadarajan, 2020). This literature elaborates the definition of customer satisfaction and provides a theoretical basis for studying the effect of e-banking service quality on customer satisfaction.

Customers are dissatisfied if the product or service does not perform as expected, satisfied if the performance or service meets expectations, and very satisfied or happy if the product or service exceeds expectations (Asnawi, Sukoco and Fanani, 2020). It can be seen that satisfaction is the extent to which the perceived performance of a product or service matches the purchaser's expectations.

This study is created to examine the impact of e-banking service quality regarding their customer satisfaction in medium-sized banks. Evidently, it is necessary to define and understand factors that are contributing to customer satisfaction.

2.2.2 Customer Satisfaction of Banks

Li, Lu, Hou, Cui and Darbandi (2020) stated that customer satisfaction of banks depends on the quality of services provided by banks, and the higher the quality of bank services, the higher the satisfaction. Renu and Singh (2019) states that the quality of e-banking services positively affects customer satisfaction and includes service and attitude in electronic service quality. Customer satisfaction factors in e-banking include quality in terms of service and attitude, it may also be influenced by personal characteristics (Aisyah, 2018). In the service process, when the bank has low security, poor performance, cumbersome process, and unreliable and costly operations. Banks do not have a caring attitude toward their customers, which may lead to customers being dissatisfied with the quality of service and thus contributes to loss of customers. This literature explains the source of bank customer satisfaction and provides theoretical support for research on customer satisfaction.

This study examines the impact of e-banking service quality on customer satisfaction. As a result, it is necessary to identify the factors that influences customer satisfaction. Discussion done by multiple scholars have concluded that quality of service and attitude are two factors contributing to customer satisfaction.

2.3 Customer Satisfaction of Electronic Banking

Electronic banking service quality affects customer satisfaction. Meaning that all dimensions of electronic banking service quality play a role in contributing to customer satisfaction levels. These factors were found to vary according to a study of satisfaction factors. This section is going to consider the attitude and processes of electronic banking service quality of medium banks as factors affecting customer satisfaction.

2.3.1 In terms of services

1) Security

Security refers to the degree of protection of customers' personal information, which involves financial security and confidentiality, and focuses on making customers

feel safe in their transactions to be satisfied, which is also expected from electronic banking (Algamdi, 2020). Security can be analyzed from the perspective of protecting customers' privacy, property and mentality (Salihu, Metin, Hajrizi and Ahmeti, 2019). At present, customers are generally concerned about the security of e-banking, users are more worried about this aspect, and banks displaying the security mechanisms applied on their websites can give customers an added sense of security (Hajduk-Stelmachowicz and Iwan, 2019).

From the literatures, it can be derived that security is described as an essential requirement for business and services. Security plays an important role in decision making for customer and affects how the company's reputation and public relations are seen by customers. High service security can reduce anxiety levels and overall improve the company's image customers perceived.

Security is a critical factor for customer satisfaction in the quality of electronic banking services of medium banks. Because the unique transaction environment of electronic banking is virtual, most customers value privacy and transaction information security as their main concern. With the system being online, customers tend to expect better security throughout the process. To conclude this section, the security of electronic banking would affect customer satisfaction.

2) Performance

Performance refers to the ability of a system to process information using a software platform versus a hardware platform, which includes uninterrupted service and strong compatibility. Evidently, good performance contributes to high customer satisfaction, which customers expect from e-banking (Hossain, 2021).

Al-Gharaibah (2020) defines performance as completing account login and page loading tasks with accuracy and speed. When customers encounter problems during the service process, they can provide timely help or provide relevant answers. Conclusions can be drawn that performance is an essential factor in electronic banking satisfaction.

3) Website design

Website design refers to the operational planning of a website layout according to the information provided by the platform, which typically include products, services, and ideas and culture that a company wishes to convey to its visitors. A good website design must also provide good aesthetic for the page (Aboobucker and Bao, 2018). Customers use electronic banking functions through a designed website. An attractive, well-laid, easy-to-use, and aesthetically pleasing website enhances a business's marketing capabilities and increases customer satisfaction, this is also what customers expect from e-banking (Rahi, Ghani, and Ngah, 2020). This is because the easier the user can navigate and operate the task effectively, the more they believe that the operation is reliable. Therefore, website design could be used as a way to improve customer satisfaction. Moreover, the literature mentioned also describes the influence of website design on customer satisfaction during the service process of e-banking service quality.

Simple and convenient design in the website operation allow users to operate the platform smoothly without professional training, which is more conducive for users to perform substantive operations on the website and form transactions. The occurrence of the transaction is the basis for the formation of satisfaction. In short, website design affects customer satisfaction.

4) Reliability

Reliability requires companies to fulfill their commitments, reliability, accuracy, and other aspects. Reliability refers to the consistency of promised availability and quality of service; error-free transactions and the provision of accurately documented documents within the promised time frame will result in reliable and satisfied customers. As a service, customer expects high reliability of the platform (Nagar and Ghai, 2019). Through analyzing customer's perception regarding the topic of reliability, a high-risk service means that the customer feels unreliable and unsafe, which could result in them not using the service. It is evident that reliability is essential. In addition, electronic

banking users will consider the reliability of electronic banking.

To achieve good reliability, companies need to fulfill their promises to customers on time and appropriately help customers solve a problem. The company must also be dependable and capable of recording everything in a timely manner correctly. Lastly, customers hope to receive reliable performance from the service they are getting, such as reliability in provisioning of related services.

In short, analyzing the reliability of the internet banking system at its level can be defined as correctly fulfilling the promises to customers while actively taking relevant measures to avoid risks.

5) Cost

Cost is one of the factors that influence the adoption of e-banking services. Upon carrying out production and business activities or to achieve specific objectives, a certain amount of resource must be spent. The monetization and objectification of the resource spent is called cost. When customers use services, they always expect to minimize transaction costs such as money and time or even zero service fees, and at the same time, they want to get more benefits from it, so the more value they get, the higher their satisfaction will be (Daba, 2021).

However, implementing new technologies will generally reduce the cost of service, and the low cost of interaction will increase the use of customers, such as low commission and time-saving. Electronic banking has cost advantages and customers are willing to use it. To conclude, people has the ability to choose to support or oppose electronic banking based on their perception of cost.

This study examines the impact of e-banking service quality on customer satisfaction. As a result, it is necessary to identify the satisfaction factors in terms of service and attitude. On the grounds of this research, six components contributing to customer satisfaction in terms of customer service has been identified. The component includes, security, performance, website design, reliability, and cost.

2.3.2 Banks' attitude

With each region's economic development and social progress, more and more customers are pursuing personalized consumption, and banks provide financial consultation, online help and technical support to meet customers' needs, this is also what customers expect from e-banking (Choudhury, Singh, Kajol and Rai, 2020). To further expound on the topic, this literature has described the impact of empathy on customer satisfaction in the attitudinal aspect of e-banking service quality.

Empathy refers to the ability to actively experience the emotions and thoughts of others. As well as to understand the positions and feelings of others, and to think and deal with problems from the perspective of others in the process of interpersonal interaction (Zhang and Hallock, 2022). Empathy treats all customers at the level of an independent individual, with services provided by enterprises personalized and unique to each individual specifically. In essence, it can be understood that the company tries its best to meet the various needs of users based on satisfying their needs and making them feel special and unique through each services. Its components include the company's personalized service to customers, the employees' concern for customers, the company's putting customers' interests first, and the company's consideration of providing thoughtful services to customers from the level of service content.

This study examines the impact of e-banking service quality on customer satisfaction. As a result, it is necessary to identify the satisfaction factors in terms of service and attitude. On the grounds of this research, a component contributing to the bank's attitude is empathy.

For electronic banking to increase their customers' satisfaction, they must take more initiatives to further understand their customer's need in order to provide service accordingly. Moreover, there is no significant difference between traditional banking and electronic banking in terms of empathy. Both services emphasize on personalized services, such as one-to-one services and customized financial products. In addition, customers are also drawn to electronic banking due to its customized service that serves

and satisfy their need. In short, empathy contributes significantly to the satisfaction level of electronic banking services users.

2.3.3 Demographic characteristics

In this section, four characteristics of the customer base are presented, which are age, region, education level, as to which they might affect e-banking services' satisfaction.

1) Age

The customer base of electronic banking is mostly dominated by young adults, or closely related to the personality traits and psychological behavior characteristics of young adult consumers. According to China's national conditions, the age stage of young-adults is between 25-34 years old. This population subset is the most active group in China's online community and has considerable online consumption experience. The characteristics of the young-adult consumer group show that they have strong independence and great consumption potential. Consumers in this age group have accumulated enough consumption experience and can choose goods and services independently. In conclusion, age positively affects customer satisfaction (Hossain, Bhowmik, and Islam, 2020).

2) Region

China's electronic banking customer users are mainly concentrated in East China and South China, which reflects the differences in China's regional economic development and differences in consumer attitudes (Cui, 2019).

The regional differences lie primarily in two aspects: the difference in the level of regional economic growth, and the other is the difference in regional consumer maturity and consumption concepts (Ye, Yang and Mao, 2021).

From an economic point of view, East China and South China are economically developed, residents have higher incomes, as well as excess financial management funds. In contrast, the economic development of North China and Western China is relatively slow and under-developed, and there are no extra funds to purchase financial

products. Economic differences can lead directly to infrastructure gaps. From this point of view, the advantage of the number of electronic banking users in economically developed regions also reflects the uneven economic development of China's national conditions. From the perspective of consumer maturity and consumption concepts, consumers in economically developed East China and West China have richer consumption experiences, higher maturity, and more advanced consumption concepts.

