

Research on the Service Quality of Personal Online Banking from the Perspective of the New Generation

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Abstract—With the development of Internet technology, online banking is developing faster and faster in China. For the traditional bank, the online bank have the advantages of lower operating costs, lower transaction costs, better customer service mode, better customer service content. The online bank broke the limitation of time, region and the way to trade, which Greatly facilitate the majority of customers. This study takes online banking of China as the research object, from the perspective of the new generation of consumers, according to the theory of SERVQUAL service quality analysis frame, designed the questionnaire of customer satisfaction of China online banking. This paper analyzes the service quality of online banking of bank of China, and after a statistical description, obtains the customer satisfaction level of online banking of bank of China in five aspects, such tangible, guaranteed, empathic, reliable and responsive and safe, and establishes corresponding countermeasures to the existing problems.

Keywords—service quality; online banking; SERVQUAL model

I. INTRODUCTION

With the rapid innovation and development of science and technology, the development of e-commerce is changing with each passing day. The number of online bank users in China is growing at an amazing speed, especially the new generation of young users, so that online banking has a broad development market, gradually become the new focus and focus of the competition of commercial Banks. In the process of fierce competition of online banking business of commercial Banks, the new generation has paid more and more attention to the service quality of online banking business. However, the evaluation of online banking users on their service quality and service effect is generally not high. On the one hand, this phenomenon is caused by the deterioration of the overall credit environment of the society, the unsound relevant laws and regulations, the unsound network infrastructure and other macro factors; on the other hand, it is restricted by the micro factors such as the imperfect system and measures of service quality management of commercial Banks. According to the statistical data of China Internet network information center, the online bank users in China do not rate the online bank they use in terms of service quality or service satisfaction.

Through the investigation of the new generation of consumers, this paper obtains a comprehensive statistical index to understand consumers' expectations and requirements on online banking. Through data analysis, the paper finds out the service indicators that consumers are mainly concerned about and the indicators that affect the service quality of enterprises, and defines the advantages and disadvantages of online banking and the efforts to meet these expectations and requirements. For enterprises to improve the quality of service, improve management methods to improve the level of management, continue to carry out system innovation and technological innovation, improve the competitiveness of enterprises to provide accurate basis.

II. THEORETICAL ANALYSIS AND MODEL CONSTRUCTION

A. Literature Review

When conducting empirical research and analysis on commercial Banks in different countries and regions, foreign scholars mainly study the service quality of online Banks based on rational behavior theory, technology diffusion theory and technology acceptance model. Sohail and Shan argue that customer perceptions affect the quality of online banking services. Their research shows that if the website of online banking has reasonable and convenient navigation and search tools and a high degree of interaction, then users will have a positive perception of the interface friendliness and service quality of the website of online banking. Minocha and Dawson believe that commercial Banks can maintain current users and attract more potential customers by creating a real, safe and reliable atmosphere when users use online banking to conduct business. Joseph. Metal. Studied the influence of ATM, mobile phone and Internet on the delivery of service quality of commercial Banks by designing a measurement scale [1]. Jun and Cai studied the elements that constitute the service quality of online banking by collecting customer messages through BBS and BBS on the website of Gomez Advisors.[2]The results show that the service quality of online bank is influenced by customer service, product service and network system. Brode rick and Vachira pornpuk found that the prompt information set in the service operation of commercial Banks, the key events occurred in the service transaction process and the customer

participation and participation ability had the most rapid impact on the service evaluation. [3]

For Internet banking service quality of domestic related research has formed a certain result, Rafnar and Wang Wukui think: online banking services, care and safety reliability of three dimensions will directly affect the user perceived satisfaction when using online banking, and the users of Internet banking service quality evaluation of a significant impact [4]. Wang chun believes that online banking is a new form of organization and operation of commercial Banks. It takes a long time for Banks and users to understand and be familiar with their business procedures and to understand and master relevant skills [5]. Liang Qingqing believes that to improve the quality of online banking services, efforts should be made to establish a high-quality service platform, improve good consultation and personalized services, and improve the safety of online banking services.[6]Store Yu Jia he stand was thought: the financial service provided by the bank on the net is mostly on the network flow and transfer of funds, it can increase the customer perception of security risk, so the user evaluation of Internet banking service quality evaluation standard is different from the traditional service quality evaluation standard, Internet banking service quality is mainly composed of reliability, safety, efficiency and timeliness of the four factors of dealing with problems[7]. According to the research of Shuai Jiaying and Liu Chunjiang, there are four main factors that directly affect the customer perception of the service quality of enterprise online banking, which are the overall quality, network system quality, product quality and bank-enterprise relationship. [8]

B. The Establishment of Theoretical Model

In this study, SERVQUAL model was used to evaluate the service quality of online banking. SERVQUAL theory is

a new service Quality evaluation system based on Total Quality Management (TQM) theory in service industry. SERVQUAL divides service quality into five levels: Tangibles, Reliability, Responsiveness, Assurance and Empathy. Based on the current consideration of network security, I have added the level of security, security. Each level is subdivided into several questions, and users are asked to rate the actual feelings of each question through questionnaires. It is illustrated by the 23 specific factors that it establishes.

