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Key Factors of Undergraduate Satisfaction and Continued Use of Mobile Shopping Apps in Yibin, China

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Abstract

Purpose: This paper aims to examine the significant impact of key factors of mobile shopping applications on satisfaction and intention to reuse among university students in Yibin, China. The conceptual framework presented the cause and effect among information quality, system quality, savings, intention to reuse, satisfaction, trust, and perceived usefulness relation. **Research Design, Data, and Methods:** The researchers used quantitative techniques (n=500) to conduct a questionnaire survey among students at Sichuan University of Science & Engineering in Yibin, China. Non-probability sampling includes judgment sampling to select computer science students, quota sampling to determine sample size, and convenience sampling to collect data and distribute questionnaires online and offline. The researchers used structural equation modeling (SEM) and confirmatory factor analysis (CFA) for data analysis, including model fit, reliability, and construct validity. **Results:** The results show that perceived usefulness and information quality significantly impact satisfaction, and satisfaction is used as an intermediate variable to influence students' mobile shopping intention to reuse. Each exogenous variable demonstrated a significant impact on the related endogenous variables, with Perceived usefulness and Information quality significantly impacting mobile shopping application usage satisfaction. Perceived usefulness greatly impacts mobile shopping application usage satisfaction, followed by Information quality and savings. **Conclusion:** Policymakers and program operators can increase the impact of factors on students' perceived ease of use and savings in mobile shopping applications. Investment and optimize the investment ratio.

Keywords: Information Quality, Satisfaction, Quality, Perceived Usefulness, Mobile Shopping Application

JEL Classification Code: E44, F31, F37, G15

1. Introduction

People have learned to use smartphones, subtly changing people's shopping methods, especially university students. Almost every college student has used smartphones to shop. As they grow older and their economic strength improves, university students will become a fixed and potential mobile shopping consumer group. (Ngai & Gunasekaran, 2007) Mobile shopping is a new e-commerce type that conducts transactions through mobile terminals. Mobile shopping applications allow users to browse and purchase goods anytime and anywhere, bringing unprecedented market potential to companies.

Currently, many university students are shopping online through mobile shopping applications. This model allows merchants to conduct business without physical stores, and consumers can obtain the latest information and promotions of products anytime and anywhere, satisfying their shopping needs and saving shopping time. This shopping experience brings unprecedented convenience to users.

However, few studies have been conducted on mobile shopping applications' satisfaction and reuse intention, making it difficult for researchers to quickly obtain users' usage experience. Therefore, it is very important to study the driving factors of satisfaction and the intention to reuse

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mobile shopping applications with university students as the research target population.

Moreover, from the perspective of consumers, users are motivated to consume not only because of their satisfaction with the product but also because the product can provide users with useful information, a stable consumption system, and better marketing strategies so that users can buy their favorite products while maximizing time and money savings and providing better services to users (Chen, 2018).

This paper investigates university students' satisfaction and intention to reuse mobile shopping apps. In this study, we consider the factors of information quality (InQ), system quality (SyQ), savings (Sa), intention to reuse (ItR), satisfaction (SaT), trust (Tr), and perceived usefulness (PeU). First, the literature on mobile shopping apps is surveyed to enrich the knowledge system. Furthermore, the study's conceptual model framework and hypotheses are proposed based on the relevant literature. This is followed by a description of the research methods and a presentation of the research results. The last part of the paper provides the conclusion and discussion of the research results, the study's limitations, and suggestions for future work.

2. Literature Review

2.1 Information Quality

DeLone and McLean (2004) believe that many research articles need to pay more attention to information quality and that this variable has no significant impact on users. However, research has found that information quality significantly affects customer satisfaction. The better the platform information quality, the higher the user satisfaction. After investigating the causes and consequences of users' trust in mobile commerce products, Sarkar et al. (2020) demonstrated a significant relationship between information quality and user satisfaction and that information quality has a strong potential to contribute to user satisfaction.

Wang et al. (2018) conducted experiments on consumer behavior based on the existing information system e-commerce success model. The experiment found that information quality significantly affects user satisfaction by analyzing variables related to the success model. Wang (2008) proposed an updated information system (IS) model. Through research, the researchers found that the information quality in the system is affected by user satisfaction.