3) Education

Regarding education, some studies have mentioned that customers of electronic banking and mobile banking have high educational level (Chakiso, 2019). Comparing the two, the electronic banking customer base has a higher degree of education due to the need to comprehend harder instructions. In addition, younger generations with higher education are also more capable of adapting to new products which makes them the highest number of population utilizing the service. In other words, this group has a relatively high awareness and usage rate of electronic banking. Moreover, electronic banking requires an increasingly high level of user knowledge, in areas such as investing, for the user to utilize the service to its full potential. Knowing this, a conclusion could be drawn that education level correlates with customer satisfaction (Dhanya and Velmurugan, 2021).

This study examines the impact of e-banking service quality on customer satisfaction. Customer characteristics are also a factor in customer satisfaction, and it is evident that it is necessary to discuss the characteristics of customers in terms of age, region and education.

2.4 Electronic banking service quality

In order to fully understand the quality of e-banking services, the researcher is going to define the quality of electronic services. Then, the researcher is going to focus on the factors that affect the quality of e-banking services. Furthermore, in the last part

of this section, the researcher is going to describe the current status of e-banking service quality.

2.4.1 Definition of electronic service quality

Electronic service quality is a measure of the extent to which the service provided matches the expectations (needs) of the customer (Chandel and Vij, 2019). By investigating the level of customer expectations of e-service quality, it is possible to understand the customer's perception of e-service quality. It can be seen that the main basis for determining e-service quality is customer expectations. This literature supports the study by describing the definition of e-service quality and the way in which e-banking service quality is assessed.

The quality of electronic services is represented by its efficiency and effectiveness in online trading of products and its services. Moreover, the quality of electronic service is also defined by attitude of customers in the processes of choosing and consuming electronic services (Akkarene and Boukrif, 2020).

Electronic service quality also refers to the quality formed in the service processes provided by the website or system (Shankar and Datta, 2020). It can be seen that electronic banking service quality is an intermediate link between customer behavior and the evaluation process, covering the whole process of service products, service scenarios, and service delivery in an electronic environment. In regards to the definition of electronic banking service quality, it can be concluded that electronic service quality includes two aspects, which are attitude and service.

1) Attitude

Attitude is an overall evaluation that expresses how much a person like or dislike an object, issue, person, or action. Attitude, as a psychological phenomenon, does not only refer to people's inner experience but also include people's behavioral tendencies. Generally speaking, attitude is latent and is mainly reflected by people's speech, expressions and behavior. In other words, attitude determines behavior, and behavior is the external expression of attitude (Wang, Li, Mangmeechai and Su, 2021).

Attitude could also be described as a continuous mental state that is prepared to feel and act in a supportive or unsupportive manner for a specific person, thing, or point of view. It highly correlates with the individual's behavior towards and individual or object. Given the sole importance of how significant an attitude of each person plays a role in their lives, it is safe to say that to be able to manipulate an individual's attitude will provide a sustainable competitive advantage in electronic service quality. Which lastly, would result in better competitive advantage for the company.

2) In terms of service

Service refers to the procedures, tasks, schedules, structures, and activities related to service transactions and consumption (Deng, 2019). In the electronic banking system, verification and approval from customer us require before any process starts.

In this case, electronic banking service process refers to the aforementioned process of using electronic banking services, i.e., transferring money, checking bills and purchasing financial products by customers through electronic banking. In correlation, the quality of electronic banking service is determined by the evaluation created by customers throughout the process.

This study examines the impact of e-banking service quality on customer satisfaction. It is necessary to first clarify the definition of e-banking service quality, and secondly, understand e-banking service and attitude.

2.4.2 Factors influencing the quality of electronic banking

In order to categorize factors influencing the quality of electronic banking, as a way, many scholars have first proposed dimensions of electronic banking service quality. Sardana and Bajpai (2020) believes that security, cost, performance and reliability are essential factors for the quality of electronic banking services. Zewge (2021) found that among the e-banking service quality dimensions, reliability, security and performance are statistically significant for customer satisfaction. This literature describes the influencing factors of electronic banking service quality and provides theoretical support for studying electronic banking service quality.

As per our conclusion, it is clear that foreign scholars have not given uniform conclusions on the factors affecting the quality of electronic banking services. However, the traditional service quality dimension does not directly correlate with the service quality of e-banking since it represents a different and unique service process.

In China, with the booming development of Internet finances, following the demand, Chinese scholars began to increase their research on the quality of electronic banking services as well. Guo (2020) classified the quality of electronic banking services into five dimensions: website design, operational process, security, performance and cost. Dong (2020) proposed that security, website design and performance are essential dimensions of e-banking service quality. Zhang (2020) classified the dimensions of e-banking service quality into five dimensions: security, reliability, simplicity of design, performance and empathy. Moreover, a study regarding the five dimensions was also established, referring that all of these dimensions affect customer satisfaction. Furthermore, researcher also believes that there are still room for electronic banking services to be, and should be improve. This is mainly due to banks neglecting customer experience. The 24-hour electronic banking service can only answer simple questions for customers, and solving complex problems is complicated and time-consuming. In addition, the complex and restrictive workflow between the various departments of electronic banking reduces the convenience of online banking. In particular, a series of actions has been mentioned. Processes such as security authentication at initial login lacks human consideration which leads to inconvenience and dissatisfaction.

With the development of the Internet, electronic banking services have become more and more diversified, with an increasing number of users. However, compared with foreign electronic banking services in other countries, electronic banking services in China still need improvement. In 2020, the central bank pointed out that one of the seven critical tasks in 2020 is the security monitoring of Internet banking (Du, 2020).

However, although electronic banking has been promoted nationwide, the security awareness of electronic banking is still low. In addition, electronic banking uses security controls and other means to ensure the security of customers' online transactions. Despite this, the reality of customers' unskilled use of electronic banking procedures and low-security awareness has caused online security issues to occur frequently still. Fraudulent messages, phone calls, and other situations standard in everyday life reduce customer satisfaction with electronic banking. In brief, the quality of electronic banking services is not perfect, and the security issues of electronic banking still need to be strengthened. Even with the growing number of electronic banking users, there are other further obstacles to overcome. Therefore, to facilitate a clear understanding of the current quality of electronic banking services, this section introduced the issue of e-banking service quality.

With regards to the study, it is necessary to determine the influencing factors of e-banking service quality. Literature reviews have shown that domestic and foreign scholars (see Table 2.2) have conducted research on factors that affect the quality of electronic banking services. However, there are still problems that needs to be further clarified and resolved. The research literature shows that scholars have different approaches to the construct of electronic banking quality. Moreover, there are also different dimension's degree to the quality, therefore creating many possible ways and approaches to approach the topic. However, this study will approach the problem by categorizing the differences into two aspects, service and attitude, then the process will continue to group each finding together and create a formulative approach to the problem.

Furthermore, according to researches on e-banking service quality in recent years, studies have shown that in service process, security is the primary factor studied by many scholars, followed by performance, website design, reliability and cost respectively. In the attitude of the bank, empathy is the only factor of concern for scholars. Therefore, to clearly understand the quality of electronic banking services,

this section introduces the attitude and service factors in the quality of electronic banking services.

Lastly, to further expound on the topic, researchers should refer to the literature mentioned within this section as they provide further clarification and theoretical supports, as well as frameworks which would be useful for future studies.

Table 2.2 Service and attitude factors of e-banking service quality

Factor	
In terms of services	Attitude
1. Security (Guo, 2020; Dong, 2020; Zhang, 2020; Sardana and Bajpai, 2020; Zewge, 2021)	1. Empathy (Zhang, 2020)
2. Performance (Guo, 2020; Dong, 2020; Zhang, 2020; Sardana and Bajpai, 2020; Zewge, 2021)	
3. Website design (Guo, 2020; Dong, 2020; Zhang, 2020)	
4. Reliability (Zhang, 2020; Sardana and Bajpai, 2020; Zewge, 2021)	
5. Cost (Guo, 2020; Sardana and Bajpai, 2020)	

2.5 Theoretical Framework

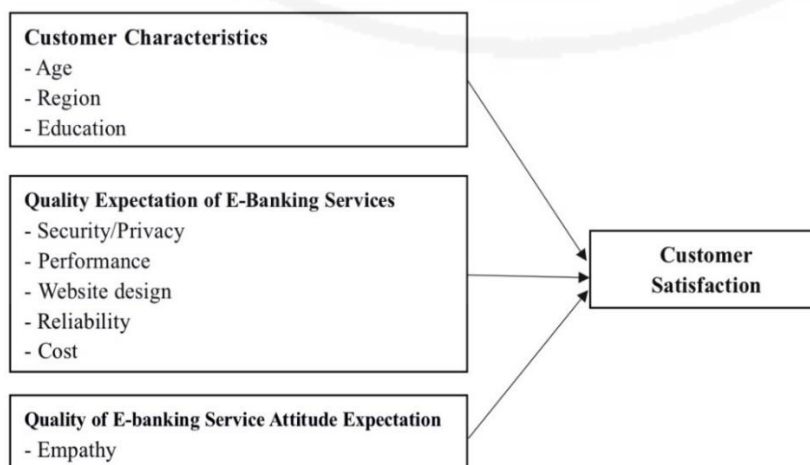


Figure 2.1 Theoretical Framework

Hypothesis 1: Age, region and education among customer characteristics positively affect customer satisfaction in e-banking of medium banks.

Hypothesis 2: The quality of e-banking in terms of service performance, security, website design, reliability and cost positively impacts the satisfaction of medium banks customers.

Hypothesis 3: Banks' attitude towards e-banking services positively affects customer satisfaction in terms of empathy.

