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Influencing Factors of Continuous Participation Behavior of Crowdsourcing Logistics Contractors

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Abstract. The crowdsourcing logistics public participation in crowdsourcing logistics is divided into the initial participation phase and the continuous participation phase after participation. Among them, the continuous participation phase after participation is the key to the success of the crowdsourcing logistics model. Therefore, this paper constructs a theoretical model for the continuous participation of the crowdsourcing logistics public, and uses the structural equation modeling method for analysis. The results show that intrinsic motivation, extrinsic motivation, participation satisfaction, subjective norms, perceived behavior control, willingness to participate, and habits promote the continuous participation of crowdsourcing logistics. Finally, the conclusions of this paper provide guidance for the operation of the crowdsourcing logistics model.

Keywords: Crowdsourcing logistics, contractors, continuous participation behavior, influencing factor.

1. Introduction

The crowdsourcing logistics model is gradually applied to enterprises that provide services at home, with the characteristics of maximizing social idle resources. However, there is a problem with the crowdsourcing logistics model. For the crowdsourcing logistics public, the crowdsourcing logistics public service stability is poor. For enterprises and platforms, the binding force of self-owned part-time delivery personnel is poor, the distribution team changes greatly, and the service quality cannot be guaranteed. Therefore, crowdsourcing logistics companies or platforms need to improve the stability of the public's continued participation in services.

At present, scholars' research on crowdsourcing logistics mainly includes three aspects. (1) Research on problems and solution strategies in the process of crowdsourcing logistics operations. Mladenow pointed out that in the crowdsourcing logistics operation, there are leakage of customer information, poor quality of delivered items, undelivered delivery, etc., and corresponding countermeasures are given for these problems [1]. (2) Evaluation of the quality of crowdsourcing logistics services. Klummp evaluated the service quality of crowdsourcing logistics through the combination of theory and practice [2]. (3) Crowdsourcing logistics public participation willingness and participation behavior research. Based on the UTAUT model, Jie analyzed the influencing factors of the public participation behavior of crowdsourcing logistics [3]. At present, scholars mainly analyze the status quo and service quality of the crowdsourcing logistics model, and rarely study the continuous participation behavior of the crowdsourcing logistics public.

Therefore, this paper takes the crowdsourcing logistics public as the research object and explores the influencing factors of the continuous participation behavior of the crowdsourcing logistics public. Therefore, this paper constructs a model of continuous participation behavior influencing factors, enriching the information system continuous use model (PAM-ISC) and planned behavior theory model (TPB) after receiving, and this paper promotes public participation in crowdsourcing logistics platform or enterprise. Package logistics provides some guidance.

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2. Research Model and Research Hypothesis

2.1 Research Model.

Based on the PAM-ISC theoretical model, this paper integrates the TPB theoretical model and combines the characteristics of the masses under the crowdsourcing logistics operation model to construct a theoretical model based on intrinsic motivation, extrinsic motivation, subjective norms, perceived behavior control, participation satisfaction, the willingness of the public to participate in crowdsourcing logistics, habits and the continuous participation behavior of crowdsourcing logistics. The research model is shown in Fig. 1.

