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The Influence of Enterprise Resource Planning (ESP) System on Customer Satisfaction

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Abstract

Purpose: This study investigates the influence of Enterprise Resource Planning (ERP) systems on customer satisfaction in small-sized companies in Xinyang City, China. The research aims to identify factors affecting customer satisfaction towards ERP systems and provide suggestions for optimizing the system to improve user experience and overall competitiveness. Four hypotheses are proposed, examining the impact of information quality, system quality, service quality, and perceived usefulness on customer satisfaction. **Research design, data and methodology:** The research employs a questionnaire survey targeting 393 employees from 100 small companies in Xinyang City, with participants having at least one year of experience using ERP software. Multiple regression analysis is used to test the hypotheses and analyze the data collected from the questionnaires. **Results:** The results proved that system quality, service quality, and perceived usefulness have a statistically significant positive causal relationship with customer satisfaction while information quality does not have causal relationship. **Conclusions:** The findings of this study will contribute to understanding the role of ERP systems in enhancing customer satisfaction and provide valuable insights for software developers and small enterprises looking to optimize their ERP implementation. Future research can continue to build upon current findings, contributing to a more comprehensive and understanding of these important areas in the bigger scales of industry.

Keywords: Customer Satisfaction, Enterprise Resource Planning, Perceived Usefulness, Service Quality, System Quality

1. Introduction

With the continuous development of information technology and the improvement of enterprise management needs, ERP (Enterprise Resource Planning) system has been widely used in the world. At present, the ERP market shows that most enterprises realize the importance of ERP systems, the market has a large number of ERP suppliers, from international well-known brands such as SAP, Oracle, etc., to various small and medium-sized local manufacturers, the competition is becoming rapidly high.

In order to meet the individual needs of enterprise customers, ERP manufacturers have launched innovative products based on cloud computing, big data, artificial intelligence and other cutting-edge technologies to improve the flexibility, real-time and intelligent degree of the system.

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In order to adapt to enterprises of different sizes and industries, ERP vendors provide a variety of service models, including traditional purchase, subscription and hybrid models, to meet the different needs of enterprises.

According to the characteristics and needs of different industries, ERP manufacturers have launched a series of industry solutions to help enterprises achieve fine management and intelligent decision-making. In recent years, with the rapid development of China's economy, more and more small and medium-sized enterprises began to pay attention to and introduce ERP systems. However, compared with large enterprises, there are still some problems and challenges in the application of ERP in SMEs. Some SMEs' understanding of ERP system still remains in the traditional financial, production and other management levels, and fail to fully understand its value in overall operation optimization and collaborative innovation.

Due to the limitation of resources and management level, SMEs may face high risks during the implementation of ERP projects, such as inaccurate demand analysis and inadequate organizational change. Compared with large enterprises, small and medium-sized enterprises often face greater cost pressure when investing in ERP projects, including software purchases, hardware equipment, personnel training and other expenditures. Due to the differences in domestic and foreign market environments, SMEs have more obvious localization needs for ERP systems, such as the adaptability of tax policies and industry standards. Nevertheless, with the popularity of technologies such as cloud computing, more and more SMEs have begun to try to introduce lightweight, low-cost ERP solutions to enhance their competitiveness.so we want to know What are the factors affecting Customer Satisfaction toward ERP systems in small-sized companies in Xinyang City, China.

Enterprise Resource Planning (ERP) systems are configurable information system (IS) packages that integrate several business functions. A typical ERP system may combine inventory data with financial, sales, and human resources data, allowing organizations to price products, produce financial statements, and manage human, material, and financial resources effectively (Markus et al., 2000).

The advent of information systems has given rise to various dimensions and options for Optimizing to be optimizing and providing solutions to the challenges in the business environment. In order for managers and organizations to outperform and survive their competitors, the key elements of the organization, including the business process, structures, human resources, financial and non-financial resources, etc., need to be managed as effectively as possible. According to Bhirud and Revatkar (2016), enterprise resource planning (ERP) systems provide that organizations need to optimize their internal value chain by providing a one-time entry form of information at the point where it is created, making it easily accessible to multiple functional areas within the organization. The use of ERP software has become increasingly common in today's businesses (Amade et al., 2022).