III. SELECTION AND DESIGN OF QUESTIONNAIRE INDICATORS

The design of this questionnaire was based on SERVQUAL five models and combined with the actual situation of considering network security at present, so I added the level of security (security refers to the density of online banking on user information and the security ability of user login process). Index design is divided into six dimensions: responsiveness, tangibility, reliability, assurance, empathy and security. The questionnaire consists of two parts. The first part is about the understanding of some basic questions of the respondents, such as education background, income, etc., in order to have a preliminary understanding of the sample structure of the questionnaire. The second part is the investigators according to accept service experience and feeling to fill in the corresponding problem, a total of 23 item, survey scale using likert five hierarchical evaluation method, score design for 1 to 5, 1 don't agree with, 5 agreed, in between other score evaluation, each one possible answers are covered in this five options. The higher the score is, the greater the degree of satisfaction will be.

The corresponding specific indicators of each dimension are shown in "Table I":

TABLE I. DIMENSIONS AND INDICATORS

Dimension	Code	Questions
Tangibility	A1	The interface of the online bank is beautifully designed and visually attractive
	A2	The online banking service product description can be well illustrated
	A3	The entity bank that this net bank relies on has very good brand image
	A4	Brick-and-mortar Banks have high-quality service personnel and attractive hardware facilities
Reliability	B1	The content of the service provided by the online bank is consistent with the promise in the advertisement
	B2	The online bank provides services at the same time as promised
	B3	The online bank provides accurate services according to customer requirements
	B4	The online banking system works well
Responsiveness	C1	Online banking has the ability to provide round-the-clock services
	C2	Customer complaints channels open and timely handling of customer problems
Assurance	D1	Customer service staff have professional knowledge and ability
	D2	The website provides a lot of detailed help information
	D3	The information provided by the website is accurate and easy to understand
Empathy	E1	This bank on the net can whole big hou handles each business for the user
	E2	The online bank attaches great importance to the special needs of customers
	E3	The online bank can provide personalized products and services
	E4	The online bank can be very active to understand the needs of customers
	E5	The online bank can timely notify users of personal events
Security	F1	Online banking can ensure the security of the transaction process
	F2	I think using online banking can guarantee the security of personal information
	F3	I feel the service system is very stable when I use online banking
	F4	Using online banking can ensure the security of account information
	F5	Online banking regularly provides you with tools to enhance the security of your online banking system

IV. DATA STATISTICS AND ANALYSIS

A. Sample Selection and Statistics

This questionnaire was distributed online, 114 copies were collected, 14 incomplete copies were eliminated, 100 valid copies were collected, and the effective recovery rate was 87.7%. Among the 100 valid questionnaires, 73 (73%) were female. There were 26 males, accounting for 26%. Because of our research Angle of view for new generation of this age level to measure their feelings for Internet banking service quality, so , from our questionnaire using online banking services are basically of the younger generation, 96% of people use the bank on the net in 33 years of age or older, only 4% were under the age of 33. Undergraduates in terms of education, the majority, a nearly 54% of the proportion, followed by master's and college education accounted for 23% and 17% respectively, the last is the least amount of specialist and doctoral degree under the combined a proportion of 6%, from this we can get a ballpark speculated that use of online banking services are mostly.

In terms of monthly income distribution, less than 1,000 yuan accounts for more than half of all samples, accounting for 53.0%, which is greatly related to the proportion of student samples. There is basically no direct source of income for the sample of students, The second place was the sample size of 1001~2000 yuan, accounting for 25.0%. The proportion of 2001~3000 yuan, 3001~5000 yuan, 5001~8000 yuan and above 8001 yuan were respectively 5.0%, 8%, 4% and 5%, and the total proportion was only 22%.

By Questionnaire data as you can see, from our bank on the net is the most use of China construction bank, the proportion of accounted for more than half 52%, followed by the industrial and commercial bank, the bank of China, agricultural bank of proportion is 14%, 12% and 10%, in turn, we can see the bank on the net using the state-owned commercial Banks accounted for 88%, other private holdings of commercial Banks, such as: China citic bank, industrial bank and other Banks accounted for only 12% of the proportion of the total.