Tseng et al. (2022) improved the model and proposed an improved information system (IS) model. They found that information quality plays a certain role in promoting research related to user satisfaction. The study found that the quality of product information will affect the user's satisfaction with mobile shopping software. The better the information quality, the higher the user satisfaction.

In general, information quality has a certain impact on satisfaction. Therefore, the researchers put forward the following hypothesis based on previous research.

H1: Information quality has a significant impact on satisfaction.

2.2 System Quality

DeLone and McLean (2004) research shows that system quality affects user satisfaction. Sarkar et al. (2020) conducted relevant research on the causes and consequences of mobile commerce trust, designed reasonable marketing strategies for mobile commerce service providers, and conducted an in-depth analysis of 118 related empirical studies. They found that the quality of e-commerce systems has a significant impact on user satisfaction.

Wang et al. (2018) aim to develop and validate a robust model for physical product electronic retail systems by drawing on existing information systems success models and consumer behavior literature. The proposed success model consisted of nine variables and was tested using the partial least squares method on data collected from 258 valid respondents. In the success model, experiments found that system quality significantly impacts user satisfaction. Wang (2008) found through relevant research that system quality is affected by user satisfaction. Tseng et al. (2022) research found that when using mobile shopping, system quality has a significant impact on user satisfaction.

Therefore, based on previous studies, the researchers proposed the following hypothesis.

H2: System quality has a significant impact on satisfaction.

2.3 Savings

Tseng et al. (2022) found that the current competition in the mobile retail market is fierce, so they studied the success factors that can determine the factors that encourage consumers to use mobile shopping applications repeatedly. The study aims to integrate the system success (ESS) model and found that savings are one-factor affecting user satisfaction.

Lal and Rao (1997) investigated the existing literature, analyzed the data using intelligent PLS through experiments, and found that the saving variable is one of the factors affecting the user satisfaction variable.

Chandon et al. (2000) constructed a multi-consumer benefit framework for promotional activities. Through a series of measurement studies, the author found that monetary and non-monetary promotions provide consumers with varying degrees of hedonic benefits. The three levels of hedonic benefits include savings, higher product quality, and improved shopping convenience. Saving money is an

effective factor in promotional activities affecting user satisfaction. In the study of complex motivations for mobile shopping, Park et al. (2019) found that saving money directly affects user satisfaction. Wong et al. (2012) considered savings to affect user satisfaction when predicting consumers' willingness to adopt mobile shopping.

Therefore, the researchers proposed the following hypothesis based on previous studies.

H3: Savings have a significant impact on satisfaction.

2.4 Trust

Sarkar et al. (2020) conducted a study identifying a significant correlation between trust and user satisfaction within mobile commerce. If users trust the product in mobile commerce, user satisfaction will increase accordingly. Hung et al. (2012) conducted an experiment on mobile shopping, selected relevant variables, and established a model to understand the determining factors of mobile shopping persistence. After sending a questionnaire survey and analyzing the relevant data, it was found that trust impacts user satisfaction.

Thakur (2018) discovered consumers' increasing preference for using mobile shopping applications. This trend indicates a growing shift towards using mobile platforms for shopping purposes. Using mobile shopping can satisfy users who want to shop anytime, anywhere. Therefore, research on the factors that influence mobile shopping applications is very important, and it has been proven through experiments that trust can effectively improve user satisfaction. Hair et al. (2017) found that using CB-SEM impacts sincerity and user satisfaction compared to PLS-SEM. Hanif et al. (2022) considered trust to be one of the factors affecting user satisfaction when studying the factors that attract or prevent users from participating in mobile shopping. Through experimental evidence, it was found that if users trust the software during mobile shopping, their satisfaction will be higher. Therefore, based on previous research, the researcher proposed that trust will affect user satisfaction during mobile shopping.

Therefore, based on previous studies, the researchers put forward the following assumptions.

H4: Trust has a significant impact on satisfaction.

2.5 Perceived Usefulness

When studying the mobile commerce framework model, Sarkar et al. (2020) discovered a significant correlation between perceived ease of use and user satisfaction. Thong et al. (2006) expanded ECM by incorporating perceived usefulness, enjoyment, etc., and found through experiments that perceived usefulness significantly impacts user satisfaction. Agrebi and Jallais (2015) conducted experiments and found that perceived usefulness significantly influences user satisfaction in mobile shopping.