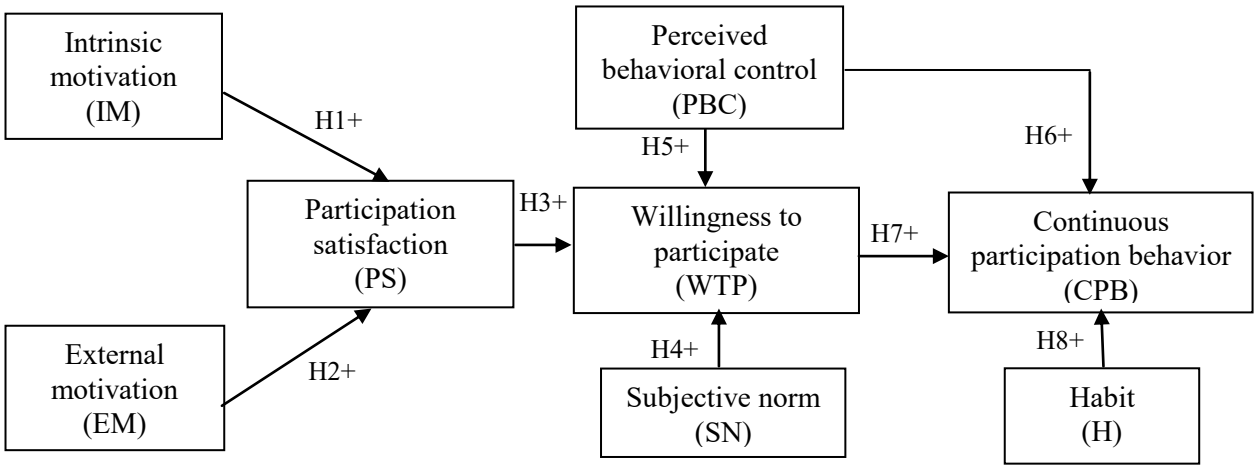

Fig. 1 Research model of influencing factors of continuous participation behavior of crowdsourcing logistics contractors

2.2 Research Hypothesis.

Intrinsic motivation affects the satisfaction of crowdsourcing logistics public participation. Nakamura et al. pointed out that when people achieve self-efficacy, they can feel happy and then feel satisfied [4]. Therefore, the hypothesis H1 is proposed: intrinsic motivation positively affects the public participation satisfaction of crowdsourcing logistics.

External motivation affects the satisfaction of crowdsourcing logistics public participation. Brabham pointed out that extrinsic motivation can increase user satisfaction and cause users' willingness to participate continuously [5]. Therefore, the hypothesis H2 is proposed: extrinsic motivation positively affects the public participation satisfaction of crowdsourcing logistics.

Participation satisfaction affects the willingness of crowdsourcing logistics to continue to participate. Porter et al. pointed out that the greater the job satisfaction, the more people promote a certain behavior [6]. Therefore, hypothesis H3: participation satisfaction has a positive impact on the willingness of crowdsourcing logistics to continue to participate.

Subjective norms affect the willingness of crowdsourcing logistics to continue to participate. Wang Shuanglong and others pointed out that the behavior of people around them has an impact on individual behavior [7]. Therefore, the hypothesis H4: subjective norms are positively affecting the willingness of the public to participate in crowdsourcing logistics.

Perceived behavioral control influences the willingness and behavior of the crowd-owning logistics community to continue to participate. Pavlova pointed out that perceived behavioral control promotes the user's willingness to participate and behavior [8]. Therefore, it is hypothesized that H5: perceived behavioral control has a positive impact on the willingness of crowdsourcing logistics to continue to participate and H6: perceived behavioral control positively affects the continuous participation behavior of crowdsourcing logistics.

The willingness to continue to participate influences the continuous participation of the crowdsourcing logistics public. Limayem pointed out that the continued willingness to use positively affects the continuous use behavior [9]. Therefore, the hypothesis H7: the continued willingness to participate is positively affecting the continuous participation of the crowdsourcing logistics public.

Habits affect the crowds of logistics and the public continues to participate in behavior. Limayem pointed out that habits, along with continued willingness to use, affect continuous use behavior [10]. Therefore, the hypothesis is proposed: H8: Habits positively affect the continuous participation of crowdsourced logistics public.

3. Research Designs

3.1 Research Model.

This paper measures the latent variables by using a questionnaire survey. The questionnaire is divided into two parts, which are the basic information of the respondents and the measurement of the seven influencing factors of the continuous participation behavior. The latent variable is measured using a seven-level scale. The latent variables and measurement items in the questionnaire are shown in Table 1.

