

Research on the continuous use intention of intelligent express cabinets

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Abstract. In the background of China's annual courier business volume surpassing 100 billion pieces, the issues within delivery service are becoming increasingly pronounced. One particular concern is that the growing occurrence of couriers depositing packages into courier cabinets without obtaining consent of users, leading to the dissatisfaction among users and a reluctance to utilize these cabinets. This paper is based on the technology acceptance model and the introduction of perceived cost and security variables, to illustrate the influence of intelligent express locker user willingness to continue to use factors. The study showed that the perceived cost had an impact on the user's willingness to continue using express locker under the intermediary effect of satisfaction. Additionally, the study also found that security had a positive influence on user satisfaction. The intermediary effect of satisfaction acts as a masking factor between security and Continuance Intention. It also points to new directions for subsequent research.

1 Introduction

According to the 52nd Statistical Report on the Development of China's Internet published by CNNIC, China's online shopping users reached 884 million (as of June 2023), and the number of express shipments has exceeded 100 billion in 2021, and has been the first in the world for eight consecutive years. The real-time monitoring data of the express big data platform of the State Post Bureau shows that the annual volume of express shipment business in 2021 has exceeded one hundred billion pieces, and has been the first place in the world for eight consecutive years.

Intelligent express cabinet as one of the ways of express terminal delivery, it can effectively save labor costs and provide delivery efficiency. According to the previous literature on the collation found that the current research for intelligent express cabinet is mainly focused on intelligent express cabinet site selection[1-3], development strategy research [4-6], system and appearance design[7-9] and other aspects. Simply from the perspective of site placement, development strategy, system and appearance design of the

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product side of the intelligent courier cabinet research has obviously been unable to adapt to the needs of the future development of intelligent courier cabinet. How to improve user satisfaction with the use of intelligent express cabinets to enhance the utilization of intelligent express cabinets is a new research direction. Through the visit found that the intelligent express cabinet is simple to use, safety, the use of cost is the main factors affecting the continued use of the user. Therefore, it is of some significance to study the influence of factors such as perceived usefulness, perceived ease of use, safety, and perceived cost on consumers' willingness to continue to use.

2 Research hypothesis and modeling

Multiple studies have shown a positive relationship between perceived ease of use (PEU) and Customer satisfaction(CS) [10-11]. Perceived usefulness(PU) influences behavioral intention, and usage behavior is influenced by behavioral intention, which in turn validates that perceived usefulness has a significant positive effect on continued usage behavior by influencing behavioral intention [12]. studies by Xu(2013), Hartono, Holsapple, & Simpson (2014) show that indicate that security plays a role in user satisfaction plays a role[13-14]. Xie Guangling (2017) tested that user satisfaction is significantly affected by perceived costs(PC) in an empirical analysis of user persistence behavior on science communication websites[15]. Liu Tianyu (2017) in the B2C model of customer perceived value on customer repurchase willingness research results show that perceived cost has a significant impact on customer satisfaction[16]. Satisfaction is the user of the product itself, as well as the process of obtaining the product to feel the sense of fulfillment and pleasure, this heart level of feeling will have a great impact on the next purchase, user satisfaction may lead to repeat purchases or the use of the product to accept other products in the same product line [17]. Based on the above literature, the intelligent express locker as a computer information system and physical product combination of express management terminal products, the user in the use of intelligent express locker is also the main use of computer information technology terminal system, so the technology acceptance model in the study of intelligent express locker use behavior is also applicable to the intelligent express locker can be used as a basic theoretical model to explore the study of intelligent express locker continue to use the willingness to study. According to the intelligent express cabinet use scenario to introduce other external factors such as perceived cost, security (SEC) variables, to build the conceptual model of this study. The specific assumptions are shown below:

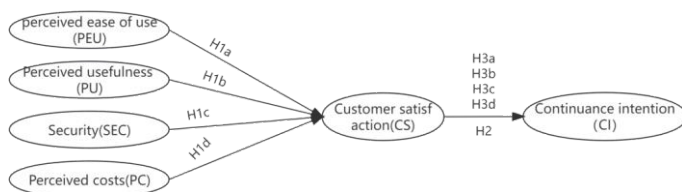


Fig. 1. Research Model on the continuous use intention of intelligent express cabinets

3 RESEARCH PROGRAM DESIGN

3.1 Research ideas and methods

This paper firstly conducts literature research to find the theoretical model idea for the analysis of the path of influence of consumer cognition, consumer behavior on consumer's

willingness to continue to use. Through the design and distribution of network questionnaires for the survey, to obtain real consumer data. Then we analyze the descriptive statistics of the valid samples and test the reliability and validity through SPSS 26.0 software. Correlation analysis is conducted for each variable, and then regression analysis is used to verify the hypotheses proposed in this study. Finally, the effect of each variable was tested.