2.6 Conclusion

Electronic banking refers to a virtual counter set up by banks on the Internet to initiate or process any transfer of funds using electronic technology. Electronic banking of medium banks provides customers with the services of transferring funds, account checking, and purchase of financial products. The operation is held through the Internet by using network technology to handle banking business safely, efficiently, and conveniently without customers ever leaving their homes. Electronic service quality is an attitude of customers in the process of choosing and consuming electronic services. Attitude is a psychological phenomenon, such as to support or oppose. Attitude determines behavior, and behavior is the external expression of attitude. Therefore, the quality of e-banking services can be divided into service and attitude aspects. According to the literature on the attitude and service of e-banking service quality, it can be seen that the customer satisfaction factor of e-banking service quality correlates with the quality of the service in a positive manner. In the attitude aspect of electronic banking service, empathy is concerned. While for service processes, security/privacy, performance, website design, reliability and cost are concerned. Thus, the theoretical framework and hypothesis of electronic banking service quality and customer satisfaction of medium banks are developed.

Chapter 3

Research methodology

This chapter introduces the methodology for conducting the research throughout this study. The methodology is divided into five parts: research methods and types, population and samples, data collection methods, data analysis and research quality, respectively.

3.1 Research methodology

In this study, a quantitative research methodology was adopted as a research method. Quantitative research provides data in numerical form (Apuke, 2017). This is because the data are presented in numerical form, statistical tests can confirm hypotheses when data are being presented.

In conducting this research, the survey was created as the type of research being used. This is because it quantifies responses into numerical data, which allows for a full measure of customer satisfaction. In addition, the standardization of quantitative survey questions sets a general view of the expected outcome, as respondents were assigned the same questions. This can further help uncover hidden values, feelings and attitudes (Weiss, 2019).

3.2 Population and sample

3.2.1 Population

The population in this study was composed of all the electronic banking customers of Minsheng Bank, which amounts to about 50 million customers according to the enterprise's annual report (Chen and Guo, 2019).

3.2.2 Samples

1) Sampling techniques

The sampling technique used in this study were self-selection and cluster sampling. Self-selection sampling is a non-probabilistic technique based on sample

judgment (Bhardwaj, 2019). Cluster sampling is a sampling method that first divides all units into several groups, then randomly selects a part of the groups, and carries out a comprehensive survey on all units in the selected group (Latpate and Kshirsagar, 2020). In this study, the subjects of the survey were the electronic banking customers of Minsheng Bank. The population was gathered using the Internet to find electronic banking customers of medium banks. In this step, social networks such as QQ, WeChat, Zhihu and Weibo were utilized. Moreover, for the sake of sample representativeness, this study covers customers of different ages and education in different regions of China. Regarding regions, there were four regions in China: East China, West China, South China and North China. For age groups, four age ranges were classified, namely, "15-24 years old", "25-34 years old", "35-44 years old" and "Over 45 years old". Lastly, education was divided into three categories: junior college and below, bachelor's degree, and higher degree.

2) Sample size

The formula for determining the sample size (Adam, 2020): $n = N/(1+Ne^2)$ (see Figure 3.1), was used to calculate the sample size (n) given the population size (N) and a margin of error (e). Usually, this formula was used when the attitude of the population was not known. Since this study knew nothing about customer satisfaction with medium banks' electronic banking service quality, the aforementioned formula was used to calculate the sample size.

About 50,000,000 electronic banking customers of Minsheng Bank, assuming a confidence level of 95% (Giving a margin error of 0.05), resulting in a sample size of 400. So, a sample of 400 people was selected for the study. Each of the four major regions of China was allocated 100 samples.

$$n = \frac{N}{1 + Ne^2}$$

Figure 3.1 Sample size calculation formula (Adam, 2020).

3.3 Data gathering techniques

Data were collected using a questionnaire and measured using the Five-point Likert Scale. This is because the results are easy to quantify, the questionnaire method saves time, money, and human resources. The questionnaire is a structured survey with a fixed form of expression for the survey questions and the way to answer them. Therefore, no individual, researcher, or investigator can be subjectively biased in a survey study, and the statistical results of the survey are generally quantifiable (Humble, 2020).

Throughout data gathering, the Likert scales were used. The reasons are as follows. First, it is easy to design and more widely used than other scales. Second, it can be used to measure multidimensional complex concepts or attitudes that other scales cannot measure. Third, the Likert Scale usually has higher reliability than scales of the same length; Fourth, the five answer forms of the Likert scale enable respondents to easily mark their position, the scale consists of a set of statements. Each statement had five types of responses to assess the level of satisfaction, i.e., lowest, low, middle, high, and highest, recorded as 1, 2, 3, 4, and 5, respectively. The total score of each respondent's attitude is the sum of the scores of his answers to each question, and this total score can explain his attitude or her different status on this scale (Emerson, 2017).

The questionnaire can be subdivided into three sections. The first section was the sample's information. This section investigated the age, region and education of the respondents. The research sample information can accurately understand the basic information of the respondents and the general situation of using Internet banking. The second section investigated the quality of e-banking in medium banks. The third section investigated the satisfaction of medium bank customers with e-banking. As can be seen, the second and third sections were the main body of the questionnaire and deal with the core variables of the research framework. They mainly measure and assess the impact of the quality of e-banking services on the satisfaction of the customers of medium banks.

3.4 Data Analysis

The data collected through questionnaires were then quantitatively analyzed. In regression analysis, if two or more independent variables are presented, the method is called multiple regression. Multiple regression analysis refers to a statistical analysis method in which one variable is regarded as the dependent variable, and the other one or more variables are considered independent variables (Kumari and Yadav, 2018). Multiple regression analysis was used to test the research hypothesis and further analyze the collected data. The quantitative relations of linear or nonlinear mathematical models between multiple variables were established and analyzed using sampled data. Use software to encode the data and enter it into a computer for analysis. The regression equation for this study is as follows (Sureiman and Mangera, 2020): $Y_1 = a + b_1X_1 + b_2x_2 + \dots + b_kX_k$. Where Y_1 is an observed score on the dependent variable, a is the intercept, b_1, b_2, \dots, b_k are the slope. X_1, X_2, \dots, X_k are the observed score on the independent variable. $Y_2 = a + b_1X_1 + b_2x_2 + \dots + b_kX_k$. Where Y_2 is an observed score on the dependent variable, a is the intercept, b_1, b_2, \dots, b_k are the slope. X_1, X_2, \dots, X_k are the observed score on the independent variable. $Y_3 = a + bX$. Where Y_3 is an observed score on the dependent variable, a is the intercept, b is the slope and X is the observed score on the independent variable.

This study used the Spiegel and Stephens (2018) class interval rating scale to explain e-banking service quality and customer satisfaction. For the purpose of data analysis, the mean levels are interpreted as follows:

1.00-1.80	Very low quality
1.81-2.60	Low quality
2.61-3.40	Middle quality
3.41-4.20	High quality
4.21-5.00	Very high quality

3.5 Research quality

3.5.1 Reliability

Reliability analysis effectively measures whether comprehensive evaluation problems have certain stability, consistency and reliability (Zhu, 2018). Throughout this paper, Cronbach's Alpha technique was used to determine the reliability of the questionnaires. Because the questionnaire in this study has a scale, the technique measures the internal consistency of the test. In order to test whether the design of the scale questions was reasonable and was effectively trying to reduce any risks of failure, the study selected 30 Minsheng Bank customers to test the questionnaires. Then, consider the questions that need to be deleted or revised in the questionnaires. Reliability analysis revealed a Cronbach's alpha of 0.885 for the quality of e-banking services in medium banks. Cronbach's alpha for e-banking customer satisfaction in medium banks was 0.877. The reliability of all scales was above 0.7, indicating that the selected scales have good reliability.

3.5.2 Validity

Validity refers to the ability of a scale to measure the content expected to be measured (Ikart, 2019). In order to ensure the validity of the questionnaire, the final stage required an expert to conduct a validity test. As for the reliability and credit of the expert, this expert has extensive experience in customer satisfaction research. This expert provided professional suggestions on the design of the questionnaire, and then this study completed the final draft of the questionnaire based on the experts' comments.

3.5.3 Ethical issues

The research was approved by the Ethics Committee of Huachiew Chalermprakiet University. The researchers informed the purpose of the survey and ensured that their responses during the study were confidential. Therefore, the introduction to the questionnaires explained the meaning and importance of the study and its confidentiality. Respondents were told to fill out the questionnaire based on their willingness. These paragraphs contain only general information to protect their

responses from any possible bias. The privacy of respondents was protected, their identities will not be revealed. Finally, the collected data was given as is.

3.6 Duration of research

The study period is from August 2021 to May 2022, the timetable is shown in Table 3.1.

Table 3.1 Duration of research

Activity	2021					2022				
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1. Preparation / Plan	█									
2. Design proposals and questionnaires			█							
3. Collect data and analyze data							█			
4. Discuss research results										█

3.7 Conclusion

This research adopts a quantitative research methodology. Questionnaires was distributed with the respondents' consent to ensure that the content filled in the survey was consistent with the data analysis. This was also done to ensure the confidentiality of the respondents' information, to protect the privacy of the respondents.

Chapter 4

Research Results

This chapter presents the results of the study. Three main sections are included: sample data, descriptive data and analytical data.

4.1 Data of sample

Minsheng Bank's e-banking customers were the sample for this study. A total of 439 online questionnaires were collected, of which 400 were from Minsheng Bank's e-banking customers, and 39 were from non-Minsheng Bank customers. Therefore, a total of 400 samples who were customers of the bank was used as the sample size for this study. Based on the number of 400 samples (see Table 4.1 below), a classification by four regions of China can be made (North, South, East, and West). According to the survey, respondents can be classified into the four regions as follow: North, South, East, and West, with 88 (22.00%), 93 (23.25%), 106 (26.50%), 113 (28.2%) respondents respectively. Moreover, an age group is also established among the respondents as follows: 15-24 years old, 25-34 years old, 35-44 years old, and over 45 years old, with 91 (22.75%), 124 (31.00%), 115 (28.75%), and 70 (17.50%) people in each group respectively. A level of education has also been established as follows: Junior College and below, bachelor's degree, and higher than bachelor's degree, with 211 (53.75%), 145 (36.25%), and 45 (11.00%) people in each education segment respectively.