With the increasing popularity of information technology and the trend of adopting computerized operations in various commercial transactions, more and more companies have introduced information systems to assist business operations (Edwards, 2021).

In facing the ever-changing globalization of business, increased competition, and rapid growth of information technology, enterprises must adopt enterprise resource planning (ERP) systems equipped with software and hardware facilities to meet the technical information requirements of enterprises as well as the desire of administrators to strengthen corporate competitiveness.

At present, the meaning of ERP in China has been expanded to include all kinds of software used in enterprises and has been included in the scope of ERP. It is a new generation of enterprise information system based on 5G optical network era. It is mainly used to enhance and improve the business, office, and production processes of enterprises to improve their core competitiveness.

1.1 Research Questions

To address the problem statement and obtain a comprehensive understanding of the factors affecting customer satisfaction when implementing ERP systems, the following research questions have been investigated.

1. How does information quality in ERP systems influence customer satisfaction in small-sized companies?

2. How does system quality influence customer satisfaction when implementing ERP systems in small-sized enterprises?

3. How does service quality provided by ERP vendors influence customer satisfaction in small-sized companies?

4. How does perceived usefulness influence customer satisfaction towards ERP systems in small-sized enterprises?

1.2 Research Objectives

Based on the research questions, the objectives of this study are as follows.

1. To examine the influence of information quality in ERP systems on customer satisfaction in small-sized companies.

2. To determine the influence of system quality on customer satisfaction when implementing ERP systems in small-sized enterprises.

3. To identify the influence of service quality provided by ERP vendors on customer satisfaction in small-sized companies.

4. To examine the influence of perceived usefulness on customer satisfaction towards ERP systems in small-sized enterprises.

2. Literature Review

2.1 Technology Information: The Influence of ERP Systems on Customer Satisfaction

The background of this study revolves around the implementation and utilization of Enterprise Resource Planning (ERP) systems in small-sized companies, particularly in Xinyang City, China. ERP systems are essential tools that integrate various business functions, such as inventory management, financial data, sales, and human resources, enabling organizations to manage their resources effectively and enhance competitiveness. With the rapid development of information technology and the increasing adoption of computerized operations, more companies are incorporating ERP systems into their daily operations.

In the context of China's "Made in China 2025" initiative, ERP systems play a crucial role in promoting intelligent manufacturing and upgrading the industry. However, the effectiveness of these systems in improving customer satisfaction remains an area of interest for researchers and practitioners. This study aims to investigate the factors affecting customer satisfaction towards ERP systems in small-sized companies in Xinyang City and provide insights for optimizing the system implementation and application. By understanding the current situation and challenges faced by these companies, this research would contribute valuable knowledge to the field and offer practical recommendations for software developers and small enterprises looking to improve their ERP systems and customer satisfaction.

Building upon the background of the study and technology information, the key problem this research aims to address is the identification of factors affecting customer satisfaction towards ERP systems in small-sized companies in Xinyang City, China. Despite the increasing adoption of ERP systems in various industries, there is limited understanding of how these systems impact customer satisfaction, particularly in the context of small-sized enterprises.

The challenge lies in determining the specific aspects of ERP systems that contribute to customer satisfaction, such as information quality, system quality, service quality, and perceived usefulness. By identifying these factors, the study will provide valuable insights for software developers and small enterprises looking to optimize their ERP implementation and application, ultimately enhancing customer satisfaction and overall competitiveness.

2.2 Theories Related to the Variables

This section presents the theories and literature related to the variables of the study, including information quality, system quality, service quality, and perceived usefulness.

2.2.1 Information Quality

Information quality refers to the accuracy, relevance, completeness, and timeliness of the data provided by an information system. The DeLone and McLean (1992) Model of Information Systems Success posits that information quality is a critical factor affecting user satisfaction and system success. In addition, Wang and Strong (1996) identified dimensions of information quality, including accuracy, reliability, and accessibility, which have been used in subsequent studies to measure its impact on user satisfaction. In previous studies, information quality has been measured using questionnaires with various dimensions, such as data accuracy, completeness, and relevance (DeLone & McLean, 2003; Wang & Strong, 1996).

