Online-Journals.org

JFSE Journal for Future Society and Education

JFSE | eISSN: 3078-6010 | Vol. 1 No. 1 (2024) | OPEN ACCESS

https://doi.org/10.3991/jfse.v1i1.51931

PAPER

The Problem and Countermeasures of Insufficient Digitalization of Customer Service in Chinese Rural Banks: Taking Z Rural Bank as an Example

Yunfei Li[1](✉), **Ubaldo Comite**[2]

[1]Nanyang Country Bank, Henan, China

[2]University Giustino Fortunato, Benevento, Italy

dr.liyunfei@gmail.com

ABSTRACT

With the progress of society and the rapid development of technology, people's demand for online and digital banking is also constantly increasing. However, there are factors such as insufficient technology investment and a lack of business technology composite talents in rural banks, which have led to serious deficiencies in the online and digital customer service. In order to solve this problem, this paper analyzes and summarizes the factors that contribute to the insufficient online and digital capabilities of rural banks through literature review. Based on the analysis results, relevant hypotheses are proposed, and Z Rural Bank is taken as an example to collect relevant data through online questionnaires. Multiple linear regression models and data analysis software are used to calculate the collected data. After qualitative and quantitative analysis, the conclusion is drawn that the number of composite talents in the bank, the level of technological investment in the bank, the level of understanding and mastery of digitalization among bank employees, and the strength of bank outsourcing companies have an impact on the insufficient online and digital capabilities of rural banks. Based on the above research conclusions, corresponding countermeasures and suggestions are proposed. Through the research results of this paper, we hope to provide some reference for the online and digital transformation and development of China's banking and financial institutions, especially rural banks.

KEYWORDS

financial digitization, multiple linear regression, existing problems, countermeasures and suggestions

1 INTRODUCTION

Digital transformation of commercial banks refers to the process in which banks use big data, AI, and the metaverse to reshape their traditional business models and improve service quality and efficiency [1].

Li, Y., Comite, U. (2024). The Problem and Countermeasures of Insufficient Digitalization of Customer Service in Chinese Rural Banks: Taking Z Rural Bank as an Example. *Journal for Future Society and Education (JFSE)*, 1(1), pp. 45–55. https://doi.org/10.3991/jfse.v1i1.51931

Article submitted 2024-07-26. Revision uploaded 2024-08-30. Final acceptance 2024-09-01.

With the progress of society and the rapid development of emerging technologies such as big data, AI, and the metaverse, banks can provide customers with more personalized and intelligent financial services. The digital customer service online and the traditional banking business model have brought about the following changes:

One is the change in business philosophy and model. Online digital customer service is popular for its simplicity, ease of implementation, and highly personalized features, leading to the loss of some traditional commercial bank customers. The second is cultural change. Online digital customer service has brought about changes in culture, thinking, organization, and management. Traditional banks need to adapt to the production relations and organizational methods of the Internet era, construct a new organizational framework, and develop new service products. The third is that competition has intensified. The online digitization of customer service has intensified competition in the financial industry, weakened the role of traditional banks as intermediaries, and increased operational risks for traditional banks.

2 LITERATURE REVIEW AND RESEARCH HYPOTHESES

Wang Yuan (2024) believes that the top-level design of digital transformation in banks is not clear, and senior management lacks understanding and consensus on transformation goals, which weakens the organization's execution power [2]. Wang Xiaodong (2022) believes that some bank managers have not developed a lifelong learning habit, their vision and knowledge have fallen behind the development situation, their innovation consciousness is not strong, they are content with the status quo, and they are stagnant. Digital transformation requires a large number of comprehensive talents, and banks lack comprehensive talents who are proficient in both financial business and IT. Due to the lack of funds for technology investment and other issues, small and medium-sized banks have insufficient investment in information technology, resulting in relatively backward system construction [3].

This paper decides to adopt the above opinions and proposes.