Table 4.1 Sample Study Data (N=400)

Variable	Item	Frequency	Percentage
Age	15-24 years old	91	22.75%
	25-34 years old	124	31.00%
	35-44 years old	115	28.75%
	Over 45 years old	70	17.50%
Region	East China	106	26.50%
	West China	113	28.25%
	South China	93	23.25%
	North China	88	22.00%
Education	Junior College and below	211	52.75%
	Bachelor degree	145	36.25%
	Higher	44	11.00%
Total		400	100.00%

4.2 Descriptive data

The descriptive data is sectioned into two parts. The first part describes the quality of e-banking services, while the second part takes regard to customer satisfaction with e-banking.

4.2.1 Quality of the e-banking system

This section summarizes the customer's evaluation of the quality of the e-banking systems in terms of services and attitude. The services aspect of this study includes quality of service, performance, security, website design, reliability, and cost. For banking attitude, the influencing factor has been identified to be quality of its empathy. Descriptive results are shown in Table 4.2.

Table 4.2 Summary of expectations in terms of service and attitude (N=400)

Independent variable	Mean	Standard Deviation	Evaluation Results
Performance of the e-banking system.	3.541	1.135	High
Security of the e-banking system.	3.442	1.070	High
Website design of the e-banking system.	3.515	1.054	High
Reliability of the e-banking system.	3.534	1.105	High
Cost of the e-banking system.	3.503	1.119	High
Empathy of the e-banking system.	3.528	1.150	High
Overall expectation of e-banking	3.505	1.157	High

Regarding customers' service expectation for e-banking systems provided by medium banks (see Table 4.2), each independent variable were summarized as follows: the mean value of the performance dimension is 3.541 with a standard deviation of 1.135; the mean value of the security dimension is 3.442 with a standard deviation of 1.070; the mean value of the web design dimension is 3.515 with a standard deviation

of 1.054; the mean value of the reliability dimension is 3.534 with a standard deviation of 1.105; the cost dimension has a mean value of 3.503 with a standard deviation of 1.119. Given the value of each independent variable, performance, reliability, website design, cost, and security have been categorized as high in the expectation result, meaning customers have high expectations throughout for each service. Moreover, in terms of customers' attitude towards medium banks, the mean value of empathy is 3.528, with a standard deviation of 1.150. As a result, customers have high expectations of the empathy dimension as well. Lastly, the mean value of customers' overall expectations of e-banking is 3.505 with a standard deviation of 1.157. Given the information, a conclusion can be drawn that overall, customers have high expectations for the quality of e-banking.

1) Quality in service

Quality in service mainly focuses on customers' expectations of e-banking in terms of service, which also includes components, namely performance, security, website design, reliability, and cost of the e-banking system.

Performance

Performance expectations for e-banking among customers of medium banks relates to multiple elements, namely, speed of completion of e-banking in the service process of login, transaction, and printing, the ability of E-Banking web application running on several browsers, and time availability of service. The means and standard deviations are shown in Table 4.3.

Table 4.3 Descriptive results of performance expectation (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Speed of completion of e-banking throughout the service process, login, transaction, and printing.	3.532	1.207	High
The ability of e-banking web application running on several browsers.	3.522	1.301	High
Time availability of E-banking service	3.567	1.278	High
Overall expectations of performance	3.541	1.135	High

In terms of medium banks customers' expectations of e-banking performance services (see Table 4.3), each item was summarized in different values as follows: the mean value of the item the speed of completion of e-banking in the service process of login, transaction, and printing is 3.532, with a standard deviation 1.207. The mean value of the item the ability of E-Banking web application running on several browsers is 3.522, with a standard deviation of 1.301. The mean value of the item time availability of E-banking service is 3.567, with a standard deviation of 1.278. Given the information, we can identify that time availability of e-banking service has the highest mean value. As a result, in terms of customers' expectations of e-banking performance services provided by medium banks, customers have high expectations for all the previously stated components. From the data, the mean value of overall customer expectations of performance is 3.541 with a standard deviation of 1.135. A conclusion can be drawn that customers have high expectation for quality in terms of performance of the platform.

Security

Security expectations for e-banking among customers of medium banks relates to multiple elements, namely, protecting confidential of customer information, ensuring security of each transaction, and display of security mechanism utilized by the platform on the website. The means and standard deviations are shown in Table 4.4.

Table 4.4 Descriptive results of security expectation (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Protecting confidential of customer information	3.395	1.143	Middle
Ensuring security of each transaction.	3.443	1.158	High
Display of security mechanism utilized by the platform on the website	3.488	1.170	High
Overall expectations of security	3.442	1.070	High

In terms of customer expectations of e-banking security services of medium banks (see Table 4.4), each item was summarized in different values as follows: the mean value of the item protecting confidential of customer information is 3.395 with a standard deviation of 1.143; the mean value of the item ensuring security of each transaction is 3.443 with a standard deviation of 1.158. The mean value of the item display of security mechanism utilized by the platform on the website is 3.488, with a standard deviation of 1.170. With the given information, we can identify that the item display of security mechanism utilized by the platform on the website has the highest mean value. As a result, in terms of customers' expectations of e-banking security services and protocols provided by medium banks, customers have high expectations for all the previously stated components. From the data, the mean value of overall

customer expectations of security is 3.442 with a standard deviation of 1.070. A conclusion can be drawn that customers have high expectation for quality in terms of security of the platform.

Website design

Website design expectations for e-banking among customers of medium banks relates to multiple elements, namely, attractiveness of the platform, user-friendliness of design, and layout cohesion and reasonability. The means and standard deviations are shown in Table 4.5.

Table 4.5 Descriptive results of website design expectation (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Attractiveness of the platform	3.558	1.217	High
User-friendliness of design	3.570	1.263	High
Layout cohesion and reasonability	3.418	1.188	High
Overall expectations of website design	3.515	1.054	High

In terms of customers' expectations of website design for e-banking services of medium banks (see Table 4.5), each item was summarized in different values as follows: the mean value of the item attractiveness of the platform is 3.558 with a standard deviation of 1.217, the mean value of the item user-friendliness of design is 3.570 with a standard deviation of 1.263, and the mean value of the item layout cohesion and reasonability is 3.418 with a standard deviation of 1.188. With the given information, we can identify that the item user-friendliness of design has the highest mean value. As a result, in terms of customers' expectations of e-banking platform's design provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of overall customer expectations of the

platform design was totaled, with the mean value of 3.515 and a standard deviation of 1.054. A conclusion can be drawn that customers have high expectation for quality in terms of design of the platform.

Reliability

Reliability expectations for e-banking among customers of medium banks relates to multiple elements, including consistency of services in e-banking, error-free transaction, and accuracy of documents provided. The means and standard deviations are shown in Table 4.6.

Table 4.6 Descriptive results of e-banking services in reliability expectation (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Consistency of services in e-banking	3.530	1.209	High
Error-free transaction	3.537	1.238	High
Accuracy of documents provided	3.535	1.226	High
Overall expectations of reliability	3.534	1.105	High

In terms of customers' expectations of the reliability of e-banking services of medium banks (see Table 4.6), each item was summarized in different values as follows: the mean value of the item consistency of services in e-banking is 3.530 with a standard deviation of 1.209; the mean value of the item error-free transaction is 3.537 with a standard deviation of 1.238; the mean value of the item accuracy of documents provided is 3.535 with a standard deviation of 1.226. With the given information, we can identify that the item error-free transaction has the highest mean value. As a result, in terms of customers' expectations of reliability of e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of overall customer expectations of platform reliability was totaled with the mean value of 3.534 and a standard deviation of 1.105. As a result, customers have

high expectations of quality in terms of the reliability of electronic banking. A conclusion can be drawn that customers have high expectation for quality in terms of reliability of the platform.

Cost

Cost expectations for e-banking among customers of medium banks relates to multiple elements, which includes low transactional fee, low process time consumption, and free financial activity services e.g., account creation, money transfer. The means and standard deviations are shown in Table 4.7.

Table 4.7 Descriptive results of Cost expectation (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Low transactional fee	3.518	1.230	High
Low process time consumption	3.515	1.224	High
Free financial activity services e.g., account creation, money transfer	3.478	1.240	High
Overall expectations of cost	3.503	1.119	High

In terms of customers' expectations of the cost of e-banking services of medium banks (see Table 4.7), each item was summarized in different values as follows: the mean value of the item low transactional fee is 3.518 with a standard deviation of 1.230; the mean value of the item low process time consumption is 3.515 with a standard deviation of 1.224; the mean value of the item free financial activity services e.g., account creation, money transfer. is 3.478 with a standard deviation of 1.240. With the given information, we can identify that the item low transactional fee has the highest mean value. As a result, in terms of customers' expectations of service costs of e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of overall customer

expectations of platform service cost was totaled with the mean value of 3.503 and a standard deviation of 1.119. A conclusion can be drawn that customers have high expectation for quality in terms of service cost of the platform.

2) Quality in the bank's attitude

Expectations of customer attitudes towards e-banking systems is influenced by empathy. Empathy expectations for e-banking among customers of medium banks include multiple components, namely, assistance on e-banking usage, financial and technical support for customers, and personalized services. The means and standard deviations are shown in Table 4.8.