2.2.2 System Quality

System quality refers to the technical performance and usability of an information system, encompassing aspects such as response time, reliability, and ease of use. The DeLone and McLean (1992) also highlights system quality as a key determinant of user satisfaction and information system success. Seddon (1997) developed a comprehensive framework for assessing system quality, which includes factors like functionality, reliability, and flexibility. Therefore, the system quality has been measured in prior research through surveys addressing aspects like system reliability, ease of use, and responsiveness (DeLone & McLean, 2003; Seddon, 1997).

2.2.3 Service Quality

Service quality refers to the support and assistance provided by the vendors or service providers of an information system, including aspects like responsiveness, empathy, and assurance. The service quality (SERVQUAL) model by Parasuraman et al. (1985) is a widely used framework for assessing service quality in various industries, including information systems. Pitt et al. (1995) adapted the SERVQUAL model to evaluate service quality in the context of information systems, highlighting dimensions like reliability, responsiveness, and assurance. Therefore, service quality has been measured using questionnaires based on the SERVQUAL model addressing dimensions including tangible, responsiveness, empathy, and assurance (Parasuraman et al., 1985; Pitt et al., 1995).

2.2.4 Perceived Usefulness

Perceived usefulness refers to the extent to which users believe that an information system will enhance their job performance or provide value. The Technology Acceptance Model (TAM) by Davis (1989) posits perceived usefulness as a critical determinant of user acceptance and adoption of information systems. Venkatesh and Davis (2000) extended TAM to develop the Unified Theory of Acceptance and Use of Technology (UTAUT), which further emphasizes the role of perceived usefulness in technology adoption. Therefore, the perceived usefulness has been measured in previous studies using questionnaires addressing users' beliefs about the potential benefits and value of the system or technology adoption (Davis, 1989; Venkatesh & Davis, 2000).

2.2.5 Customer Satisfaction

Customer satisfaction refers to the degree to which a customer's expectations are met or exceeded by a product or service, resulting in a positive evaluation and emotional response. The Expectation-Confirmation Theory (ECT) by Oliver (1980) posits that customer satisfaction is influenced by the gap between customers' initial expectations and their perceptions of the actual performance of a product or service. Fornell et al. (1996) developed the American Customer Satisfaction Index (ACSI), a widely used model for measuring customer satisfaction across various industries, including information systems. Therefore, customer satisfaction has been measured in previous studies using questionnaires addressing aspects, which are overall satisfaction, the extent to which expectations were met, and the likelihood of repurchase or recommendation (Fornell et al., 1996; Oliver, 1980).

2.3 Hypotheses

With support from the previous research and related literature, the hypothesis of the research has been stated as follows.

H_0: Information quality, System quality, Service quality, and Perceived usefulness do not statistically significantly influence customers' satisfaction towards ERP systems in small-sized enterprises.

H_a: Information quality, System quality, Service quality, and Perceived usefulness statistically significantly influence customers' satisfaction towards ERP systems in small-sized enterprises.

3. Research Methods and Materials

3.1 Research Design

This study adopts a survey research design, using a questionnaire as the primary instrument to collect data from the target population. The research aims to investigate the causal relationship between Information Quality, System Quality, Service Quality, Perceived Usefulness, and Customer Satisfaction among ERP software operators in small companies. The survey research design is suitable for this study as it allows the researcher to gather data from participants efficiently and effectively.

The research design involves the administration of a questionnaire to gather quantitative data from the target population. The questionnaire is designed to assess the impact of Information Quality, System Quality, Service Quality, and Perceived Usefulness on Customer Satisfaction. The collected data will be analyzed using multiple linear regression models to test the research hypotheses.

3.2 Population and Sample

3.2.1 Population Characteristics

The population for this research consists of ERP software operators working in 100 small-sized enterprises in Xinyang City, Henan Province, Greater China. The necessary characteristics required for the study include age, gender, occupation, and experience with ERP operation, as these factors may influence the research outcomes.

3.2.2 Sample Size

To ensure an adequate sample size for the study, the researcher utilizes purposive sampling. A total of 393 ERP software operators from the 100 small-sized enterprises are selected for the study. This method ensures that the sample size is representative and sufficient for the study's statistical analysis.

