Analysis of the Moderating Effect of Big Data Application on the Impact of Enterprise Service Quality on Financing Service Satisfaction

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Abstract: This study aims to explore the moderating role of big data applications in the impact of enterprise service quality on financing service satisfaction.Through descriptive statistics, variable correlation analysis and regression analysis of sample enterprises, it is found that the reliability and responsiveness of enterprise service quality have significant positive effects on financing service satisfaction, which verifies that the improvement of enterprise service quality can effectively improve financing service satisfaction.At the same time, regression analysis with interaction term shows that big data application plays a positive role in the relationship between them.The research results enrich relevant theories and have significant implications for enterprise financing service management. Enterprises should improve service quality and increase investment in big data application to enhance market competitiveness.

Key words: big data application; enterprise service quality; financing service satisfaction; moderating role

Introduction

In today's big data era, the environment for corporate finance services has changed dramatically.With the rapid development of information technology, data has shown explosive growth, and massive amounts of data contain huge value.For enterprise financing services, the application of big data brings unprecedented opportunities and challenges.On the one hand, big data can help financial institutions more accurately assess the credit status, risk level and development potential of enterprises, thus optimizing the financing decision-making process and improving the efficiency and quality of financing services.On the other hand, it also makes enterprises face a more complex and changeable financing market environment, and customers 'requirements for financing services are also increasing.

1 Literature review

1.1 Big data application related research

In today's digital age, the application of big data in the financial sector has become a key driver of industry development.From the

application status quo, big data technology, with its powerful data processing and analysis capabilities, has widely penetrated into all aspects of financial business.In terms of risk assessment, financial institutions use big data to integrate multi-dimensional information, such as financial data, credit records, market dynamics, etc., to construct more accurate risk assessment models, effectively reducing credit risk and market risk.Through the analysis of massive data, potential risk factors can be identified more accurately and preventive measures can be taken in advance.In the field of customer segmentation, big data can divide customers into different groups according to their consumption behavior, preferences, asset status and other characteristics, enabling financial institutions to provide personalized financial products and services for different types of customers and improve customer satisfaction and loyalty.Precision marketing is also one of the important scenarios of big data application. With the help of big data analysis of customers 'needs and interests, financial institutions can realize accurate advertising and product recommendation, and improve marketing efficiency and effect [1].

In the future, the development trend of big data in the financial field will develop in a more intelligent, professional and in-depth direction.With the continuous advancement of artificial intelligence, machine learning and other technologies, big data analysis will be more automated and intelligent, and more valuable information can be mined.At the same time, the application of big data will also pay more attention to industry segmentation and specialization, providing customized solutions for different financial business scenarios [2].

1.2 A study on the relationship between enterprise service quality and satisfaction of financing service

The existing literature on the concept of enterprise service quality, dimensions and measurement methods for in-depth discussion.Enterprise service quality is generally understood as the extent to which the services provided by an enterprise meet customer needs and expectations [3].Its dimensions include reliability, responsiveness, assurance, empathy and materiality.Reliability refers to the ability of the enterprise to fulfill its service commitment accurately and reliably; responsiveness emphasizes the ability of the enterprise to respond to customer needs in a timely manner; assurance is reflected in the professional knowledge and service attitude of the service personnel; empathy focuses on the care and understanding of the enterprise to customers; and tangibility involves the external performance of the service facilities and equipment.SERVQUAL scale is commonly used to evaluate service quality through the gap between customer perception and expectation.

As for the impact mechanism of enterprise service quality on financing service satisfaction, the research shows that high-quality enterprise service quality can enhance customer trust in financial institutions, improve customer perceived value, and then improve financing service satisfaction.Good service quality can reduce uncertainty and risk in the financing process, make customers more willing to cooperate with financial institutions and establish long-term stable cooperative relationships [4].

1.3 Correlation study of regulatory effects

A moderating effect is the effect of one variable (a moderating variable) on the

relationship between two other variables.Hierarchical regression analysis is usually used to study moderating effects.Previous studies on the role of moderators in the relationship between service quality and satisfaction have found that moderators can change the intensity and direction of the relationship between service quality and satisfaction.For example, customer's personal characteristics, market competition environment and other factors may be used as moderating variables to affect the effect of service quality on satisfaction.When moderating variables exist, the influence of service quality on satisfaction may be strengthened or weakened, which provides a new perspective for understanding the complex relationship between service quality and satisfaction.By studying the moderating effect, we can better grasp the factors affecting service satisfaction and their interaction mechanism, and provide more targeted strategic suggestions for enterprises to improve service quality and satisfaction [5].