3.2 Design of the indicator system

This paper designs a questionnaire to firstly investigate basic demographic information: gender, age, occupational background, educational background. Secondly, a basic survey of consumer behavior: usefulness, ease of use, safety, cost of use of express fee, whether to benefit the continued use of express cabinets. Finally, according to the model to design the measurement index scale questions.

4 Data analysis and model testing

4.1 Questionnaire data processing

The questionnaire was designed using a five-point Likert scale and distributed through Questionnaire Star. 358 responses were received, and 292 valid questionnaires were obtained after invalid questionnaires were excluded. The validity rate of the questionnaire was 81.56%. Among them, 153 were male and 139 were female. After analyzing the reliability of the scale questions by SPSS software test, the value coefficients of Cronbachs Alpha were all greater than 0.7, which indicated that the reliability of the scale was good, and it could be used for the next step of the study.

Table 1. Correlation analysis.

	PEU	PU	SEC	PC	CS	CI
PEU	1					
PU	0.772**	1				
SEC	0.774**	0.740**	1			
PC	0.679**	0.694**	0.754**	1		
CS	0.707**	0.809**	0.810**	0.781**	1	
CI	0.719**	0.823**	0.691**	0.714**	0.989**	1

* $p < 0.05$ ** $p < 0.01$

From Table 4.1, it can be seen that the variables perceived ease of use, perceived usefulness, security, perceived cost and user satisfaction and willingness to continue to use have a good correlation between the two are positively correlated, and can be analyzed by regression.

4.2 Regression analysis

Table 2. Results of linear regression analysis of antecedent variables and satisfaction.

(n=292)									
	Non-standardized coefficient		Standardized coefficient	t	p	VIF	R ²	Align R ²	F
	B	standard error	Beta						
Math.	0.159	0.126	-	1.264	0.207	-	0.784	0.781	F (4,287)=260.947, p=0.000
PC	0.247	0.039	0.282	6.388	0.000**	2.587			
SEC	0.373	0.054	0.349	6.842	0.000**	3.454			
PU	0.420	0.049	0.410	8.638	0.000**	2.993			
PEU	-0.071	0.050	-0.070	-1.425	0.155	3.223			
D-Wvalue: 2.140 * p<0.05 ** p<0.01									

To summarize the analysis: perceived cost, perceived security, and perceived usefulness have a significant positive impact on user satisfaction. But Perceived Ease of Use does not have an impact on User Satisfaction.

4.3 Mediating effects of customer satisfaction

Bootstrap method regression was performed in Process software. The results of the regression analysis and mediation effect Bootstrap test are shown in Table 4.3:

Table 3. Summary of the results of the test of the mediating role of user satisfaction.

Item	c Aggregate effect	a	b	a*b Value of intermediary effect	a*b (Boot SE)	a*b (z-value)	a*b (p-value)	a*b (95% BootCI)	c' Direct effect	Test Conclusion
PC=>CS=>CI	0.242**	0.247**	0.701**	0.173	0.046	3.771	0.000	0.087 ~ 0.267	0.068	FM
SEC=>CS=>CI	-0.006	0.373**	0.701**	0.261	0.051	5.163	0.000	0.116 ~ 0.314	-0.267**	SE
PU=>CS=>CI	0.651**	0.420**	0.701**	0.294	0.066	4.432	0.000	0.143 ~ 0.401	0.357**	PM
PEU=>CS=>CI	0.142*	-0.071	0.701**	-0.050	0.052	-0.962	0.336	-0.144 ~ 0.060	0.192**	IM
* p<0.05 ** p<0.01 Effect share at masking effect refers to: ratio of mediated effect/direct effect										

5 Findings

This paper builds a theoretical model that conforms to this study based on previous research. After proposing hypotheses and verifying the hypotheses, the specific conclusions: 1. Perceived usefulness, security, perceived cost (of reasonable) on the positive impact of satisfaction, the impact of satisfaction on the willingness to continue to use are valid; user satisfaction in the perceived usefulness, the perceived cost and the willingness to continue to use the mediating role between; 2. The assumption that the perceived ease of use of user

satisfaction has a positive impact is not valid, this paper argues that with the intelligent The popularity of express cabinets, consumers have been very skillful in the operation of intelligent express cabinets, intelligent express cabinet operating system is also more and more in line with people's habits, such as from the initial pickup through the SMS authentication code to the current scanning QR code pickup or directly in the cell phone APP operation pickup, the ease of use of intelligent express cabinets has reached a fairly high level. Therefore, the ease of use of intelligent express lockers can no longer affect consumer satisfaction.3. The assumption that user satisfaction is mediated between perceived ease of use, security and willingness to continue to use does not hold true, this paper argues that the assumption that perceived ease of use has a positive impact on user satisfaction does not hold true, so user satisfaction will not have a mediating effect between perceived ease of use and willingness to continue to use. Although perceived security has a direct impact on user satisfaction, perceived security has only a masking effect on the willingness to continue using through user satisfaction, so subsequent research will do further verification and analysis for this point, and make the research results are more directional.

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