According to Jain et al. (2022), their research into the determinants of consumers' decision to continue mobile shopping revealed that the perceived usefulness of the shopping experience plays a crucial role in influencing user satisfaction. Hung et al. (2012) discovered that the perceived usefulness of mobile shopping significantly impacts user satisfaction. Through investigation and research, Shang and Wu (2017) found that perceived usefulness is an important factor affecting user satisfaction. Sarkar and Khare (2019) discovered that the perceived usefulness of mobile shopping applications significantly impacts user satisfaction. This finding highlights the importance of perceived usefulness in shaping users' satisfaction levels when using mobile shopping applications. Therefore, based on previous studies, the researchers put forward the following assumptions.

H5: Perceived usefulness has a significant impact on satisfaction.

2.6 Satisfaction

Wang et al. (2018) discovered that user satisfaction significantly influences the intention to reuse among the nine variables in the electronic retail success model. Agrebi and Jallais (2015) proposed an extended technology acceptance model (TAM). They found through research that increasing user satisfaction positively and significantly impacts the willingness to shop on smartphones. Jain et al. (2022) integrated M-S-QUAL, Technology Adoption Model (TAM), and Technology Continuation Theory (TCT) and tested the model through experiments. They discovered that users' satisfaction significantly influences the factors impacting customers' willingness to continue shopping on mobile devices.

Hung et al. (2012) summarized the experience of shoppers using mobile shopping devices and found that user satisfaction is a decisive factor in users' intention to reuse. Shang and Wu (2017) found that satisfaction is a factor in consumers' willingness to use smartphones for mobile shopping. Sarkar and Khare (2019) explored the impact of sustained use in their study, uncovering that user satisfaction significantly affects users' likelihood of reusing mobile shopping applications. Wang (2008) discovered that the intention to reuse is influenced by user satisfaction within the context of e-commerce. Therefore, based on previous studies, the researchers put forward the following assumptions.

H6: Satisfaction has a significant impact on intention to reuse.

3. Research Methods and Materials

3.1 Research Framework

The basic theories referenced in this study include the e-commerce System Success (ESS) model proposed by Tseng et al. (2022), Thakur (2018) proposed the partial least squares structural equation model, Jain et al. (2022) integrated M-S-QUAL, Technology Adoption Model (TAM) and Technology Continuity Theory (TCT) to test the conceptual model of mobile shopping usage we proposed. On this basis, the researcher constructed the conceptual framework of this study, as shown in Figure 1.

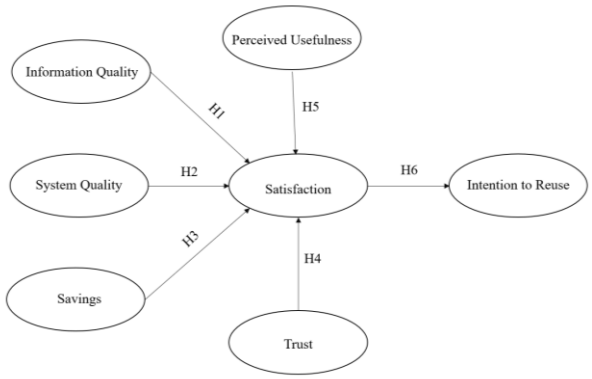

Figure 1: Research Conceptual Framework

H1: Information quality has a significant impact on satisfaction.
H2: System quality has a significant impact on satisfaction.
H3: Savings have a significant impact on satisfaction.
H4: Trust has a significant impact on satisfaction.
H5: Perceived usefulness has a significant impact on satisfaction.
H6: Satisfaction has a significant impact on intention to reuse.

3.2 Research Methodology

In this study, the researchers adopted a quantitative method based on non-probability sampling and surveyed a specific group through an online questionnaire platform (Schillewaert et al., 1998). The study's target sample is the student population of Sichuan University of Science & Engineering, located in Yibin, Sichuan Province. By analyzing the collected data, this study aims to explore the factors that affect university students' satisfaction with mobile shopping applications and their intention to reuse them.