- Hypothesis 1: The top-level design of banks will affect the problem of insufficient digitalization of customer service.
- Hypothesis 2: The number of comprehensive talents in banks will affect the problem of insufficient digitalization of customer service.
- Hypothesis 3: The level of technology investment in banks will affect the insufficient digitalization of customer service.

Jiang Zhengyan (2021) believes that some banks have not realized the importance of digital transformation construction, and have not restructured the existing departmental and job responsibilities of their employees. In addition, the training for digital transformation is insufficient, resulting in employees having insufficient ability to master new technologies [4].

This paper decides to adopt the above opinions and proposes.

- Hypothesis 4: The level of understanding and mastery of digitalization among bank employees will affect the problem of insufficient digitalization in customer service.

Xiao Heng (2022) believes that the digital transformation of customer service in some small and medium-sized banks relies heavily on outsourcing technology companies, so the quality of outsourcing companies will largely determine their

ability to digitize customer service. In addition, communication and coordination between various departments of the bank are not smooth, responsibilities are unclear, and a comprehensive business operation mechanism for the front, middle, and back ends has not been established, which has reduced efficiency. Some banks even need to establish a dedicated digital transformation committee to coordinate and lead the overall situation [5].

This paper decides to adopt the above opinions and proposes.

- Hypothesis 5: The strength of bank outsourcing companies will affect the problem of insufficient digitalization of customer service.
- Hypothesis 6: The coordination level among various departments of the bank will affect the problem of insufficient digitalization of customer service.

Zhang Liyun (2023) believes that the innovation of financial products and services in small and medium-sized banks is relatively weak. Due to the lack of precise market research and scientific customer demand analysis, the innovation of financial products and services is relatively backward. In addition, the complex user interface and insufficient usability and operability of online products have resulted in weak core competitiveness of online products in the market [6].

This paper decides to adopt the above opinions and proposes.

- Hypothesis 7: The innovation capability of bank products will affect the problem of insufficient digitalization of customer service.

Wang Yuan (2024) believes that the digital marketing services of banks are insufficient. Banks have not fully utilized the potential of digital marketing by placing digital advertisements on new media. In addition, digital marketing methods have not effectively achieved the ability to establish deep interaction between banks and customers, making it difficult for banks to gain a deep understanding of customers' actual needs [2].

This paper decides to adopt the above opinions and proposes.

- Hypothesis 8: The degree of digital marketing in banks will affect the insufficient digitalization of customer service.

3 RESEARCH METHODOLOGY

This paper plans to take Z Rural Bank as an example to study the problems and countermeasures of its online and digital transformation. The plan is to use a survey questionnaire (see Table 1) and a comprehensive survey method to collect data.

The sample collection target is all employees of Z Rural Bank. As of the end of July 2024, the total number of employees in the bank is 455. Assuming the Yamane simple random sampling method is adopted [7], the random ratio P is set to 0.5, the sampling error ratio e is set to 0.05, and the confidence level Z is set to 1.96. According to the formula, $n = \frac{P(1-P)Z^2}{e^2}$ the minimum sample size n can be obtained as 384. Therefore, the number of employees in the bank can cover the minimum sample size requirement.

The questionnaire plan is divided into two parts; the first part is the basic information of the respondents. This section mainly includes the gender, age, and education level of the respondents.

The second part plans to use the Likert scale for questionnaire design and data collection. The project will be set up based on the eight hypotheses (independent variables) and one dependent variable proposed in this paper.