3.2.3 Sampling Technique

The study employs purposive sampling, which involves selecting participants based on specific criteria relevant to the research objectives. In this case, each company randomly selects 3-4 ERP operators for a questionnaire survey. This method ensures that the sample is representative of the population and meets the necessary characteristics required for the study.

3.3 Research Instruments

The primary research instrument utilized in this study is a questionnaire. The questionnaire includes sections on Information Quality, System Quality, Service Quality, Perceived Usefulness, and Customer Satisfaction. The items in each section are adapted from previous literature to ensure the validity and reliability of the instrument.

3.3.1 Questionnaire

The questionnaire comprises multiple sections, including demographic information and variables related to Information Quality, System Quality, Service Quality, Perceived Usefulness, and Customer Satisfaction. The five-level Likert scale ranging from Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1 has been employed to measure participants' agreement level on each statement.

The questionnaire items have been adapted from previously validated questionnaires.

The Information quality has 4 items, System quality includes 4 items, Service quality includes 4 items, and Customer satisfaction includes 5 items adapted from Kuo et al. (2018). The Perceived usefulness has 4 items, which were adopted from Davis (1989). The total statements are 21 items.

3.3.2 Questionnaire Translation

The questionnaire items were from the English language research; however, the samples are Chinese native speakers. Therefore, to avoid the language barrier, the questionnaire items were translated into Chinese by the experts. The translators were senior finance and economics teachers with experience of studying abroad in Europe and America who teach ERP software operation at the School of Finance and Economics of Xinyang Agriculture and Forestry University.

3.4 Data Collection Procedures

The data collection procedure involves creating the questionnaire based on the research objectives and distributing it to the sample population.

The researcher used a website named Wenjuanxing, which is widely used in China, to distribute the questionnaire. This website can generate WeChat applets for data collection, and the collected data can be exported to file formats supporting various research and statistical software, such as SPSS, to facilitate later statistical operations.

4. Results and Discussion

In order to ensure the reliability of the questionnaire items, the Cronbach's alpha has been calculated for the internal consistency reliability. A total of 30 people were invited to participate in the pilot study to test the reliability

of the instrument. If the Alpha value is less than 0.6, it is considered not acceptable, while the alpha value is over 0.6, the result of the questionnaire is acceptable (Hair et al., 2003).

The Cronbach's alpha of each variable of the research was higher than 0.6, therefore, it confirmed the reliability as shown in table 1.

Table 1: Cronbach's alpha values of each variable (n=30)

Variables	Number of Items	Cronbach's Alpha
Information quality (IQ)	4	0.813
System quality (SQ)	4	0.836
Service quality (SEQ)	4	0.689
Perceived Usefulness (PU)	4	0.854
Customer Satisfaction (CS)	5	0.690

4.2 Demographic Information

Among the 393 ERP operators from small and medium-sized enterprises who completed the questionnaire, there were 123 male operators, accounting for 31.3%, and 270 female operators, accounting for 68.7% of the total.

Fourteen of them aged under 24 years old, accounting for 3.56%; 142 individuals aged between 24-35 years old, accounting for 36.13%; 162 individuals aged between 36-50 years old, accounting for 41.22%; and 75 individuals aged over 50 years old, accounting for 19.08%.

Regarding income, there were 42 individuals earning less than 3,000 RMB, accounting for 10.69%; 254 individuals earning between 3,000-6,000 RMB, accounting for 64.63%; 61 individuals earning between 6,000-9,000 RMB, accounting for 15.52%; 20 individuals earning between 9,000-12,000 RMB, accounting for 5.09%; and 16 individuals earning more than 12,000 RMB, accounting for 4.07%. The details are shown in table 2.