Table 4.8 Descriptive results of empathy expectation in e-banking attitude (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Assistance on e-banking usage	3.525	1.242	High
Financial and technical support for customers	3.528	1.238	High
Personalized services.	3.533	1.292	High
Overall expectations of empathy	3.528	1.150	High

In terms of customers' expectations of empathy with the e-banking system (see Table 4.8), each item was summarized in different values as follows: the mean value of the item assistance on e-banking usage is 3.525 with a standard deviation of 1.242; the mean value of the item financial and technical support for customers is 3.528 with a standard deviation of 1.238; the mean value of the item personalized services is 3.533 with a standard deviation of 1.292. With the given information, we can identify that the item personalized services, has the highest mean value. As a result, in terms of customers' expectations of the bank's attitude towards empathy and e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of overall customer expectations of the

bank's empathy was totaled, with the mean value of 3.528 and a standard deviation of 1.150. A conclusion can be drawn that customers have high expectation for quality in terms of the bank's attitude towards customers of the platform.

4.2.2 Customer satisfaction to e-banking

This section summarizes customer satisfaction of e-banking systems in terms of services and attitude. Service satisfaction includes satisfaction with service performance, security, website design, reliability, and cost. While e-banking attitude includes satisfaction with regards to empathy. Descriptive results are shown in Table 4.9.

Table 4.9 Summary of customer satisfaction in terms of service and attitude (N=400)

Dependent variable	Mean	Standard Deviation	Evaluation Results
Performance satisfaction of e-banking services.	3.503	1.136	High
Security satisfaction of e-banking services.	3.532	1.096	High
Website design satisfaction of e-banking services.	3.478	1.060	High
Reliability satisfaction of e-banking services.	3.530	1.097	High
Cost satisfaction of e-banking services.	3.499	1.125	High
Empathy satisfaction of e-banking attitudes.	3.527	1.148	High
Overall customer satisfaction	3.511	1.059	High

Firstly, a summarization of the data can be made. Customer satisfaction level of Minsheng bank's e-banking services has been dissected into different dependent variables. With the experiment, we were able to identify the most influential variable of each component and create a new table for summarization (see Table 4.9. Each variables' values were summarized as follows: the mean value of the performance dimension is 3.503 with a standard deviation of 1.136; the mean value of the security

dimension is 3.532 with a standard deviation of 1.096; the mean value of the website design dimension is 3.478 with a standard deviation of 1.060; the mean value of the reliability dimension is 3.530 with a standard deviation of 1.097; the mean value of the cost dimension is 3.499 with a standard deviation of 1.125. With the given information, we can conclude that customers have high satisfaction level with the bank services in all dimensions.

Secondly, in terms of customers' attitude toward Minsheng Bank's e-banking, the mean value of empathy was recorded and totaled at 3.527, with a standard deviation of 1.148. This expresses that customer have high satisfaction with the empathic dimension of the bank.

In addition, the overall customer satisfaction with Minsheng Bank's e-banking service and attitude was 3.511, with a standard deviation of 1.059. A conclusion can be drawn that customers have high satisfaction with Minsheng Bank's e-banking services and attitude.

1) Satisfaction on service

Customer satisfaction in terms of e-banking services includes e-banking performance, security, website design, reliability, and cost.

Performance satisfaction

Performance satisfaction for e-banking among customers of medium banks relates to the speed of completion of e-banking in the service process of login, transaction, and printing, the ability of E-Banking web application running on several browsers and time availability of service. The means and standard deviations are shown in Table 4.10.

Table 4.10 Descriptive results of performance satisfaction (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Speed of completion of e-banking in the service process of login, transaction, and printing	3.520	1.220	High
The ability of E-Banking web application running on several browsers	3.473	1.278	High
Time availability of service	3.517	1.270	High
Overall satisfaction with performance	3.503	1.136	High

In terms of customer satisfaction with Minsheng Bank's e-banking performance services (see Table 4.10), each item was summarized in different values as follows: the mean value of the item the speed of completion of e-banking in the service process of login, transaction, and printing is 3.520 with a standard deviation of 1.220; the mean value of the item the ability of E-Banking web application running on several browsers is 3.473 with a standard deviation of 1.278; the mean value of the item time availability of service is 3.517 with a standard deviation of 1.270. With the given information, the item speed of completion of e-banking in the service process of login, transaction, and printing, has the highest mean value. As per the result of the experiment, in terms of customers' expectations on performance of and e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of all other components has also been totaled and summarized as follow: The mean value of overall customer satisfaction with performance is 3.503 with a standard deviation of 1.136. Pertaining to the table, a conclusion can be made that customers have a high level of satisfaction with the performance of e-banking.

Security satisfaction

Security satisfaction for e-banking among customers of medium banks relates to protecting confidential of customer information, ensuring security of each transaction, and display of security mechanism utilized by the platform on the website. The means and standard deviations are shown in Table 4.11.

Table 4.11 Descriptive results for security satisfaction (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Protecting confidential of customer information	3.463	1.215	High
Ensuring security of each transaction	3.528	1.210	High
Display of security mechanism utilized by the platform on the website	3.605	1.242	High
Overall satisfaction with security	3.532	1.096	High

In terms of customer satisfaction with Minsheng Bank's e-banking security services (see Table 4.11), each item was summarized in different values as follows: the mean value of the item protecting confidential of customer information is 3.463 with a standard deviation of 1.215, the mean value of the item ensuring security of each transaction is 3.528 with a standard deviation of 1.210; the mean value of the item display of security mechanism utilized by the platform on the website is 3.605 with a standard deviation of 1.242. With the given information, the item, display of security mechanism utilized by the platform on the website, has the highest mean value. As per the result of the experiment, in terms of customers' expectations on security of e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of all other components has also been totaled and summarized as follow: the mean value of overall customer

satisfaction with security is 3.532 with a standard deviation of 1.096. Pertaining to the table, a conclusion can be made that customers have a high level of satisfaction with the security of e-banking.

Website design satisfaction

Website design satisfaction for e-banking among customers of medium banks relates to attractiveness of the platform, user-friendliness of design, and “layout cohesion and reasonability. The means and standard deviations are shown in Table 4.12.

Table 4.12 Descriptive results for website design satisfaction (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Attractiveness of the platform	3.507	1.220	High
User-friendliness of design	3.505	1.265	High
Layout cohesion and reasonability.	3.420	1.193	High
Overall satisfaction with website design	3.478	1.060	High

In terms of customer satisfaction with Minsheng Bank's e-banking website design (see Table 4.12), each item was summarized in different values as follow: the mean value of the item attractiveness of the platform is 3.507 with a standard deviation of 1.220; the mean value the item user-friendliness of design is 3.505 with a standard deviation of 1.265; the mean value of the item layout cohesion and reasonability is 3.420 with a standard deviation of 1.193. With the given information, the item attractiveness of the platform, has the highest mean value. As per the result of the experiment, in terms of customers' expectations on platform design of e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of all other components has also been totaled and summarized as follow: The mean value of overall customer

satisfaction with website design is 3.478 with a standard deviation of 1.060. Pertaining to the table, a conclusion can be made that customers have a high level of satisfaction with the platform design of e-banking.

Reliability satisfaction

Reliability satisfaction for e-banking among customers of medium banks relates to consistency of services in e-banking, error-free transaction, and accuracy of documents provided. The means and standard deviations are shown in Table 4.13.

Table 4.13 Descriptive results for reliability satisfaction (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Consistency of services in e-banking	3.498	1.197	High
Error-free transaction	3.542	1.252	High
Accuracy of documents provided	3.550	1.235	High
Overall satisfaction with reliability	3.530	1.097	High

In terms of customer satisfaction with the reliability of Minsheng Bank's e-banking (see Table 4.13), each item was summarized in different values as follow: the mean value of the item consistency of services in e-banking is 3.498 with a standard deviation of 1.197; the mean value of the item error-free transaction is 3.542 with a standard deviation of 1.252; the mean value of the item accuracy of documents provided is 3.550 with a standard deviation of 1.235. With the given information, the item accuracy of documents provided, has the highest mean value. As per the result of the experiment, in terms of customers' expectations on platform reliability of e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of all other components has

also been totaled and summarized as follow: The mean value of overall customer satisfaction with reliability is 3.530 with a standard deviation of 1.097. Pertaining to the table, a conclusion can be made that customers have a high level of satisfaction in terms of reliability of the e-banking platform.

Cost satisfaction

Cost satisfaction for e-banking among customers of medium banks relates to low transactional fee, low process time consumption and free financial activity services e.g., account creation, money transfer. The means and standard deviations are shown in Table 4.14.

Table 4.14 Descriptive results for cost satisfaction (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Low transactional fee	3.488	1.230	High
Low process time consumption	3.518	1.236	High
Free financial activity services e.g., account creation, money transfer	3.493	1.255	High
Overall satisfaction with cost	3.499	1.125	High

In terms of customer satisfaction with the service cost of Minsheng Bank's e-banking (see Table 4.14), each item was summarized in different values as follow: the mean value of the item low transactional fee is 3.488 with a standard deviation of 1.230; the mean value of the item low process time consumption is 3.518 with a standard deviation of 1.236; and the mean value of the item free financial activity services e.g., account creation, money transfer is 3.493 with a standard deviation of 1.255. With the given information, the item low process time consumption has the highest mean value. As per the result of the experiment, in terms of customers' expectations on the cost of

e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Moreover, the mean value of all other components has also been totaled and summarized as follow: The mean value of overall customer satisfaction with cost is 3.499 with a standard deviation of 1.125. Pertaining to the table, a conclusion can be made that customers have a high level of satisfaction in terms of service cost of the e-banking platform.

2) Satisfaction with attitude

Satisfaction of customer attitudes towards e-banking systems pays regards to empathy. Empathy satisfaction for e-banking among customers of medium banks relates to assistance on e-banking usage, financial and technical support for customers, and personalized services. The means and standard deviations are shown in Table 4.15.