Table 1. Survey questionnaire

Project	Question	Very Inconsistent	Very Inconsistent	Very Inconsistent	Very Inconsistent	Very Inconsistent
The top-level design of banks	Bank management lacks the necessary understanding of customer service online and digital transformation goals.					
	The middle and senior management of banks lack innovative awareness of online and digital transformation.					
The number of comprehensive talents in banks	Banks lack versatile talents who are proficient in both financial services and IT.					
The level of technology investment in banks	Insufficient funding guarantee for bank technology investment, and relatively backward system construction compared to other banks.					
The level of understanding and mastery of digitalization among bank employees	Banks pose challenges to employees' existing job responsibilities and knowledge structures.					
	Employees have insufficient understanding of digital transformation, and the bank's technology training for employees is insufficient.					
The strength of bank outsourcing companies	The technology and capabilities of outsourcing companies will greatly affect the digital transformation ability of banks' customer service.					
The coordination level among various departments of the bank	The bank failed to establish a business operation mechanism that runs through the entire process of front, middle, and back office.					
The innovation capability of bank products	The bank did not conduct precise market demand research, resulting in weak core competitiveness of the product in the market.					
	The operation interface of online financial products in banks is complex, and the convenience and usability of the APP are insufficient.					
The degree of digital marketing in banks	The potential of digital marketing has not been fully realized in the application of intelligent marketing tools.					
The degree of online and digital customer service	Z Rural Bank's mobile banking and online banking functions are relatively complete.					
	Z Rural bank WeChat Alipay and other card binding and quick payment are convenient.					
	The application, disbursement, and repayment of online loans from Z Village Bank are relatively convenient.					
	The practicality and operability of smart devices such as Z Rural Bank's intelligent teller machines are relatively convenient.					

This paper investigates the impact of multiple independent variables on the dependent variable and identifies which factors are important and which are secondary. Therefore, this paper plans to use a multiple linear regression model to analyze the problem of insufficient online and digital customer service in rural banks (see Table 2).

To examine the influencing factors of digitalization in customer service, the article constructs the following model:

$$DCS = \beta_0 + \beta_1 TLD + \beta_2 NCT + \beta_3 TI + \beta_4 EUM + \beta_5 OC + \beta_6 CL + \beta_7 IC + \beta_8 DM + \beta_9 AGE + \beta_{10} GEN + \beta_{11} EDU + \varepsilon$$

Among them, β_0 is the intercept term; $\beta_1 - \beta_{11}$ is the estimated parameters for the corresponding variables; ε is a random error term.

Table 2. Explanation of formula variables

	Variable Symbol
Dependent variable	Digitalization of customer service (DCS)
Independent variable	The top-level design of banks (TLD)
	The number of comprehensive talents in banks (NCT)
	The level of technology investment in banks (TI)
	The level of understanding and mastery of digitalization among bank employees (EUM)
	The strength of bank outsourcing companies (OC)
	The coordination level among various departments of the bank (CL)
	The innovation capability of banking products (IC)
	The degree of digital marketing in banks (DM)
Control variable	Gender (GEN)
	Age (AGE)
	Education (EDU)

4 RESEARCH RESULTS

From August 8th to 11th, 2024, a total of 391 survey questionnaires were collected and distributed to all employees of Z Rural Bank through WeChat. After excluding 6 questionnaires with short response times or invalid responses, a total of 385 valid questionnaires were collected (see Table 3).

Table 3. Distribution of sample demographics characteristics

Variable	Category	Frequency	Percentage
Gender	Male	229	59.48%
	Female	156	40.52%
Age	18–25	12	3.12%
	26–40	297	77.14%
	41–60	74	19.22%
	Over 61	2	0.52%
Educational level	Middle school and below	0	0%
	High school/polytechnic school	5	1.30%
	Junior college	41	10.65%
	Undergraduate	317	82.34%
	Master and above	22	5.71%

Perform multiple linear regression analysis on the data using SPSS software, and obtain the Pearson correlation coefficient table (see Table 4) and multiple linear regression results.