Table 1 Latent variables and measurement items

Latent variable	Measurement item
IM	(1) Crowdsourcing logistics gives me confidence (2) Crowdsourcing logistics enables me to achieve self-efficacy (3) Crowdsourcing logistics makes me feel fulfilled (4) Crowdsourcing logistics makes me feel that time passes quickly (5) Crowdsourcing logistics makes me forget my troubles for the time being (6) Crowdsourcing logistics makes me happy
EM	(1) Crowdsourcing logistics earns me extra income (2) Crowdsourcing logistics gives me a certain reputation (3) Crowdsourcing logistics has broadened my career path (4) Crowdsourcing logistics increases job opportunities
PS	(1) Crowdsourcing logistics makes me satisfied (2) Crowdsourcing logistics makes me feel happy (3) Crowdsourcing logistics makes you feel satisfied (4) Crowdsourcing logistics makes me feel joyful
SN	(1) Friends around are participating in crowdsourcing logistics (2) Colleagues around are participating in crowdsourcing logistics (3) Part-time crowdsourcing logistics public agrees with crowdsourcing logistics
PBC	(1) Smartphones and vehicles help to participate in crowdsourcing logistics (2) I have enough time and energy to participate in crowdsourcing logistics (3) I will use various functions on crowdsourcing logistics software. (4) I can accomplish the tasks of grabbing, distributing, and investing well.
WTP	(1) I will dedicate myself to crowdsourcing logistics. (2) I will continue to participate in crowdsourcing logistics (3) I will stop participating in crowdsourcing logistics
H	(1) Crowdsourcing logistics is a habitual behavior for me. (2) Crowdsourcing logistics is a natural behavior for me. (3) Crowdsourcing logistics has become my habit
CPB	(1) I will continue to participate in crowdsourcing logistics in the future. (2) I will participate in crowdsourcing logistics every day. (3) I am willing to recommend to my friends and relatives to participate in crowdsourcing logistics

3.2 Sample Collection.

This paper distributes questionnaires through the questionnaire survey platform. The survey subjects take into account the people of all walks of life and all ages, ensuring the randomness and comprehensiveness of the survey. A total of 500 questionnaires were collected in this study. After extracting some invalid data, 456 valid questionnaires were obtained. The effective rate of the questionnaire was 91.2%. The survey results show that people aged 20 to 35 account for 89%, which is consistent with the fact that young people are mainly involved in the masses. All respondents in the

sample participated in crowdsourcing logistics, and 46% of the users often participated in crowdsourcing logistics, indicating that the sample is extremely typical.

4. Data Analysis

4.1 Reliability and Validity Analysis of Measurement Models.

This paper first tests the reliability and validity of the model. For reliability detection, this paper uses Cronbach's α coefficient and CR for detection. As shown in Table 2, the Cronbach's α and CR values of the variables in this study model were all greater than 0.7, indicating that the internal stability of the model was good. For the validity test, the AVE values of each variable were greater than 0.5, indicating that each variable has a good convergence validity. In terms of differential validity detection, as shown in Table 3, the square root of the AVE value of each variable is greater than the correlation coefficient between the variable and other variables, indicating that the model has good discriminant validity.

Table 2 Reliability and validity analysis results of the model

Latent variable	IM	EM	PS	SN	PBC	WTP	H	CPB
Cronbach'sα	0.89	0.87	0.84	0.83	0.86	0.70	0.88	0.83
CR	0.89	0.86	0.85	0.84	0.86	0.77	0.88	0.83
AVE	0.58	0.60	0.58	0.63	0.60	0.53	0.72	0.63

Table 3 Model difference validity test analysis results

Latent variable	IM	EM	PS	SN	PBC	WTP	H	CPB
IM	0.76							
EM	0.54	0.77						
PS	0.5	0.53	0.76					
SN	0.34	0.37	0.37	0.79				
PBC	0.36	0.37	0.36	0.17	0.78			
WTP	0.55	0.52	0.58	0.45	0.55	0.73		
H	0.45	0.35	0.39	0.29	0.41	0.47	0.85	
CPB	0.51	0.36	0.42	0.25	0.6	0.56	0.62	0.79