The questionnaire structure was divided into three parts. The first part contained screening questions aimed at identifying eligible respondents. The second part used a 5-point Likert scale to cover the measurement items of the six hypotheses proposed in this study, with scores ranging from "1" representing "strongly disagree" to "5" representing "strongly agree." The third part involved demographic information, including variables such as gender, age, and education level.

Before the questionnaire was officially distributed on a large scale, the researchers conducted a pre-test involving 50 respondents to assess its content validity. The pre-test questionnaire was scored by experts using the Item-Objective Congruence Index (IOC) to ensure that the items in the questionnaire effectively reflected the research objectives.

3.3 Population and Sample Size

To verify the validity and reliability of the questionnaire, this study used Cronbach's Alpha coefficient for analysis (Tavakol & Dennick, 2011). The questionnaire was eventually distributed to the target respondents, and 500 valid responses were successfully collected. Data analysis used statistical tests using SPSS AMOS software, including confirmatory factor analysis (CFA), to test the measurement's convergent validity and discriminant validity. These analytical steps were designed to confirm the fit of the research conceptual framework and to ensure the validity and reliability of the model.

On this basis, the researchers used structural equation modeling (SEM) to test the potential causal relationships among the research variables and reveal the key factors that affect university students' satisfaction with mobile shopping applications and their intention to reuse them.

3.4 Sampling Technique

The researchers used non-probability, judgment, and quota sampling methods to select the Sichuan University of Science and Technology student population in Yibin, China. They distributed questionnaires through an online questionnaire platform. Table 1 shows the specific sampling situation of this study.

Table 1: Sample Units and Sample Size

Primary and Secondary Schools	Population Size	Proportional Sample Size
Software engineering	782	161
Computer science and technology	1113	230
Network engineering	529	109
Total	**2,424**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The demographic information collected from the participants included information such as the student's gender and grade. We distributed questionnaires to 500 university students in the School of Computer Science and Engineering, Sichuan University of Science & Engineering, Yibin, Sichuan Province. Among the respondents were 201 females and 299 males, accounting for 40.2% and 59.8%, respectively. There were 158 students aged 19-20 (31.6%) and 173 students aged 21-23 (34.6%). There were 169 students with more than 23 pairs (33.8%). Table 2 lists the demographic information of this study.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	female	201	40.2%
	male	299	59.8%
Age	19-20 years old	158	31.6%
	21-23 years old	173	34.6%
	More than 23 years old	169	33.8%

4.2 Confirmatory Factor Analysis (CFA)

This study quantitatively assessed the variables in the proposed conceptual framework by implementing confirmatory factor analysis (CFA). The measurement results revealed that the scale items of all variables showed statistical significance. Further analysis showed that the factor loadings of each scale item were within the acceptable range, indicating that the constructed conceptual framework had a good fit. Specifically, the factor loading values of this study all exceed the threshold of 0.30, all p-values are lower than the significance level of 0.05, the structural reliability coefficients all exceed the standard of 0.70, and the extracted variances are all greater than the critical value of 0.50. These statistical estimates all confirm their significance. The relevant statistical values are detailed in Table 3.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Information Quality (InQ)	Tseng et al. (2022)	3	0.877	0.821-0.863	0.877	0.704
System Quality (SyQ)	Tseng et al. (2022)	3	0.872	0.811-0.849	0.873	0.695
Savings (Sa)	Tseng et al. (2022)	3	0.898	0.834-0.882	0.898	0.747
Intention to Reuse (ItR)	Tseng et al. (2022)	3	0.860	0.793-0.835	0.86	0.673
Satisfaction (SaT)	Jain et al. (2022)	3	0.862	0.803-0.841	0.888	0.675
Trust (Tr)	Thakur (2018)	4	0.892	0.778-0.845	0.892	0.674
Perceived Usefulness (PeU)	Jain et al. (2022)	3	0.882	0.799-0.872	0.883	0.716