Table 2: Demographic Information of the Samples (n=393)

Variables	Category	Frequency	Percentage
Gender	Male	123	31.3%
	Female	270	68.7%
Total		**393**	**100%**
Age	Under 24 Years	14	3.56%
	24-35 Years	142	36.13%
	36-50 Years	162	41.22%
	Over 50 Years	75	19.08%
Income	Less than 3,000 RMB	42	10.69%
	3,000-6,000 RMB	254	64.63%
	6,000-9,000 RMB	61	15.52%
	9,000-12,000 RMB	20	5.09%
	More than 12,000 RMB	16	4.07%
Total		**393**	**100%**

4.3 Descriptive Statistics of the Variables

In this section, the descriptive statistics for all the variables included in the study has been analyzed by applying mean and standard deviation.

4.3.1 Arbitrary Level of Questionnaire

In the study, the 5 Level Likert Scale questionnaire (Agreement) has been employed to collect samples' attitudes toward each variable measured. To interpret the data obtained, the arbitrary level from Pimentel (2010) as shown in table 3 has been utilized to interpret the mean value of each variable.

Table 3: Arbitrary Level of the Mean Value Interpretation

Arbitrary Level	Interpretation
1.00 - 1.79	Strongly Disagree
1.80 - 2.59	Disagree
2.60 - 3.39	Neutral
3.40 - 4.19	Agree
4.20 - 5.00	Strongly Agree

4.3.2 Descriptive Statistics of Information Quality

Table 4 shows the participants' opinions regarding the attribute of information quality associated with ERP systems. The total mean was 4.36, which, when compared to the arbitrary level, represents 'Strongly agree.' The participants agreed that the information provided by the ERP system (IQ1) had a mean score of 4.37 and a standard deviation of 0.738. They also agreed that the information was accurate (IQ2) with a mean score of 4.42 and a standard deviation of 0.630. Furthermore, they believed that the information was relevant (IQ3), with a mean score of 4.29 and a standard deviation of 0.561. Lastly, they agreed that the information was complete (IQ4), with a mean score of 4.36 and a standard deviation of 0.664. On average, the participants strongly agree that the ERP provided the information quality. It can be interpreted that participants

perceived that ERP systems provide good information quality.

Table 4: Descriptive Statistics of Information Quality

	Item Statement	Mean	SD	Interpretation
1	I can query information that I need from our ERP.	4.37	.738	Strongly Agree
2	Information provided by our ERP is sufficiently detailed.	4.42	.630	Strongly Agree
3	Information provided by our ERP is easy to read.	4.29	.561	Strongly Agree
4	Information provided by our ERP is latest.	4.36	.664	Strongly Agree
	Total	**4.36**	**.561**	**Strongly Agree**

4.3.3 Descriptive Statistics of System Quality

Table 5 presents the participants' opinions regarding the attribute of system quality associated with ERP systems. The total mean for system quality was calculated by averaging the mean scores of each item.

The participants agreed that the responsiveness of the ERP vendor (SQ1) had a mean score of 4.42 and a standard deviation of 0.597. They also strongly agreed that the reliability of the ERP system (SQ2) had a mean score of 4.41 and a standard deviation of 0.613. Furthermore, they believed that the assurance provided by the ERP vendor (SQ3) had a mean score of 4.45 and a standard deviation of 0.583. Lastly, they agreed that the empathy shown by the ERP vendor (SQ4) had a mean score of 4.48 and a standard deviation of 0.558. Therefore, on average, the participants express their opinions towards the system quality of the ERP at the strongly agree level. It can be interpreted that participants perceived that ERP systems has high quality.

Table 5: Descriptive Statistics of System Quality

	Item Statement	Mean	SD	Interpretation
1	Our ERP performs reliably for my work.	4.42	.597	Strongly Agree
2	The responsive time of our ERP is quick.	4.41	.613	Strongly Agree
3	Our ERP provides necessary features and functions for my work.	4.45	.583	Strongly Agree
4	Our ERP provides runs accurately.	4.48	.558	Strongly Agree
	Total	**4.44**	**.558**	**Strongly Agree**

4.3.4 Descriptive Statistics of Service Quality

Table 6 presents the participants' opinions regarding the attribute of service quality associated with ERP systems. The total mean for service quality was calculated by averaging the mean scores of each item.