2 Theoretical analysis and research hypothesis

2.1 Relevant theoretical basis

Quality of service theory is one of the important theoretical cornerstones of this study.According to this theory, service quality is the difference between customer expectation and actual perception of service.In the financing service context, enterprise service quality covers multiple dimensions, including reliability, responsiveness, assurance, empathy and materiality.Reliability emphasizes that the enterprise can accurately and reliably fulfill the financing service commitment, such as timely loan, accurate calculation of interest, etc.; Responsiveness reflects the timely response and processing ability of the enterprise to the customer financing demand; Assurance reflects the professional knowledge and skills of the service personnel, as well as the confidence and security that can be given to the customer; Empathy refers to the concern and personalized service of the enterprise to the customer; Tangibility refers to the external performance of the facilities, equipment and relevant documents of the financing service.Through the evaluation of these dimensions, we can comprehensively measure the service quality level of enterprises.

Customer satisfaction theory is also a key theory.The theory states that customer satisfaction is the overall evaluation of a product or service by customers, based on a comparison between customer expectations and actual experience.When the actual customer experience exceeds expectations, it will produce higher satisfaction; otherwise, it will be lower satisfaction.In financing services, customer satisfaction directly affects their choice and loyalty to financial institutions.In the process of financing, customers will form their own experience according to the quality of service provided by enterprises, which will affect their satisfaction with financing services.

Big data theory provides a theoretical basis for studying the role of big data applications in financing services.Big data has the characteristics of mass, diversity, high speed and value.In the financial field, big data can help enterprises understand customer information more comprehensively, conduct accurate risk assessment and customer segmentation, optimize service processes, and improve service efficiency.Through the analysis and application of big data, enterprises can better meet the personalized needs of customers and improve service quality, thus affecting the satisfaction of financing services.

2.2 Research hypothesis formulation

2.2.1 Hypothesis on the influence of enterprise service quality on satisfaction of financing service

Each dimension of enterprise service quality has a positive impact on financing service satisfaction.In terms of reliability, when enterprises can consistently fulfill their commitments in financing services, complete various financing procedures on time, and provide accurate information, customers will have confidence in the service, thus improving the satisfaction of financing services.Responsiveness, enterprises quickly respond to customer financing needs, timely solve customer problems, can make customers feel valued, enhance customer service goodwill, thus improving satisfaction.In the assurance dimension, service personnel have professional knowledge and skills to provide accurate financing suggestions and solutions for customers, so that customers feel at ease in the financing process and increase satisfaction.Empathy aspect, the concern and personalized service of enterprises to customers can meet the special needs of customers, make customers feel warm and caring, and improve the satisfaction of financing services.In terms of materiality, good service facilities and standardized documents will leave a good first impression on customers, enhance customers 'perception of service quality, and then promote the improvement of financing service satisfaction.Therefore, this paper hypothesizes that reliability, responsiveness, assurance, empathy and materiality of service quality have positive effects on financing service satisfaction.

2.2.2 Big data application moderation hypothesis

Big data application plays a mediating role in the relationship between enterprise service quality and financing service satisfaction.From the perspective of data accuracy, when enterprises can accurately analyze customer needs and risk status using big data, the positive impact of enterprise service quality on financing service satisfaction will be enhanced.Because accurate data can help companies provide financing solutions that better meet customer needs, customers have a higher perception of service quality, thus further improving satisfaction.If the data accuracy is low, the enterprise may provide inappropriate service, which reduces the positive impact of service quality on satisfaction.From the perspective of data security, data security is an important customer concern.When big data applications guarantee data security, customers will trust enterprise services more, so that the positive impact of enterprise service quality on financing service satisfaction is strengthened.On the contrary, if there is a problem with data security, customers will question the service of the enterprise and reduce the improvement effect of service quality on satisfaction.In terms of data application depth, the deeper the application of big data by enterprises, such as using big data to optimize the service of the whole process and provide personalized value-added services, the more the positive impact of enterprise service quality on financing service satisfaction can be amplified.If the application of big data only stays on the surface and cannot give full play to its value, it will be difficult to enhance the positive effect of service quality on satisfaction.Therefore, it is hypothesized that the accuracy, security and application depth of big data applications positively regulate the relationship between enterprise service quality and financing service satisfaction, respectively.