In addition, Table 4 shows the values of the square root of the variance extracted by each variable. These data indicate that the correlations between all variables in this study are appropriate. In the analysis process of CFA, this study used the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), Tucker- The Lewis index (TLI), and the root mean square error of approximation (RMSEA) are used as indicators to evaluate the fit of the model.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	<3 (Yaşlioğlu & Toplu Yaşlioğlu, 2020)	1.546
GFI	>0.9 (Khairi et al., 2021)	0.949
AGFI	>0.8 (Khairi et al., 2021)	0.932
NFI	>0.9 (Ainur et al., 2017)	0.955
IFI	>0.9 (Doğan & Özdamar, 2017)	0.984
TLI	>0.9 (Subudhi & Mishra, 2020)	0.980
CFI	>0.9 (Yuan, 2005)	0.984
RMSEA	<0.08 (Putra & Fariz, 2022)	0.033
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = the ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, IFI = Incremental Fit Indices, TLI = Tucker Lewis index, CFI = comparative fit index and RMSEA = root mean square error of approximation

Table 5 presents this study's convergent and discriminant validity; both indicators were confirmed to be acceptable levels. All measurement results support the validity of the structural model estimated in this study.

Table 5: Discriminant Validity

	InQ	SyQ	Sa	ItR	SaT	Tr	PeU
InQ	**0.839**						
SyQ	0.252	**0.834**					
Sa	0.255	0.155	**0.864**				
ItR	0.311	0.266	0.289	**0.820**			
SaT	0.295	0.263	0.267	0.282	**0.822**		
Tr	0.192	0.243	0.208	0.209	0.271	**0.821**	

	InQ	SyQ	Sa	ItR	SaT	Tr	PeU
PeU	0.224	0.246	0.257	0.334	0.347	0.255	**0.846**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

Yaşlioğlu and Toplu Yaşlioğlu (2020) recommended that the Chi-square/degrees-of-freedom (CMIN/DF) ratio for model fit measures was less than 3.00.

Khairi et al. (2021) suggested that GFI was greater than 0.90. Khairi et al. (2021) suggested that AGFI was greater than 0.80. Yuan (2005) suggested that the CFI was greater than 0.90. Subudhi and Mishra (2020) suggested that the TLI was greater than 0.90. Hu and Bentler (1999) suggested that the RMSEA was less than 0.08. The researchers used SPSS AMOS version 26 for the SEM calculations and adjusted the model. The fit index results for this study presented a good fit. CMIN/df =2.585, GFI = 0.901, AGFI = 0.873, NFI = 0.922, CFI = 0.950, TLI = 0.942 and RMSEA = 0.056. Table 6 demonstrates these values.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	<3 (Yaşlioğlu & Toplu Yaşlioğlu, 2020)	2.585
GFI	>0.9 (Khairi et al., 2021)	0.901
AGFI	>0.8 (Khairi et al., 2021)	0.873
NFI	>0.9 (Ainur et al., 2017)	0.922
IFI	>0.9 (Doğan & Özdamar, 2017)	0.941
TLI	>0.9 (Subudhi & Mishra, 2020)	0.942
CFI	>0.9 (Yuan, 2005)	0.950
RMSEA	<0.08 (Putra & Fariz, 2022)	0.056
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = the ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, IFI = Incremental Fit Indices, TLI = Tucker Lewis index, CFI = comparative fit index and RMSEA = root mean square error of approximation

4.4 Research Hypothesis Testing Result

The researchers calculated the significance of the research model based on each variable's regression weight and R2 variance. Table 7 shows the calculation results. These results support all the hypotheses of this study. Information quality affects satisfaction (β=0.202), system quality affects satisfaction (β=0.158), storage affects satisfaction (β=0.168), Trust affects satisfaction (β=0.158), perceived usefulness affects satisfaction (β=0.277), and satisfaction affects re-use intention (β=0.354).

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: INQ→SAT	0.202	4.155***	Supported
H2: SYQ→SAT	0.158	3.265*	Supported
H3: SA→SAT	0.168	3.526***	Supported
H4: TR→SAT	0.158	3.309***	Supported
H5: PEU→SAT	0.277	5.639***	Supported
H6: SAT→ITR	0.354	6.686***	Supported

Note: *** p<0.001, ** p<0.01, * p<0.05
Source: Created by the author

The results of the structural path from Table 7 could be summarized as follows:

H1: Information quality positively affects satisfaction. With a standardized path coefficient of 0.202 and a t-value of 4.155***.

H2: The standardized path coefficient between system quality and satisfaction is 0.158, and the t-value is 3.265*. Therefore, the result indicates that System Quality does affect Satisfaction.