4.2 Structural Equation Model Analysis.

This paper uses Amos 24.0 to examine research models and research hypotheses. The fit of the study model is first tested. As shown in Table 4, the test indicators of the model all meet the good conditions, indicating that the model fits well. Next, the framework of the research model is examined, and the test results are shown in Fig. 2 and Table 5. Then the hypothesis proposed by the research model is tested. The test results are shown in Table 6. All assumptions were accepted and the level of significance was extremely high. Finally, the total effect of each latent variable on the continuous participation behavior of the crowdsourcing logistics public is analyzed. As shown in Table 7, the total effect of habit, perceived behavior control, and willingness to participate in the continuous participation behavior of the crowdsourcing logistics public is greater.

Table 4 Fitting test results of the model

Fitness test indicator	Common evaluation criteria		Actual value	CFA
	Acceptable	Very good		
	<3.0		1.987	1.898
RMSEA	<0.1	<0.08	0.046	0.044
GFI	>0.7	>0.9	0.901	0.906
AGFI	>0.7	>0.9	0.881	0.885
CFI	>0.7	>0.9	0.949	0.954
NNFI/TLI	>0.8	>0.9	0.942	0.947

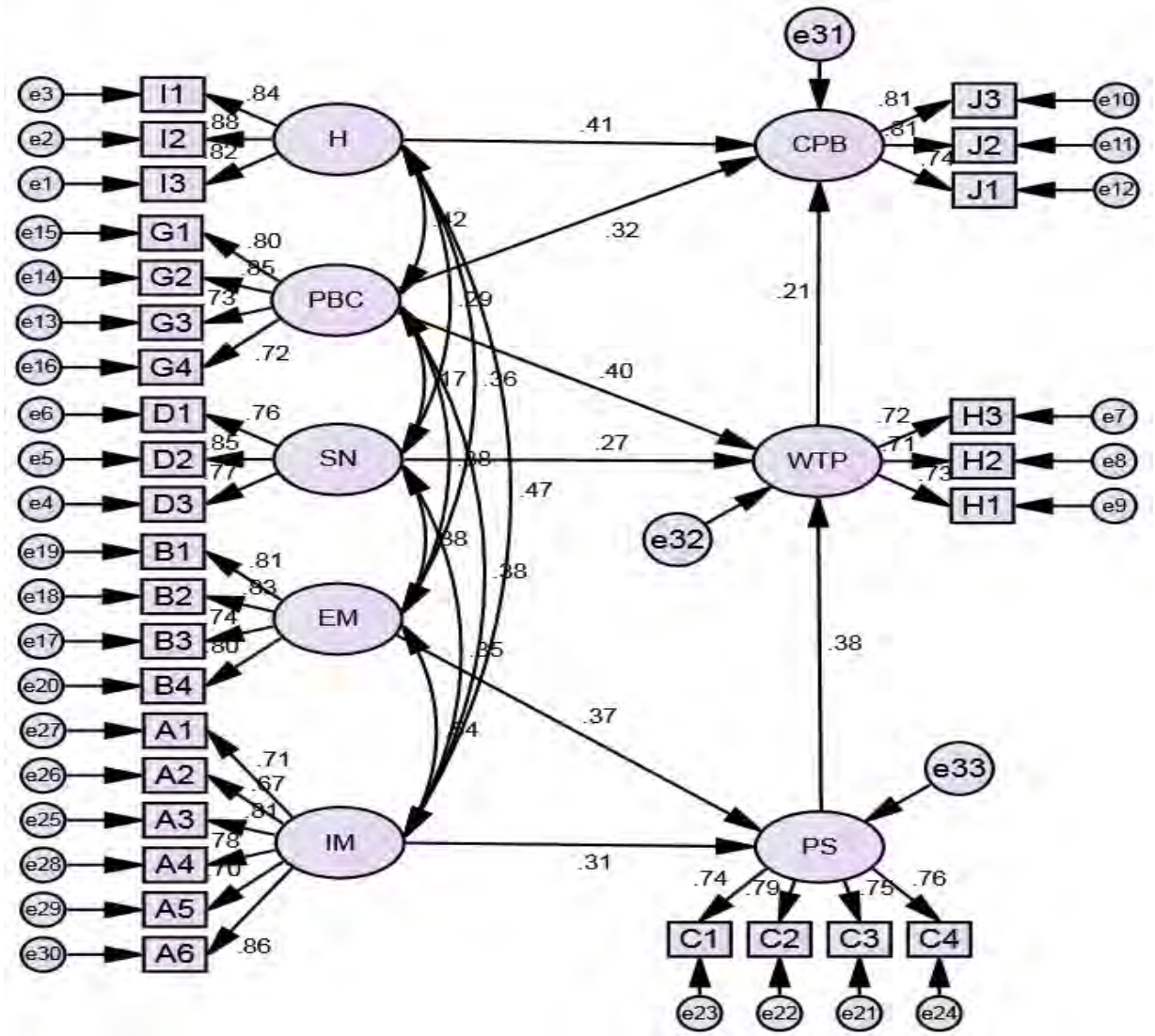

Fig. 2 Test results of the model

Table 5 Test significance level of the study mode l (Note: *** means p<0.001)

Path			Standardized Estimate	Unstandardized Estimate	S.E.	C.R.	P
PS	←	IM	0.31	0.27	0.05	5.37	***
PS	←	EM	0.37	0.37	0.06	6.15	***
WTP	←	PS	0.38	0.45	0.07	6.91	***
WTP	←	SN	0.28	0.26	0.05	5.39	***
WTP	←	PBC	0.40	0.43	0.06	7.39	***
CPB	←	PBC	0.32	0.34	0.06	5.49	***
CPB	←	WTP	0.21	0.20	0.06	3.64	***
CPB	←	H	0.41	0.40	0.05	8.05	***

Table 6 Hypothesis test results of the model

	Hypothetical	Result
H1	IM positively affects the public participation satisfaction of crowdsourcing logistics	Accept