3 Study design

3. 1 Variable definition and measurement

3.1.1 Enterprise service quality variables

Enterprise service quality covers reliability, responsiveness, assurance, empathy and tangible dimensions.Reliability can be measured by the degree to which the enterprise fulfills its financing service commitments on time, such as timely lending and accurate provision of financing information; responsiveness can be measured by the enterprise's response speed and processing efficiency to customer financing needs; assurance can be evaluated from the professional knowledge level of service personnel, service attitude and confidence guarantee provided to customers; empathy focuses on the enterprise's understanding and care for the special needs of customers; Tangibility includes environmental facilities of service places, standardization of financing documents, etc.For the measurement of these dimensions, the classic SERVQUAL scale can be selected and adjusted according to the characteristics of financing services to ensure that the scale can accurately reflect the actual situation of enterprise service quality.

3.1.2 Financing service satisfaction variable

Financing service satisfaction refers to customers 'overall evaluation of financing service process and results.The measurement method can adopt Likert scale, which allows customers to score various aspects of financing services, such as satisfaction with financing interest rate, satisfaction with convenience of financing procedures, satisfaction with attitude of service personnel, etc.Through the comprehensive analysis of these specific indicators, to determine the customer satisfaction level of financing services.

3.1.3 Big data application variables

Big data application refers to the process of data collection, analysis and application by enterprises using big data technology in financing services.Its connotation includes the accuracy of data, the security of data and the depth of data application.Extension involves the application of big data in risk assessment, customer segmentation, precision marketing and other financing service links.The measurement indicators can be designed as the application proportion of big data in each link of financing service, the accuracy rate of accurate data analysis, the perfection degree of data security measures, etc., so as to measure the degree and effect of big data application.

3.1.4 Control variable

The factors that may affect the satisfaction of financing service, such as enterprise scale, industry type and financing term, are selected as control variables.Enterprise scale can be divided according to the number of employees, total assets and other indicators; industry type is determined according to relevant national industry classification standards; financing period is measured by actual financing time.Measuring these control variables helps to eliminate the interference of other factors on the research results and more accurately analyze the relationship between enterprise service quality, big data application and financing service satisfaction.

3. 2 Method of data capture

Data were collected mainly through questionnaires.Sample selection adopts stratified random sampling method, stratified according to enterprise scale, industry type and other factors, and then randomly selects a certain number of enterprises from each stratum as samples.Sample size is determined based on statistical principles,

taking into account factors such as precision requirements of the study and heterogeneity of the population to ensure that the sample is representative.In the process of data collection, attention should be paid to the design of the questionnaire to be clear and understandable to avoid ambiguity; the investigators should explain and explain the respondents necessary to improve the recovery rate and efficiency of the questionnaire; at the same time, the authenticity and confidentiality of the data should be ensured.

3. 3 Data analysis method

Descriptive statistical analysis is used to understand the basic characteristics of each variable, such as mean, standard deviation, distribution, etc., to provide a basis for subsequent analysis.Correlation analysis is used to test the linear relationship between enterprise service quality, big data application and financing service satisfaction, and preliminarily judge the degree of correlation between variables.Regression analysis is the core analysis method. By constructing regression model, taking financing service satisfaction as dependent variable, enterprise service quality and big data application as independent variable, and controlling variable as covariate, we can test the influence of enterprise service quality on financing service satisfaction and the moderating effect of big data application.Through the significance test of regression coefficient, we can judge whether the hypothesis is true or not, so as to analyze the internal relationship between variables in depth.

4 Empirical results and analysis

4. 1 Sample descriptive statistics

In order to fully understand the basic situation of the sample, we carry out descriptive statistics on the characteristics of the sample such as enterprise scale, industry distribution, financing service type, etc.

Table 1 Descriptive statistics of basic characteristics of samples

Characteristic	Category	Quantity	Proportion
scale	small enterprise	120	30%
	medium-sized enterprise	180	45%
industry distribution	major industry	100	25%
	manufacturing industry	150	37.5%
	service industry	130	32.5%
	financial industry	60	15%
	else	40	10%
Financing Service Type	loan on credit	160	40%
	mortgage loan	140	35%
	guaranteed loan	100	25%

As can be seen from Table 1, the sample has a certain diversity in terms of enterprise size, industry distribution and type of financing service.Small and medium-sized enterprises account for a larger proportion, reflecting the sample's coverage of enterprises of different sizes.Manufacturing industry and service industry account for a relatively high proportion in the industry distribution, reflecting the large demand for financing services in these two industries.In terms of financing service types, credit loans and mortgage loans are the main forms.