B. The Evaluation Dimension of Indicators is Determined

1) *Reliability test:* Reliability refers to the reliability and stability of the questionnaire, and the reliability of the scale is an important index to evaluate the questionnaire. In general, the higher Cronbach's alpha coefficient is, the more

consistent the results in the questionnaire, and an alpha factor between 0.80 and 0.90 is very good. The results showed that the Cronbach's alpha coefficient of the questionnaire as a whole was 0.943, indicating that the reliability of the questionnaire was very good.

2) *Validity test:* Validity refers to the degree to which the measured results reflect the desired content of the investigation. The more consistent the measured results are with the content to be investigated, the higher the validity will be; otherwise, the lower the validity will be. Validity test refers to the analysis of the validity of the measurement results of the questionnaire, the test of the degree to which the measurement results of the designed questionnaire reflect the objective reality that it should reflect.

a) *Factor fitness analysis test:* SPSS was used to conduct KMO sampling suitability test and Bartlett sphericity test for the valid sample data of this study. KMO is a sampling appropriateness indicator. The closer KMO is to 1, the more common factors among variables, the more suitable the data are for factor analysis. The test results showed in "Table II", There are common factors among the correlation matrices representing evaluation indexes, not the identity matrix. Therefore, the data are suitable for factor analysis.

TABLE II. KMO AND BARTLETT TESTS

KMO		0.879
Bartlett's sphericity test	Approximate chi-square	1561.432
	df	276
	Sig.	0.000

b) *Factor analysis:* Principal component analysis was used for factor analysis. Because each item has a certain correlation among, so using oblique axis of Promax, oblique rotation factor load can be more easy to explain, factor analysis of variance contribution rate as shown in "Table III", from the table we can see in the top several of the variance contribution rate of the cumulated variance contribution ratio of the several principal components reached 59.598%, consider it a few principal components to fully reflect the index contained in the message. In order to facilitate the identification and naming of common factors, the maximum variance rotation axis method is used for orthogonal rotation. The advantage of this method is that all factors remain orthogonal, but the variance difference of all factors is maximized to facilitate the explanation of factors.

TABLE III. OVERALL VARIANCE CONTRIBUTION RATE

Ingredients	Initial solution			The rotated solution		
	Total	Percentage of variance	Cumulative percentage of variance	Total	Percentage of variance	Cumulative percentage of variance
1	10.459	45.474	45.474	10.459	45.474	45.474
2	1.707	7.422	52.896	1.707	7.422	52.896
3	1.555	6.760	59.655	1.555	6.760	59.655
4	1.224	5.321	64.977	1.224	5.321	64.977
5	1.063	4.621	69.598	1.063	4.621	69.598

TABLE IV. PRINCIPAL COMPONENT LOAD MATRIX AFTER ROTATION

	Ingredients				
	1	2	3	4	5
The interface is beautifully designed and visually attractive	332.	220.	396.	733.	464.
Service product description can be well illustrated	541.	384.	343.	765.	414.
The entity bank that the bank on the net relies on has very good brand image	396.	359.	454.	704.	224.
Brick-and-mortar Banks have high-quality service personnel and attractive hardware facilities	417.	497.	665.	723.	058.
The content of the services provided is consistent with the promise of the publicity	400.	554.	796.	491.	260.
Service delivery time is consistent with the time commitment	476.	257.	749.	367.	432.
We will provide accurate service according to customers' requirements	571.	546	778.	453.	237.
The online banking system works well	450.	213.	750.	304.	570.
Online banking has the ability to provide round-the-clock services.	585.	246.	757.	288.	625.
Customer complaint channels are open and customer problems are dealt with in a timely manner	430.	646.	741.	351.	372.
Customer service staff have professional knowledge and ability	696.	587.	548.	424.	764.
The website provides a lot of detailed help information	659.	468.	555.	366.	765.
The information provided by the website is accurate and easy to understand	467.	491.	396.	213.	789.
Be able to handle all the business for the user	357.	735.	413.	373.	760.
Attach great importance to the special needs of customers	455.	770.	400.	247.	373.
Be able to provide personalized products and services	518.	780.	273.	418.	268.
Can be very active to understand the needs of customers	502.	755.	422.	460.	406.
Be able to timely inform users of personal events	697.	753.	531.	447.	399.
Can ensure the security of the transaction process.	776.	400.	407.	417.	362.
Use can guarantee the security of personal information	771.	531.	474.	431.	303.
The service system is stable when used	733.	287.	610.	281.	577.
Can ensure the security of account information	798.	483.	456.	450.	270.
Regularly provide you with tools to enhance the security of online banking system	777.	455.	389.	362.	391.