H3: The hypothesis is supported that savings positively affect satisfaction. The standardized path coefficient is 0.168 at a t-value of 3.526***.

H4: Trust positively affects satisfaction with a standardized path coefficient of 0.158 and a t-value of 3.309***.

H5: Perceived usefulness threat positively affects satisfaction. The standardized path coefficient is 0.277, and the t-value is 5.639***.

H6: The standardized path coefficient between satisfaction and intention to reuse is 0.354, and the t-value is 6.686***.

5. Conclusion and Recommendation

5.1 Conclusion

This study aims to comprehensively analyze the influence of satisfaction and reuse intention of mobile shopping applications among students of the Sichuan University of Science and Chemical Technology in Yibin, China. Currently, the global population is 7.9 billion, and more than 2.8 billion shoppers are using mobile shopping applications to purchase goods, which means that 35% of people have experience in mobile shopping. The global mobile shopping application market size is growing rapidly. Therefore, conducting an in-depth study on the factors and mechanisms that affect the satisfaction and reuse intention of mobile shopping applications is necessary. This study proposes six hypotheses to explore the relationship between these factors.

The target population of this study is college students in Yibin, China. This study was conducted at the Sichuan

University of Science and Chemical Technology in Yibin, China. We conducted a questionnaire survey on 500 students from the university's software engineering, computer science and technology, and network engineering majors who had experience using mobile shopping apps. We analyzed the data from these questionnaire surveys. The analysis of these data supports the conceptual framework of this study. The conceptual framework is informed by previous relevant literature. Based on previous relevant research, we used satisfaction as a mediating factor affecting students' intention to reuse.

This study's conceptual framework passed the AMOS test and supported the item factor structure. Confirmatory factor analysis confirmed the applicability of this study's factor structure and confirmation model, and the relevant data had a reasonable fit.

The data collected from 500 questionnaires were measured by confirmatory factor analysis (CFA). These results show that the conceptual model of this study was established after passing the validity and reliability tests. The test results of convergent validity - comprehensive reliability, Cronbach's alpha reliability, factor loading and mean-variance extraction analysis, and discriminant validity - prove that the concept of this study is correct. This study used structural equation modeling (SEM) to analyze the impact of mobile shopping applications on the satisfaction and reuse intention of students at Sichuan University of Science & Engineering. The results show that the research hypotheses proposed in this paper are valid. They support all six research hypotheses of this study.

In this study, first, in mobile shopping applications, information quality, system quality, Trust, storage, and perceived usefulness directly affect users' satisfaction with mobile shopping applications and indirectly affect users' intention to reuse mobile shopping applications again. User satisfaction with the use of a mobile shopping application has a direct impact on its reuse. The impact is direct and significant.

Secondly, in mobile shopping applications, perceived ease of use and information quality have the greatest direct impact on user satisfaction with mobile shopping applications. This is the mechanism of action found in this study.

Finally, this study provides policy support and a basis for China's mobile shopping applications and provides new ideas for their development, promoting the optimal allocation of related resources.

5.2 Recommendation

Based on the results of this study, we propose the following recommendations. First, we suggest that students' satisfaction with using mobile shopping applications can be enhanced by developing them with better information and system quality. For example, during large shopping festivals, when many users use the application simultaneously, the application can still maintain stability and promptly provide users with the latest and most favorable information.

Secondly, we suggest that mobile shopping applications can provide better saving strategies and perceived ease of use strategies by formulating relevant strategies to make users feel that mobile shopping applications are helpful in their daily lives and enable users to spend less money to buy products of the same quality.

Finally, we suggest optimizing factors related to mobile shopping apps to use their limited resources better and thus enhance users' intention to reuse mobile shopping apps. Subsequent research on the impact of mobile shopping apps on student satisfaction and intention to reuse will start from a higher level.

5.3 Limitation and Further Study

The limitations of this study are mainly reflected in the fact that the variables examined are all at the individual level, and the data collection is limited to a specific period. In addition, the data source is limited to the teacher group in a specific educational institution. In order to deepen the research in this field, future work can consider integrating variables similar to this study, adopting longitudinal research designs or experimental methods, and conducting continuous data collection at different time points, which will help promote the theoretical construction and practical application of this field.

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