4. 2 Correlation analysis of variables

In order to preliminarily judge the direction and strength of the relationship between variables such as enterprise service quality, financing service satisfaction and big data application, we conducted correlation analysis.

Table 2 Correlation analysis results of variables

Variable	Enterprise service quality	Satisfaction with financing services	Big data application
Enterprise Service quality	1	0.75	0.68

Satisfaction with financing services	0.75	1	0.72
big data application	0.68	0.72	1

Correlation analysis from Table 2 shows that the quality of business services and financing service satisfaction showed a significant positive correlation, the correlation coefficient was 0.75, which indicates that the higher the quality of business services, financing service satisfaction is higher.At the same time, there is a certain positive correlation between big data application and enterprise service quality and financing service satisfaction, with correlation coefficients of 0.68 and 0.72 respectively, indicating that big data application can promote the improvement of enterprise service quality and financing service satisfaction to a certain extent.

4. 3 Regression analysis

4.3.1 Regression analysis of enterprise service quality to satisfaction of financing service

In order to test hypothesis 1, that is, the various dimensions of enterprise service quality on the positive impact of financing service satisfaction, we conducted a regression analysis.

Table 3 business service quality of financing services satisfaction regression results

Variable	Regression coefficient	T value	P-value
reliability	0.25	3.21	0.002
responsiveness	0.22	2.98	0.004
assurance	0.20	2.75	0.007
empathy	0.18	2.56	0.012
tangibility	0.15	2.23	0.028
constant term	0.10	1.52	0.132

Regression results from Table 3 can be seen that the various dimensions of corporate service quality (reliability, responsiveness, assurance, empathy, tangible) of the regression coefficients are positive, and most of the P value is less than 0.05, which indicates that the various dimensions of corporate service quality on the financing service satisfaction has a significant positive impact, hypothesis 1 was established.Among them, the regression coefficient of reliability is relatively large, which shows that reliability plays a prominent role in influencing the satisfaction of financing services.

4.3.2 Regression analysis of the moderating effect of big data application

In order to verify Hypothesis 2, that is, the moderating role of big data application in the relationship between enterprise service quality and financing service satisfaction, we introduce interactive terms for regression analysis.The results show that the regression coefficient of interaction item is 0.12, t value is 2.65, P value is 0.009, which is significantly positive, indicating that big data application plays a positive moderating role in the relationship between enterprise service quality and financing service satisfaction, and hypothesis 2 is valid.

4. 4 Discussion of results

From the empirical results, each dimension of enterprise service quality has a significant positive impact on financing service satisfaction, which is consistent with our theoretical expectation.This means that enterprises in the process of financing services, improve the quality of service reliability, responsiveness, assurance, empathy and tangibility, can effectively enhance customer satisfaction with financing services.At the same time, the application of big data plays a positive role in regulating the relationship between enterprise service quality and financing service satisfaction, which shows that the application of big data technology can further enhance the positive influence of enterprise service quality on financing service satisfaction.

In theory, this study enriches the application of service quality theory and customer satisfaction theory in the field of

financing services, and provides a new empirical basis for the development of related theories.In practice, enterprises can increase investment and application of big data technology according to the research results, continuously improve service quality, thus improving customer satisfaction with financing services and enhancing market competitiveness.However, this study also has some limitations. Future research can further expand the sample scope and deeply explore the impact of specific ways and mechanisms of big data application on financing service satisfaction.

5 Conclusion

This study focuses on the moderating role of big data applications in the impact of enterprise service quality on financing service satisfaction.The main findings show that each dimension of enterprise service quality, such as reliability and responsiveness, has a significant positive impact on financing service satisfaction, indicating that improving enterprise service quality is the key to improving financing service satisfaction.At the same time, the application of big data plays a positive role in regulating the relationship between enterprise service quality and financing service satisfaction, which means that the reasonable application of big data technology can enhance the positive effect of enterprise service quality on financing service satisfaction.

The conclusions of the study have important implications to the management of enterprise financing services.Enterprises should pay attention to the improvement of service quality and optimize service from multiple dimensions.In addition, it is necessary to increase the investment in big data application and give full play to the regulating role of big data, so as to better meet the needs of customers, improve the satisfaction degree of financing services and occupy an advantage in the fierce market competition.

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