H2	EM positively affects the public participation satisfaction of crowdsourcing logistics	Accept
H3	PS positively affects the willingness of crowdsourcing logistics to continue to participate	Accept
H4	SN positively affecting the willingness of crowdsourcing logistics to continue to participate	Accept
H5	PBC positively affecting the willingness of crowdsourcing logistics to continue to participate	Accept
H6	PBC positively affects the continuous participation of crowdsourcing logistics	Accept
H7	WTP positively affects the continuous participation of crowdsourcing logistics	Accept
H8	H positively affects the continuous participation of crowdsourcing logistics	Accept

Table 7 Effect of variables on the continuous participation behavior of crowdsourcing logistics

Variable	direct effect	indirect effect	total effect
IM	NA	0.03	0.03
EM	NA	0.03	0.03
PS	NA	0.08	0.08
SN	NA	0.06	0.06
PBC	0.32	0.08	0.40
WTP	0.21	NA	0.21
H	0.41	NA	0.41

5. Summary

This paper analyzes the influencing factors of the continuous participation behavior of crowdsourcing logistics public, and draws the important influencing factors of the continuous participation behavior of crowdsourcing logistics people, namely, continuous participation willingness, perceived behavior control and habits, among which habit is the biggest influencing factor. Therefore, the crowdsourcing logistics platform needs to adopt certain strategies to attract the crowdsourcing logistics public to continue to participate and form habits. In addition, perceived behavior control also has an important impact on the continuous participation behavior of the crowdsourcing logistics public. Therefore, the crowdsourcing logistics platform needs to improve the convenience of the crowdsourcing logistics public, and carry out relevant training to improve its self-efficacy.

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