The participants Strongly agreed that the system's ease of use (SEQ1) had a mean score of 4.62 and a standard deviation of 0.558. They also strongly agreed that the system's flexibility (SEQ2) had a mean score of 4.56 and a standard deviation of 0.629. Furthermore, they believed that the system's reliability (SEQ3) had a mean score of 4.51 and a standard deviation of 0.627. Lastly, they Strongly agreed that the system's integration (SEQ4) had a mean score of 4.69 and a standard deviation of 0.505. On average, the participants strongly agree to the service quality of the ERP systems. It can be interpreted that participants perceived that the service quality of ERP systems is good.

Table 6: Descriptive Statistics of Service Quality

	Item Statement	Mean	SD	Interpretation
1	The service provided by software company for ERP is sufficient.	4.62	.558	Strongly Agree
2	Our software company is available for assistance with difficulties when using a ERP.	4.56	.629	Strongly Agree
3	The training for ERP usage is sufficient in software company.	4.51	.627	Strongly Agree
4	When encountering problems in using a ERP, I can also find someone to help me.	4.69	.505	Strongly Agree
	Total	**4.59**	**.505**	**Strongly Agree**

4.3.5 Descriptive Statistics of Perceived Usefulness

Table 7 presents the participants' opinions regarding the attribute of perceived usefulness associated with ERP systems. The total mean for perceived usefulness was calculated by averaging the mean scores of each item.

The participants agreed that using the system improves their job performance (PU1) with a mean score of 4.61 and a standard deviation of 0.571. They also strongly agreed that using the system increases their productivity (PU2) with a mean score of 4.55 and a standard deviation of 0.621. Furthermore, they believed that using the system enhances their effectiveness on the job (PU3) with a mean score of 4.52 and a standard deviation of 0.643. Lastly, they Strongly agreed that they find the system useful in their job (PU4) with a mean score of 4.57 and a standard deviation of 0.572. On average, the participants showed their opinions towards

the perceived usefulness of the ERP systems at the strongly agree level. It can be interpreted that participants perceived that ERP systems are useful.

Table 7: Descriptive Statistics of Perceived Usefulness

	Item Statement	Mean	SD	Interpretation
1	Using ERP enhances my work effectiveness.	4.61	.571	Strongly Agree
2	Using ERP can improve my work performance.	4.55	.621	Strongly Agree
3	Using ERP gives me greater control over my work.	4.52	.643	Strongly Agree
4	I find ERP to be useful in my work	4.57	.572	Strongly Agree
	Total	**4.56**	**.571**	**Strongly Agree**

4.3.6 Descriptive Statistics of Customer Satisfaction

Table 8 presents the participants' opinions regarding the attribute of customer satisfaction associated with ERP systems. The total mean for customer satisfaction was calculated by averaging the mean scores of each item.

The participants agreed that they were satisfied with the system's performance (CS1) with a mean score of 4.49 and a standard deviation of 0.631. They also strongly agreed that they were satisfied with the information provided by the system (CS2) with a mean score of 4.55 and a standard deviation of 0.592. Furthermore, they believed that they were satisfied with the service provided by the ERP vendor (CS3) with a mean score of 4.43 and a standard deviation of 0.667. They also strongly agreed that they were satisfied with the overall usefulness of the system (CS4) with a mean score of 4.40 and a standard deviation of 0.701. Lastly, they expressed their overall satisfaction with the ERP system (CS5) with a mean score of 4.52 and a standard deviation of 0.682. Overall, participants show their high satisfaction level towards the ERP systems.

Table 8: Descriptive Statistics of Customer Satisfaction

	Item Statement	Mean	SD	Interpretation
1	I am satisfied with our ERP.	4.49	.631	Strongly Agree
2	I am pleased with using our ERP.	4.55	.592	Strongly Agree
3	I found it enjoyable to use our ERP.	4.43	.667	Strongly Agree
4	I have a favorable experience of using our ERP.	4.40	.701	Strongly Agree
5	I have a positive attitude toward using our ERP for work.	4.52	.682	Strongly Agree
	Total	**4.478**	**.592**	**Strongly Agree**

4.4 Hypothesis Testing

A multiple linear regression analysis was conducted to test if independent variables—Information Quality (IQ), System Quality (SQ), Service Quality (SEQ) and Perceived Usefulness (PU) have a significant influence on customers' satisfaction towards ERP systems in small-sized enterprises.