Table 4.15 Descriptive results of empathy satisfaction in e-banking attitudes (N=400)

Items	Mean	Standard Deviation	Evaluation Results
Assistance on e-banking usage	3.512	1.232	High
Financial and technical support for customers	3.553	1.253	High
Personalized services.	3.515	1.282	High
Overall satisfaction with empathy	3.527	1.148	High

In terms of customer satisfaction with the empathy of Minsheng Bank's e-banking (see Table 4.15), each item was summarized in different values as follow: the mean value of the item assistance on e-banking usage is 3.512 with a standard deviation of 1.232; the mean value of the item financial and technical support for customers is 3.553 with a standard deviation of 1.253; the mean value of the item personalized services is 3.515 with a standard deviation of 1.282. With the given information, the mean value of the item financial and technical support for customers has the highest mean value. As per the result of the experiment, in terms of customers' expectations on

the bank's attitude in e-banking services provided by medium banks, customers have high expectations for all the previously stated components. Pertaining to the table, a conclusion can be made that customers have a high level of satisfaction in terms the bank's attitude on the e-banking platform.

4.3 Customer satisfaction

This section provides an analysis on the factors that influences customer satisfaction and is segmented into three parts. The first part analyzes the effect of factors on customer characteristics (age, region, education) on satisfaction. The second part analyzes the impact of e-banking services (performance, security, website design, reliability and cost) on satisfaction. And the third part analyzes the impact of e-banking attitudinal aspects regarding its empathy on customer satisfaction.

4.3.1 The impact of customer characteristics on customer satisfaction

In this section, a regression analysis is conducted using statistical analysis software with regards to the customers' characteristics, namely age, region, and education of e-banking. These data will be use as independent variables, while customer satisfaction will be use as the dependent variable. The hypotheses will be created and then tested based on the results of the regression analysis. The regression analysis and hypothesis testing results are shown in Table 4.16.

Table 4.16 The impact of age, region and education of e-banking on customer satisfaction

	β	t-value	P-value	Tolerance	VIF	Hypothesis Test Results
Intercept	3.182	15.285	0.000			
Age	0.014	0.270	0.787	0.986	1.104	Not Supported
Region	0.093	1.833	0.068	0.941	1.062	Not Supported
Education	0.032	0.637	0.524	0.947	1.055	Not Supported

Note. $R^2=0.011$

Hypothesis 1 of this study hypothesizes that age, region, and education of e-banking in customer characteristics positively affect customer satisfaction in e-banking services provided by medium banks. More specifically:

H1a: The age of the customer positively affects the customer satisfaction level of e-banking services provided by medium banks.

H1b: The region of the customer positively affects the customer satisfaction level of e-banking services provided by medium banks.

H1c: The education of customers on e-banking positively affects the customer satisfaction level of e-banking services provided by medium banks.

According to Table 4.16, (1) a negative correlation can be found between age ($\beta=0.014$, $p=0.787$) and customer satisfaction in e-banking. Therefore, hypothesis H1a is not supported. (2) A negative correlation can be found between region ($\beta=0.093$, $p=0.068$) and customer satisfaction of e-banking. Therefore, hypothesis H1b is not supported. (3) Lastly, a negative correlation can be found between education ($\beta=0.032$, $p=0.524$) and customer satisfaction in e-banking. Therefore, hypothesis H1c is not supported. The experiment is performed based on the regression equation is: $Y_1 = 3.182 + 0.014*age + 0.093*region + 0.032*education$. $R^2=0.011$.

In addition, before applying regression analysis, the relationship between the independent variables was tested using the VIF and tolerance tests. Under normal circumstances the VIF value should not exceed 10, whereas the tolerance value should exceed 0.05. The results shown in Table 4.16 shows a result where the VIF values for all variables are less than 10 (1.055-1.104) and with tolerance values for all variables are greater than 0.05 (0.941- 0.986). As a result, co-linearity could not be found between the independent variables. The test also proved that the model used in the study is accurate. Moreover, the R^2 for this study was 0.011, which indicated that the regression model was statistically significant.

4.3.2 Customer satisfaction with the service

In this section, a regression analysis is conducted using statistical analysis software with regards to customers satisfaction and e-banking services, namely performance, security, website design, reliability, and cost. These data will be use as independent variables, while customer satisfaction will be use as the dependent variable. The hypotheses will also be created and then tested based on the results of the regression analyses. The regression analysis and hypothesis testing results are shown in Table 4.17.

Table 4.17 Impact on customer satisfaction in terms of e-banking services

	β	t-value	P-value	Tolerance	VIF	Hypothesis Test Results
Intercept	0.016	0.648	0.517			
Performance	0.180	9.953	0.000	0.389	2.571	Supported
Security	0.271	13.077	0.000	0.402	2.488	Supported
Website design	0.127	7.515	0.000	0.523	1.911	Supported
Reliability	0.207	10.945	0.000	0.382	2.616	Supported
Cost	0.250	13.855	0.000	0.337	2.966	Supported

Note. $R^2=0.983$

Hypothesis 2 of this study hypothesizes that the quality of e-banking services in terms of performance, security, website design, reliability, and cost positively impact the satisfaction level of medium bank customers. More specifically:

H2a: Performance regarding the quality of e-banking services would positively affect customer satisfaction level of e-banking services provided by medium banks.

H2b: Security regarding the quality of e-banking services would positively affect customer satisfaction of e-banking services provided by medium banks.

H2c: Website design regarding the quality of e-banking services would positively affect customer satisfaction of e-banking services provided by medium banks.

H2d: Reliability regarding the quality of e-banking services would positively affect customer satisfaction of e-banking services provided by medium banks.

H2e: Cost regarding the quality of e-banking services would positively affect customer satisfaction of e-banking services provided by medium banks.

According to Table 4.17, (1) a positive correlation can be found between performance ($\beta=0.180$, $p < 0.05$) and customer satisfaction in e-banking. Therefore, hypothesis H2a is supported. (2) A positive correlation can be found between security ($\beta=0.271$, $p < 0.05$) and customer satisfaction in e-banking. Therefore, hypothesis H2b is supported. (3) A positive correlation can be found between website design ($\beta=0.127$, $p < 0.05$) and customer satisfaction in e-banking. Therefore, hypothesis H2c is supported. (4) A positive correlation can be found between reliability ($\beta=0.207$, $p < 0.05$) and customer satisfaction in e-banking. Therefore, hypothesis H2d is supported. (5) And lastly, A positive correlation can be found between cost ($\beta=0.250$, $p < 0.05$) and customer satisfaction in e-banking. Therefore, hypothesis H2e is supported. The experiment is performed based on the regression equation is: $Y_2 = 0.016 + 0.180 * \text{performance} + 0.271 * \text{security} + 0.127 * \text{website design} + 0.207 * \text{reliability} + 0.250 * \text{cost}$. $R^2=0.983$.

Before applying regression analysis, the relationship between the independent variables was tested using the VIF and tolerance test. Under normal circumstances, the VIF value should not exceed 10, whereas the tolerance value should exceed 0.05. The results shown in Table 4.17 shows result where the VIF values for all variables are less than 10 (1.911-2.966) and with tolerance values for all variables are greater than 0.05 (0.337- 0.523). As a result, co-linearity could not be found between the independent variables. The test also proved that the model used in the study is accurate. Moreover, the R^2 for this study was 0.983, which indicated that the regression model was statistically significant.

4.3.3 Customer satisfaction with the bank's attitude

This section conducted a regression analysis using statistical analysis software with the attitudinal aspect of e-banking (empathy) as the independent variable and customer satisfaction as the dependent variable. The hypotheses are then tested based on the results of the regression analysis. The regression analysis and hypothesis testing results are shown in Table 4.18.

Table 4.18 The impact of attitude (empathy) on customer satisfaction

	β	t-value	P-value	Tolerance	VIF	Hypothesis Test Results
Intercept	0.398	8.061	0.000			
empathy	0.882	66.225	0.000	0.361	2.772	Supported

Note. $R^2=0.917$

Hypothesis 3 of this study hypothesizes that the banks' attitude towards e-banking services, in terms of empathy, positively correlates with customer satisfaction. According to Table 4.18, empathy ($\beta=0.882$, $p < 0.05$) has a positive effect on customer satisfaction in e-banking services. Therefore, hypothesis 3 supported. The experiment is performed based on the regression equation: $Y_3 = 0.398 + 0.882 * \text{empathy}$. $R^2=0.917$.

Before applying regression analysis, the relationship between the independent variables was tested using the VIF and tolerance tests. Under normal circumstances, the VIF value should not exceed 10, whereas the tolerance value should exceed 0.05. The results shown in Table 4.18 shows that the VIF value of the variables was less than 10 (VIF=2.772), whereas the tolerance value of the variables was greater than 0.05 (Tolerance=0.361). As a result, co-linearity could not be found between the independent variables. The test also proved that the model used in the study is accurate. Moreover, the R^2 for this study was 0.917, which indicated that the regression model was statistically significant.

4.4 Conclusion

According to the results, with regards to customer characteristics, age, region, and education on e-banking does not contribute to customer satisfaction. However, according to the results, with regards to e-banking services and attitude, positive correlation can be found across all dimensions (performance, security, reliability, website design, cost, and empathy). Given the information above, we can conclude that customer characteristic does not play a role in customer satisfaction, but in contrary, e-banking services and the bank's attitude towards its customer does play a role in customer satisfaction of e-banking services provided by medium banks.

Chapter 5

Discussion and Conclusion

This chapter is segmented into three parts: discussion, recommendations, and conclusion, where each part holds each own specific task. The first part discusses the impact of demographic characteristics, e-banking service quality, and the bank's attitude on customer satisfaction. The second part includes recommendations. And finally, the third part shows the conclusion of this study.