Table 4. Pearson correlation coefficient table

		TLD	NCT	TI	EUM	OC	CL	IC	DM	DCS
TLD	Pearson correlation	1	0.661**	0.612**	0.683**	0.631**	0.567**	0.683**	0.645**	–0.273**
	Significance		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NCT	Pearson correlation	.661**	1	0.750**	0.741**	0.650**	0.624**	0.686**	0.671**	–0.481**
	Significance	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
TI	Pearson correlation	0.612**	0.750**	1	0.732**	0.727**	0.696**	0.761**	0.713**	–0.424**
	Significance	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
EUM	Pearson correlation	0.683**	0.741**	0.732**	1	0.736**	0.736**	0.800**	0.762**	–0.399**
	Significance	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
OC	Pearson correlation	0.631**	0.650**	0.727**	0.736**	1	0.694**	0.826**	0.768**	–0.252**
	Significance	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
CL	Pearson correlation	0.567**	0.624**	0.696**	0.736**	0.694**	1	0.709**	0.737**	–0.289**
	Significance	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000
IC	Pearson correlation	0.683**	0.686**	0.761**	0.800**	0.826**	0.709**	1	0.852**	–0.334**
	Significance	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
DM	Pearson correlation	0.645**	0.671**	0.713**	0.762**	0.768**	0.737**	0.852**	1	–0.331**
	Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
DCS	Pearson correlation	–0.273**	–0.481**	–0.424**	–0.399**	–0.252**	–0.289**	–0.334**	–0.331**	1
	Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Notes: 1. **Indicates significant correlation at the 0.01 level. 2. The correlation coefficients are all less than 0.85.

Table 5. Results of multiple linear regression

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	β		
Constant	3.089	0.599	–	5.161	0.000***
TLD	0.121	0.064	0.123	1.883	0.061
NCT	–0.437	0.082	–0.400	–5.313	0.000***
TI	–0.278	0.087	–0.259	–3.218	0.001***
EUM	–0.238	0.098	–.211	–2.418	0.016**

(Continued)

Table 5. Results of multiple linear regression *(Continued)*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	β		
OC	–.270	0.053	0.252	–5.088	0.000***
CL	0.114	0.081	0.102	1.403	0.162
IC	–0.009	0.118	–0.008	–0.075	0.940
DM	–0.069	0.102	–0.061	–0.674	0.501
GEN	–0.036	0.110	–0.014	–0.327	0.744
AGE	0.357	0.116	0.134	3.076	0.002
EDU	0.125	0.117	0.047	1.061	0.289
R^2	0.298**				
Adjust R^2	0.277**				
F	F = 14.361, P = 0.000**				

Note: ***, **, * Represent significance levels of 1%, 5%, and 10%, respectively.

According to the beta values in the Table 5 above, substitute those into the formula, and the final formula for the multiple linear regression model is:

$$DCS = 0.123TLD - 0.4NCT - 0.259TI - 0.211EUM + 0.252OC + 0.102CL - 0.008IC - 0.061DM - 0.014AGE + 0.134GEN + 0.047EDU + 1.035$$

The number of comprehensive talents in banks (NCT), the level of technology investment in banks (TI), the level of understanding and mastery of digitalization among bank employees (EUM), and the strength of bank outsourcing companies (OC). The above four items have a significant negative impact on the dependent variable, that is, the higher the score, the more problems exist in this item, and the lower the degree of digitalization of customer service.

5 CONCLUSIONS, SUGGESTIONS, AND PROSPECTS

Table 6. Research hypothesis test results

Research Hypothesis	Sig.	Test Results
The top-level design of banks will affect the insufficient Digitalization of customer service.	0.061	Rejected
The number of comprehensive talents in banks will affect the insufficient digitalization of customer service.	0.000***	Accepted
The level of technology investment in banks will affect the insufficient digitalization of customer service.	0.001***	Accepted
The level of understanding and mastery of digitalization among bank employees will affect the insufficient digitalization of customer service.	0.016**	Accepted
The strength of bank outsourcing companies will affect the insufficient digitalization of customer service.	0.000***	Accepted

(Continued)

Table 6. Research hypothesis test results *(Continued)*

Research Hypothesis	Sig.	Test Results
The coordination level among various departments of the bank will affect the insufficient digitalization of customer service.	0.162	Rejected
The innovation capability of bank products will affect the insufficient digitalization of customer service.	0.940	Rejected
The degree of digital marketing in banks will affect the insufficient digitalization of customer service.	0.501	Rejected

Note: ***, **, * Represent significance levels of 1%, 5%, and 10%, respectively.