Therefore, the hypotheses are as follows.

H_0: Information quality, System quality, Service quality, and Perceived usefulness do not statistically significantly influence customers' satisfaction towards ERP systems in small-sized enterprises.

H_a: Information quality, System quality, Service quality, and Perceived usefulness statistically significantly influence customers' satisfaction towards ERP systems in small-sized enterprises.

Table 9: Model Fit Measures

Model	R	R^2	Adjusted R^2	Overall Model Test			
				F	df1	df2	p
1	0.901	0.812	0.810	419	4	388	<.001

Table 9 shows the multiple linear regression model. It is shown that the linear combination of independent variables was statistically significant related to the dependent variable F (4, 388) = 419, p = <.001). The four variables combined relationship was .810 indicating that approximately 81% of the variance can be accounted for by the linear combination of independent variables.

Table 10: Model Coefficients

Construct	β	t	p
IQ	0.0567	1.27	0.205
SQ	0.2836	5.29	<.001
SEQ	0.1549	3.40	<.001
PU	0.5479	12.57	< .001

Table 10 shows the relative strength of the independent variables on the dependent variable. Three of the indices were statistically significant. The SQ was accounted for a significant portion of the variance, and it was statistically significant at $p < .001$ with the β value of .2836. The SEQ and PU were also statistically significant at $p < .001$ with the

β values of .1549 and .5479 respectively. However, the test also found that IQ (β = 0.0567, p = 0.205) did not significantly influence the dependent variable.

The formula for the model of the independent variables towards the dependent variable is as follows.

$\hat{Y} = .0567X_1 + .2836X_2 + .1549X_3 + .5479X_4$

5. Conclusions

5.1 Answers to the Research Questions

5.1.1 How does information quality in ERP systems influence customer satisfaction in small-sized companies?

Based on the results of the multiple linear regression analysis, information quality (IQ) has a positive estimate coefficient of 0.0567, suggesting that better information quality in ERP systems could potentially increase customer satisfaction in small-sized companies. However, the p-value is 0.205 which is greater than the standard significance level of 0.05. This implies that the relationship between information quality and customer satisfaction is not statistically significant. Therefore, while the data suggests a positive relationship, it does not support the alternative hypothesis that information quality significantly influences customer satisfaction.

5.1.2 How does system quality influence customer satisfaction when implementing ERP systems in small-sized enterprises?

System quality (SQ) has a positive estimate coefficient of 0.2836, indicating that higher system quality is associated with increased customer satisfaction. The p-value is less than 0.001, demonstrating a statistically significant relationship between system quality and customer satisfaction. This aligns with previous literature discussed confirming the importance of system quality in successful ERP implementation and its impact on customer satisfaction.

5.1.3 How does service quality provided by ERP vendors influence customer satisfaction in small-sized companies?

The service quality (SEQ) also shows a positive estimate coefficient of 0.1549. The p-value is less than 0.001, implying a statistically significant relationship between service quality and customer satisfaction. This result is consistent with previous research discussed, reinforcing the notion that the quality of services provided by ERP vendors plays a crucial role in determining customer satisfaction.

5.1.4 How does perceived usefulness influence customers' satisfaction towards ERP systems in small-sized enterprises?

Perceived usefulness (PU) has the highest estimate coefficient among the predictors at 0.5479, suggesting a strong positive causal relationship with customer satisfaction. The p-value is less than 0.001, indicating a statistically significant causal relationship. This finding supports the discussions in the literature section about the importance of perceived usefulness in driving customer satisfaction. It suggests that if users find the ERP system useful and effective in their work, they are more likely to be satisfied with it.

5.2 Implication for Practice

The findings of this research have several practical implications that align with the stated aims of the study and its significance.

For small enterprises, particularly those in third-tier cities like Xinyang City, these results offer actionable insights into optimizing their ERP systems. By understanding the factors affecting customer satisfaction, these companies can make informed decisions about system implementation. This could include investing in user training, refining system features to better suit user needs, or improving user interface design. Such improvements could enhance user experience, leading to higher customer satisfaction and potentially increasing production efficiency and work efficiency.