5.1 Discussion

5.1.1 The impact of demographic characteristics to customer's satisfaction

Hypothesis 1 hypothesizes that age, region, and education on e-banking services regarding customer characteristics positively affect customer satisfaction in e-banking services provided by medium banks. According to the study results, the aforementioned dimensions does not display positive correlations with customer satisfaction. Therefore, the hypothesis is not supported. As a result, hypotheses H1a, H1b, and H1c, is not supported as well.

However, the result of this study contradicts with several researchers. Hossain, Bhowmik, and Islam (2020) mentioned that age positively affects customer satisfaction, while Ye, Yang and Mao (2021) mentioned that region positively affects customer satisfaction, and Dhanya and Velmurugan (2021) mentioned that education positively affects customer satisfaction. It can be seen that the results of this study are inconsistent with the conclusions of any previous scholars. Upon investigating the cause, it was identified that sample characteristics variables were not significant as well. The findings of the investigation also highlighted that the reason for such cause may be due to the heterogeneity of the sample distribution. This is because in China, with a population of 1.3 billion, there is an uneven regional distribution of the population, as well as an uneven distribution of educational resources and aging population (Ye, Yang and Mao, 2021). In other words, under the total sample distribution, the effect of sample

characteristic variables on the dependent variable in the total sample may be smoothed out due to the issue of heterogeneity across samples (e.g., region, education, age).

5.1.2 The impact of e-banking service quality to customer's satisfaction

1) Performance

Hypothesis H2a of this study hypothesizes that performance in the quality of e-banking services provided by medium banks will positively affect customer satisfaction. According to the results, performance was found to have a positive effect on customer satisfaction. Therefore, hypothesis H2a is supported. As Zhang (2020) mentioned, performance is positively related to customer satisfaction; the better the performance, the higher the satisfaction. It can be seen that the present findings are consistent with the results of previous scholars. Al-Gharaibah (2020), also added that performance requires e-banking to allow for ease of access, fast and efficient operations, and 24-hour accessibility. Therefore, to increase its efficiency in performance, Minsheng Bank should value all the aforementioned points. Lastly, in order to improve its customer satisfaction, Minsheng Bank can also develop a customer relationship management system to observe and provide personalized services for customers based on the system information to meet the needs of different customers.

2) Security

Hypothesis H2b of this study hypothesizes that security in the quality of e-banking services provided by medium banks would positively affect the customer satisfaction. According to the study results, security was found to have a positive impact on customer satisfaction. Therefore, hypothesis H2b is supported. As Zewge (2021) mentioned, safety is positively related to customer satisfaction; the better the security, the higher the satisfaction. It can be seen that the findings of this study are consistent with the results of previous scholars. Algamdi (2020) mentioned that e-banking security translates to e-banking requiring meet certain security aspects, such as protecting customer privacy, safe transaction, and transparent security measures of the platform during services. Therefore, to satisfy its customers, Minsheng Bank should create a

secure and safe operation. The step and recommendations are as follow. First, Minsheng Bank should strengthen its business security. Under the guidance of the concept of clear flow and controlled risk, Minsheng Bank can take various measures to ensure that the funds in customers' accounts are safe. For example, a limitation of total amount of transaction should be standardized. Second, Minsheng should strengthen its technical security. This can be achieved by increasing technical investment, improving the management ability of system risk, and be alert to critical attacks. For critical attacks, it is very important that the system can monitor the whole system in real time, and at the same time automatically repair itself from virus attacks. This is done to ensure the protection of the customer's legal rights. Third, Minsheng Bank should vigorously promote the education of e-banking. By utilizing its official channels, the process must be done to publicize and train relevant knowledge and skills for risk preventions.

3) Website design

Hypothesis H2c of the study hypothesizes that website design in the quality of e-banking services provided by medium banks would positively affect customer satisfaction. According to the study results, website design has a positive impact on customer satisfaction. Therefore, hypothesis H2c is supported. As Dong (2020) mentioned, website design has a positive effect on customer satisfaction; and the better the website design, the higher the satisfaction. It can be seen that the findings of this study are consistent with the results of previous scholars. Rahi, Ghani and Ngah (2020) stated, that e-banking platform web's design must be attractive, easy to use, and well laid out. In short, the website design of e-banking is essential to the platform. In coherent with the points, Minsheng Bank's e-banking website need to be able to attract customers through its page design. Its layout must also be inviting and easy to use to make sure that customer stayed within the platform and complete their transaction.

4) Reliability

Hypothesis H2d in this study hypothesizes that reliability in the quality of e-banking services provided by medium banks would positively affect customer

satisfaction. According to the study results, reliability was found to have a positive effect on customer satisfaction. Therefore, hypothesis H2d is supported. As Zhang (2020) mentioned, reliability is positively related to customer satisfaction; the higher the reliability, the higher the satisfaction. It can be seen that the findings of this study are in direct agreement with the results of previous scholars. Nagar and Ghai (2019) mentioned that reliability requires e-banking services to be error-free, as well as provides accurate records documentation. Adjustments on the service must be in compliance with the points for the bank to perform. In addition, Minsheng Bank should avoid errors in its services since mistakes may lead to financial losses for customers and eventually, reduction in customer satisfaction.

5) Cost

Hypothesis H2e in this study hypothesizes that cost in the quality of e-banking services provided by medium bank would positively affect the customer satisfaction. According to the study results, cost has a positive impact on customer satisfaction. Therefore, hypothesis H2e is supported. Upon using a service, customers would instinctively want to minimize the cost spend, be it money, time, etc. While at the same time, they would also want to reap the most benefit from what they are using. With that, the correlation appears, the more benefits a customer can get, the more they feel satisfied. As Guo (2020) mentioned, cost positively impacts customer satisfaction. The findings of this study are consistent with the results of previous scholars. Daba (2021) mentioned that customers are cost-sensitive; e-banking needs to reduce transaction time, lower service fees, or even no service fees to satisfy customers. Therefore, in compliance with the points, Minsheng Bank needs to reduce transaction time and service fees, or even no service fees, to make customers satisfied.

With regards to the experiment performed, performance, security, website design, reliability, and cost have a positive impact on satisfaction. Therefore, Hypotheses H2a (performance), H2b (security), H2c (website design), H2d (reliability), and H2e (cost) are all supported.

5.1.3 The impact of bank attitude on customer's satisfaction

Hypothesis 3 of this study hypothesizes that banks' attitude towards e-banking services positively affects customer satisfaction in terms of empathy. According to the study results, empathy was found to have a positive effect on customer satisfaction. Therefore, hypothesis 3 is supported. As Zhang (2020) mentioned, empathy is positively related to customer satisfaction; the higher the empathy, the higher the satisfaction. The findings of this study are consistent with the results of previous scholars. In addition, Choudhury, Singh, Kajol and Rai (2020) mentioned that empathy could be felt through personalized services and financial support and technical support from e-banking etc. Therefore, the aforementioned points must be met in order for the bank to compete. In the fierce market competition, Minsheng Bank's business philosophy must change from being product-centered to being customer-centered. This helps provide customers with excellent service value, and thus increasing customer satisfaction. A few operational steps can be made in order to achieve this goal. First, the bank can promote product innovation amongst the team in order to meet personalized needs. With the development of information technology as well as the increase in income level, the bank has experienced an expansion in its customer base. As a result, it is difficult for homogeneous services to meet the need of multi-level customers. To seize the market of e-banking, Minsheng Bank needs to continuously optimize its product portfolio and provide personalized services to meet customers' needs. Second, the bank should carry out multi-party cooperation to strengthen the customers' sense of profitability. Negotiating and cooperating with multiple parties, carrying out rich and diversified marketing activities, and constantly enhancing preferential offers, such as cashback payments, are conducive to increasing customers' sense of profitability of services in the process of interaction. This is done to bring the psychological distance between them and builds intimate trading relationships.

5.2 Suggestions

5.2.1 For practitioners

It is necessary for all medium banks in China to make electronic banking more reliable, efficient, and secure. Moreover, it is also important to address other elements such as the security of customer accounts, and minimization in cost of services. In addition, medium banks need to enhance their website environments and layout to make them more attractive and user-friendly. Finally, practitioners of medium banks need to listen to customers' feedback and focus on personalizing customer services, as well as their experience to keep customers satisfied.

5.2.2 For further research

This study focused only on the impact of e-banking service quality on customer satisfaction. This study also collected information from a sample set of customers from Minsheng Bank. Therefore, if any researcher is interested in the field, it is highly recommended to collect data from customers of different banks. In addition, it is I would also recommend that each factor be examined in detail in future studies. For example, factors such as security issues, website design, and empathy and its influence on customer satisfaction, as well as its influence on each of the elements itself.

5.3 Conclusions

Throughout the experiments regarding customer satisfaction, customer characteristics, which consists of age, region, and education on e-banking does not have a positive correlation with customer satisfaction. However, services and attitude positively impact customer satisfaction. In services, performance, security, website design, reliability, and cost all shows positive correlation with customer satisfaction. Whereas in terms of attitude, empathy shows a positive correlation as well.

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Appendices

Appendix A: Approval of ethical committee



Acquire Knowledge to Serve Society

**THE CERTIFICATE OF ETHICAL APPROVAL
(CERTIFICATE OF EXEMPTION)
THE ETHICS COMMITTEE OF RESEARCH
HUACHIEW CHALERM PRAKIET UNIVERSITY**

January 26th, 2022

Project Title The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China

Principal Investigator Mr. Sun Chenxi

Faculty / Program Master of Business Administration Program in Digital Business

This is to certify that the research project above has been approved in accordance with the Declaration of Helsinki by the Research Ethics Committee at Huachiew Chalermprakiet University.

Signature

(Wirat Tongrod, Ph. D.)