From the above Table 6, it can be seen that the number of comprehensive talents, technology investment level, employees' level of digital mastery, and the strength of outsourcing companies in banks significantly negatively affect the digitalization level of customer service (significance less than 5%, indicating a significant impact path).

Based on the findings, the following recommendations are suggested:

- To increase the number of comprehensive talents who are proficient in both financial business and IT, the following comprehensive measures can be implemented to gradually increase the number of composite talents in technology business, and enhance their competitiveness and innovation ability.

One is to optimize the recruitment strategy. In addition to traditional social and campus recruitment, universities and headhunting companies can also collaborate to seek talents with relevant experience and potential by leveraging the resources and experience of professional institutions. The second is to focus on internal training and talent development. Develop training courses for employees that integrate technology and business, covering topics such as financial technology knowledge, data analysis, and business process optimization. The third is to encourage internal competition for positions. Provide job opportunities for employees with technological interests and potential to join the technology team and accumulate experience in technology and business practice. The fourth is to establish a mentorship system. Experienced technology business composite employees can be arranged to guide new employees and accelerate their growth. The fifth is industry-university research cooperation. We can collaborate with research institutions to involve employees in cutting-edge fintech research projects and enhance their professional skills. The sixth is to create an innovative culture. Provide resources and support for employees' innovative projects, giving them the opportunity to put their ideas into practice.

- To increase the level of technological investment, multiple aspects such as strategic planning, resource allocation, and technological innovation can be comprehensively considered. Through continuous investment and optimization, one can gradually enhance their own technological strength and competitiveness.

One is to develop a clear technological strategic plan. Conduct in-depth analysis of the business objectives and development direction of the bank, clarify the supporting role and development focus of technology, set phased technology investment goals and long-term investment plans, and ensure the sustainability and stability of investment. The second is to optimize budget allocation. Reasonably increase the proportion of technology investment in the annual budget and prioritize the funding needs of key technology projects. In addition, evaluate the existing business

costs, reasonably reduce expenses in non-critical areas, and invest the saved funds into the technology field. The third is cooperation and outsourcing. To establish strategic partnerships with outsourcing companies, adopt outsourcing services for non-core technology businesses, reduce operating costs, and obtain professional technical support. The fourth is to strengthen internal research and development capabilities. Recruit and cultivate professional talents with technical backgrounds, and establish efficient technology research and development teams. The fifth is to establish a performance evaluation mechanism. Clear performance indicators for technology investment should be established, such as the degree of business process optimization, customer satisfaction improvement, etc. The effectiveness of technology investment should be regularly evaluated and feedback provided in order to adjust investment strategies in a timely manner.

- To enhance employees' understanding of digital transformation and mastery of new technologies, the following measures can be taken:

One is to carry out publicity and training. Regularly hold training, lectures, and seminars on digital transformation; subscribe to professional fintech magazines, journals, and online courses. The second is practical project training. Combining with the digital transformation projects of Xingli construction, involve employees to deepen their understanding and application ability of new technologies in practice. The third is leadership demonstration and promotion. The senior leadership of the bank takes the lead in learning and applying digital technology, demonstrating a firm determination and positive attitude towards transformation. The fourth is benchmarking learning. Organize employees to visit and learn from banks that have successfully undergone digital transformation, and draw on the successful experiences and practices of peer banks.