For software developers, the research provides valuable feedback from real-world applications of ERP systems in small enterprises. These insights can guide them in refining and improving their software, ensuring it meets the particular needs of users in third-tier cities. This could involve tailoring system features, improving user support services, or even developing new software solutions specifically designed for small businesses. By doing so, developers can increase their market control and competitiveness.

For local governments, the research offers evidence-based suggestions for policymaking. The study's findings can inform initiatives aimed at promoting digital transformation and innovation among small enterprises in third-tier cities. This could involve providing financial incentives for ERP system adoption, offering training programs for employees, or establishing platforms for knowledge sharing and collaboration among businesses. Such measures could help foster social informatization and technological application, contributing to regional economic growth.

In conclusion, the practical implications of this research are closely tied to its significance. By providing insights into the impact of ERP systems on customer satisfaction, the study not only contributes to academic literature but also offers practical strategies for multiple stakeholders. This ultimately supports the overarching goal of advancing social informatization and economic growth in China's third-level cities.

5.3 Recommendations for Future Research

Based on the findings and limitations of the current study, several recommendations can be made for future research in this field.

Firstly, this current study found that information quality (IQ) does not have a positive relationship with customer satisfaction, the relationship was not statistically significant. This suggests that there may be other factors at play or that the relationship between IQ and customer satisfaction is more complex than initially assumed. Future research could delve deeper into this area, perhaps by examining different dimensions of information quality or by considering the role of moderating variables.

Secondly, as this current research focused on small-sized enterprises in third-tier cities like Xinyang City, it would be beneficial to extend this study to include larger businesses and those in other geographical locations. This could provide a more comprehensive understanding of the impacts of ERP systems on customer satisfaction across different contexts.

Thirdly, the research relied heavily on quantitative data. While this provided valuable insights, the addition of qualitative methods such as interviews or case studies could offer a richer picture of the experiences of companies implementing ERP systems. This could help uncover nuances that are not easily captured through surveys and statistical analysis.

Lastly, the study focused on four main predictors of customer satisfaction: information quality, system quality, service quality, and perceived usefulness. However, there may be other relevant factors worth exploring. For example, user training, organizational culture, and top management support have been identified in previous literature as important elements in ERP implementation success. Including these factors in future research could lead to a more holistic understanding of what drives customer satisfaction in the context of ERP systems.

In conclusion, while this study provides valuable insights into the impact of ERP systems on customer satisfaction in small enterprises, there is still much to explore. By addressing the above suggestions, future research can continue to build upon current findings, contributing to a more comprehensive and nuanced understanding of this important area.

5.4 Conclusion

This research aimed to explore the impact of ERP systems on customer satisfaction in small-sized companies in third-tier cities like Xinyang City, focusing specifically on the roles of information quality (IQ), system quality (SQ), service quality (SEQ), and perceived usefulness (PU). The findings provided valuable insights into these relationships and their implications for practice.

The data analysis revealed that system quality, service quality, and perceived usefulness have a statistically significantly positive causal relationship with customer satisfaction. This suggests that when these aspects are well-managed and optimized, they can contribute significantly to enhancing customer satisfaction. These findings align with previous literature, reinforcing the importance of these factors in successful ERP implementation.

Information quality has no causal relationship with customer satisfaction. This suggests that the relationship between information quality and customer satisfaction may be more complex than initially assumed, warranting further investigation.

These findings have important practical implications for various stakeholders, including small enterprises, software developers, and local governments. They provide actionable insights that can guide decision-making and policy formulation, ultimately contributing to the broader goal of

promoting social informatization and economic growth in China's third-level cities.

Despite its contributions, this study is not without limitations, which also provide avenues for future research. By delving deeper into the role of information quality, expanding the scope of the study, incorporating qualitative methods, and exploring additional predictors of customer satisfaction, future research can continue to build upon the findings of current research.

In conclusion, this research has shed light on the critical area of ERP application in small-sized companies, providing both theoretical insights and practical recommendations. It contributes to the understanding of how ERP systems can be leveraged to enhance customer satisfaction and promote economic growth, particularly in the context of China's third-tier cities.

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