Chairman of the Board

Research Ethics Committee

Huachiew Chalermprakiet University

Approval Date January 26th, 2022

Certificate Number a.1185/2565

This approval is valid until 25th January 2024.

Appendix B: Consent form



เรียนรู้เพื่อรับใช้สังคม

Questionnaires for the study on

The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China

My name is Sun Chenxi—a graduate student at the Master of Business Administration (M.B.A.) in Digital Business at Huachiew Chalearmprakiet University in Thailand. As a part of this degree, I am conducting a thesis on the topic “The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China”. The study is designed explore the impact of electronic banking service quality on customer satisfaction in medium banks in China. For the complete of the study, we need Minsheng bank’s customers to answer the questionnaires. The data collection is started from January to May 2022.

This research is conducted on a strictly anonymous with the confidentiality of participants. Your name will not be identified in this report and data collected will be seen only the researcher and thesis advisor. Your participation is voluntary. If you are willing to answer the questionnaires, please tick to declare that you consent to give the data for this research. The data you provide will be used for this study only.

Further information and questions about this project, please contact me at e-mail address scx223344@gmail.com and my thesis advisor, Dr. Lanthom Jonjongsong at e-mail address lanthomjon@gmail.com

Regards

(Mr. Sun Chenxi)

Researcher



เรียนรู้เพื่อรับใช้สังคม

Consent to Participation in Research

The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China

I have been given and have understood an explanation of this research project. I understand that I may withdraw myself (or any information I have provided) from this project (before data collection and analysis is complete) without having to give reasons.

- I understand that the data collected will be visible only to the researcher and thesis advisor, and my name will not be identified in this report.
- I understand that the data I provide will be used only for this study and will not be used for any other purpose, nor will it be released to others without my written consent.
- I understand that answering the questions in the questionnaire means that I have read the consent form and volunteered to participate in this research without any enforcement from anyone.

Appendix C: Questionnaire

The questionnaire is divided into three sections. The first section is information about customer characteristics. The second section investigates the quality of e-banking in medium banks. The third section investigates Minsheng Bank customers' satisfaction with e-banking.

Section 1: Please indicate your information by tick (✓) in the box that matches your information.

1. Have you ever used Minsheng Bank's e-banking?

- Yes (Answer "Yes" to jump to the next question)
- No (Answer "No" to end the questionnaire)

2. What's your age?

- 15-24 years old
- 25-34 years old
- 35-44 years old
- Over 45 years old

3. Which region of China are you from?

- East China
- West China
- South China
- North China

4. What is your educational background?

- Junior College and below
- Bachelor degree
- Higher

Section 2: Quality of e-banking services for medium banks.

2.1 Please indicate your opinion on the e-banking terms of service of medium banks by tick (√) in the box that matches your opinion (1=Lowest; 2=Low; 3= Middle; 4= High; 5= Highest).

Items	Lowest	Low	Middle	High	Highest
	1	2	3	4	5
1. Your opinion on the quality of medium banks' e-banking service in terms of performance.					
1.1 The speed to complete of E-banking service processes, such as login, transaction, printing, etc. is important to me.					
1.2 The ability of E-Banking web application running on several browsers is important to me.					
1.3 All the time availability of E-banking service is important to me.					
2. Your opinion on the quality of medium banks' e-banking service in terms of security.					
2.1 Protect confidential of customer information is important to me.					
2.2 Ensuring the security of customer account transactions is important to me.					
2.3 Showing security mechanism that e-banking applying on the website is important to me.					
3. Your opinion on the quality of medium banks' e-banking service in terms of website design.					
3.1 E-banking website attractive design is important to me.					
3.2 Easy to use design of e-banking website is important to me.					
3.3 The reasonable layout of the e-banking website is important to me.					
4. Your opinion on the quality of medium banks' e-banking service in terms of reliability.					
4.1 Consistency of services in e-banking is important to me.					

Section 2.1 (Continued)

Items	Lowest	Low	Middle	High	Highest
	1	2	3	4	5
4.2 Error-free of every transaction of e-banking is important to me					
4.3 All documents provided to customer correctly is important to me.					
5. Your opinion on the quality of medium banks' e-banking service in terms of cost.					
5.1 Low service charges per transaction of e-banking is importance to me.					
5.2 Less time consuming to complete transaction on e-banking service is important.					
5.3 No service charge for some services, such as open account, transfer money, etc. is important to me.					

2.2 Please indicate your opinion on the medium banks' e-banking service attitude by tick (√) in the box that matches your opinion (1=Lowest; 2=Low; 3= Middle; 4= High; 5= Highest).

Items	Lowest	Low	Middle	High	Highest
	1	2	3	4	5
1. Your opinion on the quality of medium banks' e-banking service in terms of empathy.					
1.1 Help section on e-banking is important.					
1.2 Both financial and technical support providing for customers is important					
1.3 Personalized services providing is important to me.					

Section 3: Satisfaction with the quality of Minsheng Bank's e-banking services.

3.1 Please indicate your level of satisfaction with Minsheng Bank's e-banking services by tick (√) in the box that matches your opinion (1=Very Low; 2=Low; 3=Moderate; 4= High; 5=Very High).

Items	Very Low	Low	Moderate	High	Very High
	1	2	3	4	5
1. Your satisfaction level with Minsheng Bank's e-banking in terms of performance.					
1.1 The speed to complete of Minsheng Bank's E-banking service processes, such as login, transaction, printing, is satisfactory to me.					
1.2 E-Banking web application of Minsheng bank could run on several browsers.					
1.3 E-banking service of Minsheng bank have been available all the time.					
2. Your satisfaction level with Minsheng Bank's e-banking in terms of security.					
2.1 E-Banking web application of Minsheng bank protect confidential of customer information very well to me.					
2.2 E-Banking web application of Minsheng bank provides customer account transactions protection mechanism that is satisfactory to me.					
2.3 Security mechanism on the website of E-Banking of Minsheng bank is satisfactory to me.					
3. Your satisfaction level with Minsheng Bank's e-banking in terms of website design.					
3.1 E-banking website of Minsheng bank is attractive design to me.					
3.2 E-banking website of Minsheng bank is easy to use for me.					
3.3 The layout of E-banking website of Minsheng bank is good to me.					

Section 3.1 (Continued)

Items	Very Low	Low	Moderate	High	Very High
	1	2	3	4	5
4. Your satisfaction level with Minsheng Bank's e-banking in terms of reliability.					
4.1 E-banking services of Minsheng bank is consistency to me.					
4.2 E-banking services of Minsheng bank is error-free for every transaction for me.					
4.3 E-banking services of Minsheng bank provides correctly documents to me.					
5. Your satisfaction level with Minsheng Bank's e-banking in terms of cost.					
5.1 Low service charges per transaction of Minsheng Bank's e-banking is satisfactory to me.					
5.2 Less time consuming to complete transaction on Minsheng Bank's e-banking service is satisfactory.					
5.3 Minsheng Bank's e-banking has no service fees for some services, such as open account, transfer money, etc. is satisfactory to me.					

3.2 Please indicate your level of satisfaction with Minsheng bank's e-banking service attitude by tick (√) in the box that matches your opinion (1=Very Low; 2=Low; 3=Moderate; 4= High; 5=Very High).

Items	Very Low	Low	Moderate	High	Very High
	1	2	3	4	5
1. Your satisfaction level with Minsheng Bank's e-banking service in terms of empathy.					
1.1 I am satisfied with the session of help provided by Minsheng Bank's e-banking.					
1.2 I am satisfied with the financial and technical support provided by Minsheng Bank's e-banking.					
1.3 I am satisfied with the personalized service provided by Minsheng Bank's e-banking.					

Appendix D: Expert validity test



เรียนรู้อีโอดีรับใช้สังคม

01 April 2022

Dear Dr. Marissa Intharakoed

Attachment 1) Thesis proposal “The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China”

2) Questionnaire

My name is Sun Chenxi—a graduate student at the Master of Business Administration (M.B.A.) in Digital Business at Huachiew Chalearmprakiet University in Thailand. As a part of this degree, I am conducting a thesis on the topic “The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China”. The study has objectives. As in the proposal, the theoretical framework and research methodology. This study will collect data from the e-banking customers of Minsheng Bank. To ensure the quality of the study, I would like to ask you to check the questionnaire to conduct the study. For more information and questions about this project, please contact me at e-mail address scx223344@gmail.com and my thesis advisor, Dr. Lanthom Jonjongsong at e-mail address lanthomjon@gmail.com

I would like to thank you in advance for your kind support my study.

Best Regards

SunChenxi

(Mr. Sun Chenxi)

Researcher



หนังสือยินยอมการเผยแพร่ผลงานวิจัย Consent form for research dissemination

เขียนที่ HCU

วันที่ 16/06/2022

ข้าพเจ้า นาย/นาง/นางสาว 学生姓名 Sun Chenxi รหัสนักศึกษา 学号 636070

ระดับ 学位 ปริญญาโท 硕士 ปริญญาเอก 博士 หลักสูตร 课程 Master ..

of Business Administration สาขาวิชา 专业 Digital Business คณะ 学院 Faculty ..

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ชื่อเรื่อง (ดุษฎีนิพนธ์/วิทยานิพนธ์/การศึกษาอิสระ 申请检查学位论文/毕业论文/选修)
(ชื่อภาษาไทย) (泰文名称)

อิทธิพลของคุณภาพบริการธนาคารอิเล็กทรอนิกส์และความพึงพอใจของลูกค้าธนาคารขนาดกลางในประเทศจีน

(ชื่อภาษาอังกฤษ) (英文名称)

The Influence of Electronic Banking Service Quality and the Satisfaction of Customers of Medium Banks in China

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ไม่อนุญาต

ลงชื่อ SunChenxi

ผู้วิจัย (Mr. Sun Chenxi)