- To find a strong technology outsourcing company for cooperation, the following aspects can be considered:

One is to conduct market research. You can consult with peer banks to obtain their successful project cooperation experience and recommendations. You can also use industry reports, professional media, fintech forums, and other channels to learn about well-known technology outsourcing companies in the market. Powerful outsourcing companies usually have rich practical experience and innovative capabilities in the financial industry, understand banking business processes, regulatory requirements, and market dynamics. They can bring new business models and service concepts to banks, help them achieve differentiated competition in digital transformation, and enhance market competitiveness. The second is to evaluate technical capabilities. Understand its research and development capabilities and application experience in key technology fields such as big data, AI, and metaverse. Powerful outsourcing companies usually have deep technical accumulation and professional knowledge in the field of financial technology. They can provide advanced and mature technological solutions and apply the latest and most effective technological means to the digital transformation of banks. The third is to review project management capabilities. Understand whether there is an experienced project management team that can effectively plan, execute, and monitor digital transformation projects, ensure timely and quality delivery of projects, and reduce the risk of project delays and failures. The fourth is to review qualifications and reputation.

Verify the relevant qualification certificates of the outsourcing company, such as ISO quality certification, investigate its reputation and credibility in the industry, and determine whether there are any legal disputes or adverse records. If conditions permit, conduct on-site inspections of candidate companies to understand their working environment, development processes, and management models.

The online and digital transformation of commercial banks may have profound and multifaceted impacts on future society.

One is that financial services will become more convenient and efficient. In the future, people can access the banking system anytime and anywhere through various terminal devices, and business transactions will no longer be limited by time and location. Bank branches will also leverage advanced technology and automated processes, and business processing speed will be greatly improved. The second is to promote financial inclusion. Banks can better cover groups that were previously difficult to reach, such as residents in remote areas and small and micro enterprises. By utilizing online platforms and digital services, we aim to lower service barriers and costs, and provide them with equal financial opportunities. The third is that personalized financial solutions can be provided. Based on big data analysis and AI technology, banks can gain a deep understanding of each customer's unique needs and risk preferences, and tailor personalized financial products and service plans for them. The fourth is to promote economic development. Digitization enables banks to more efficiently assess the credit status and business potential of small and micro enterprises, provide them with more accurate financing support, promote their innovative development and business expansion, and ultimately drive the vitality and innovation of the overall economy. The fifth is to change people's way of life. People will have easier access to rich financial knowledge and market information, and with the help of digital wealth management tools, they can more scientifically allocate assets and manage wealth, improving the financial health of individuals and families. The sixth is that we need to improve the level of social governance. The digital system of the bank can be integrated and data shared with the information platform of government departments, providing support for government services and improving government efficiency and service quality. The seventh is that strengthen risk prevention and control. By utilizing advanced technological means, banks can more effectively monitor and prevent financial risks while also providing more comprehensive risk assessment and early warning services to society. This is of great significance for preventing systemic financial risks and maintaining social and economic stability. The eighth is that it poses challenges to financial regulation. Due to the innovation of financial business models, it is possible to break through the existing financial framework, and regulatory agencies need to adjust their supervision and systems in a timely manner to prevent systemic risks.

6 REFERENCES

[1] Liu He, "The challenges and countermeasures faced by digital transformation of commercial banks," *In the Era of Financial Technology*, vol. 6, pp. 82–85, 2024.

[2] Wang Yuan, "How commercial banks can use financial technology to create new opportunities," *Chinese Businessman*, pp. 158–159, 2024.

[3] Wang Xiaodong, "Exploration of digital transformation of business channels in commercial banks," Anhui Jianzhu University, Hefei, 2022.

[4] Jiang Zhengyan, "Research on the digital transformation of commercial bank branches under the background of financial technology: Taking a bank as an example," Hubei University of Technology, Wuhan, 2021.
[5] Xiao Heng, "Research on the digital transformation of customer service in FD commercial bank," Yunnan University, Kunming, 2022.
[6] Zhang Liyun, "A Bank's digital transformation optimization strategy for customer service," Anhui University, Hefei, 2023.
[7] T. Yamane, *Statistics, An Introductory Analysis*, 2nd Ed., New York, NY: Harper and Row, 1967.

7 AUTHORS

Yunfei Li is with the Nanyang Country Bank, Henan, China (E-mail: dr.liyunfei@gmail.com).

Ubaldo Comite is with the University Giustino Fortunato, Benevento, Italy (E-mail: ubaldo.comite@unical.it).