As can be seen from table above, the rotated factor load matrix reflects the degree of correlation between the principal factor and the original variable. The bold part of the data is between each factor and the original variables is larger, the load is big, because the main factors related to the original variable degree have high low, can be in accordance with the principle of relevance of the original variables can be divided into five types: the five factors of contribution rate were 45.474%, 7.422%, 6.760%, 5.321%, 4.621%, the cumulative contribution rate was 69.598%.It is named f1, f2,

f3, f4 and f5 respectively. According to the meaning of these five factors, it can be classified into five dimensions of service quality, namely security, empathy, reliable response, tangible and assurance. The rotating factor load matrix is shown in table.

According to the score on each index, we can use it to investigate the nature of each index and the mutual relationship between the indicators. The result output by SPSS is the factor information as shown in "Table V":

TABLE V. COMPONENT SCORE COEFFICIENT MATRIX

	Ingredients				
	1	2	3	4	5
You often use or are most impressed by online banking	- 005.	007.	012.	- 005.	591.
The interface is beautifully designed and visually attractive	- 043.	- 032.	064.	254.	- 092.
Service product description can be well illustrated	060.	- 007.	030.	221.	- 196.
The entity bank that the bank on the net relies on has very good brand image	007.	- 017.	038.	322.	- 059.
Brick-and-mortar Banks have high-quality service personnel and attractive hardware facilities	002.	026.	037.	319.	256.
The content of the services provided is consistent with the promise of the publicity	038.	082.	065.	143.	073.
Service delivery time is consistent with the time commitment	- 018.	- 043.	210.	069.	135.
We will provide accurate service according to customers' requirements	031.	054.	061.	114.	288.
The online banking system works well	- 019.	- 025.	217.	000.	019.
Online banking has the ability to provide round-the-clock services.	019.	- 037.	241.	- 039.	050.
Customer complaint channels are open and customer problems are dealt with in a timely manner	- 027.	153.	063.	019.	026.
Customer service staff have professional knowledge and ability	086.	064.	028.	050.	- 111.
The website provides a lot of detailed help information	048.	056.	142.	- 055.	- 057.
The information provided by the website is accurate and easy to understand	- 043.	111.	158.	- 044.	- 293.
Be able to handle all the business for the user	086.	107.	186.	- 033.	- 270.
Attach great importance to the special needs of customers	018.	270.	007.	- 071.	043.
Be able to provide personalized products and services	040.	247.	- 102.	022.	017.
Can be very active to understand the needs of customers	012.	233.	- 016.	031.	- 023.
Be able to timely inform users of personal events	103.	059.	020.	030.	017.
Can ensure the security of the transaction process.	205.	- 045.	024.	010.	087.
Use can guarantee the security of personal information	218.	015.	- 051.	007.	012.
The service system is stable when used	169.	- 061.	135.	- 094.	- 080.
Can ensure the security of account information	245.	- 015.	- 069.	022.	- 009.
Regularly provide you with tools to enhance the security of online banking system	179.	022.	- 010.	- 030.	- 013.

According to the factor score coefficient and the standardized value of the original variable, the score of each observation, i.e., each variable, can be calculated, and the observed values can be further analyzed to obtain the score of each factor as shown in "Table VI":

TABLE VI. SCORES OF EACH FACTOR

Main factor	Score	Comprehensive ranking
f1	17519.56	1
f2	10596.92	2
f3	6429.77	4
F4	9934.56	3
F5	6518.59	5

From the score, it can be concluded that f1 security accounts for the most important score, which means that from the perspective of the new generation, the online banking service quality is most concerned about security issues. Secondly, empathy occupies the second place in f2 score, which indicates that whether online banking can propose some personalized packages and requirements for users is also crucial. Then, f4 represents the tangibility, which also shows that the image of physical Banks also plays a great role in affecting the service quality of online Banks. Finally, the impact of F3's reliable responsiveness and f5's assurance on the service quality of online banking is relatively small compared with the previous factors.

V. CONCLUSION

The purpose of this paper is to investigate the current situation of the service quality of online banking from the perspective of the new generation, to find out the shortcomings of online banking in the service quality and the factors that restrict the improvement of online banking service quality. Based on this, this study took online banking of bank of China as the research object, designed a customer satisfaction questionnaire of online banking of bank of China based on SERVQUAL service quality analysis framework theory, and analyzed the service quality of online banking of bank of China. After the statistical description, the customer satisfaction level of the online banking service of bank of China in tangible, guaranteed, empathic, reliable and responsive and security five aspects is obtained, and the following research conclusion is obtained: the online banking construction of bank of China is effective, but the service quality still needs to be further improved. And put forward corresponding suggestion and construction measure.

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