

# Research on the Impact of Crowdsourcing Innovation Platform's Service Quality on Users' Continuous Participation Intention

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## Abstract

With the wide application of Internet technology, crowdsourcing innovation platform came into being. As a mode of collaborative innovation, crowdsourcing innovation provides innovative services for enterprises and users based on the Internet platform. On the basis of sorting out the relevant literature on service quality, flow experience, trust and users' intention to continue to participate, combined with the characteristics of crowdsourcing innovation service platform, this paper establishes the scale of service quality, users' flow experience, trust and intention to continue to participate of crowdsourcing innovation platform. This paper collects 255 valid questionnaires through the questionnaire, and analyse the data to verify the hypothetical model. The result show that: (1) The service quality of crowdsourcing innovation platform has a positive impact on users' flow experience, trust and intention to continuous participate; (2) Users' trust has a positive impact on users' intention to continuous participate; (3) Trust plays an intermediary role in the impact of crowdsourcing innovation platform service quality on users' intention to continuous participate.

## Keywords

Crowdsourcing Innovation; Service Quality; Flow Experience; Trust; Intention to Continuous Participate.

## 1. Introduction

In recent years, with the rapid development of information technology and knowledge economy, the traditional innovation mode of enterprises is gradually changing to an open, platform and collaborative innovation mode. Crowdsourcing provides an online collaboration platform, which brings users, enterprises and resources into the same interactive ecosystem to form the interaction and transaction between supply and demand. It is a typical social economy model. The research on crowdsourcing innovation platform shows that sustainability is an important factor for the success of this virtual market (Boons, 2015). Successful crowdsourcing depends on the continuous passion of platform users. The number of users is an asset of the crowdsourcing innovation platform. However, in today's Internet era, users are faced with many external choices and temptations, and their attention and energy are easily distracted and diverted. At present, the low activity of Witkey is restricting the rapid development of crowdsourcing platform. Therefore, understanding the factors affecting users' continuous participation in crowdsourcing tasks is very important for the continuous operation of crowdsourcing innovation platform.

## 2. Literature Review

### 2.1. Service Quality

There are two explanations for service quality. First, service quality is an overall concept. This concept is the subjective evaluation of quality in the process of users' contact with services and the degree to which specific service requirements are met compared with users' expectations (Guan, 2020). Second, service quality is conceptualized as a multidimensional term. Gronroos's two-dimensional model, Brady's three-dimensional model and SERVQUAL's quality of service model are common multi-dimensional quality of service models. Multidimensional methods have been widely accepted and supported through qualitative and empirical research. Therefore, this paper uses a multi-dimensional model to study the service quality, and defines the service quality of crowdsourcing innovation platform as the overall perception of users on the service content, service process and service results of crowdsourcing innovation platform. High quality service quality will improve users' subjective feelings and improve users' satisfaction and loyalty. User loyalty is an important factor affecting the survival and development of crowdsourcing innovation platform. User loyalty to the platform shows that users will continue to participate in the tasks of crowdsourcing innovation platform. When the service quality level provided by crowdsourcing innovation platform to participants is very high, the higher the loyalty of participants is, the stronger their willingness to continue to participate in crowdsourcing tasks will be.

### 2.2. Flow Experience

Flow theory was first proposed by Csikszentmihalyi (1975). He believed that when individuals were completely immersed in a pleasant activity, they could experience flow. Flow is a state of mental operation. People in the state of "flow" completely focus on an activity, have an energetic sense of concentration and enjoyment, and ignore the sense of space and time (Csikszentmihalyi, 1975). With the development of the internet, the concept of immersive experience has been extended to the network environment. The impact of network products on users' flow experience has become a research hotspot. Trevino (1992) believes that flow experience is an important factor in human-computer interaction design, and users' attitude towards computer technology depends on whether flow experience is generated. Flow experience is a positive experience, which will have a direct impact on the participation behavior of participants. Research shows that flow experience will positively affect the continuous use intention and continuous use behavior of web users (Judy, 2007).

### 2.3. Trust

Trust is an informal control mechanism in network exchange relations. It has inherent uncertainty, anonymity, lack of control and potential opportunism (Yu, 2011). It can reduce friction, limit opportunistic behavior, encourage future transactions and promote long-term relationships (Bhattacharjee, 2002). Morgan and Hunt (1994) put forward the commitment trust theory of relationship marketing (CTRM) based on the social exchange theory, which is mainly used in the research of relationship marketing. They believe that the existence of relationship commitment and trust is the core of the success of relationship marketing, and the customer's trust and commitment to the seller is the decisive factor of the effect of relationship marketing. Trust is crucial to the success of crowdsourcing and may affect the continued participation of the subcontractor (Feller, 2012). Crowdsourcing innovation website is a typical transactional virtual community, and trust also plays an important role in such network environment (Feller, 2012). It is considered to be the antecedent affecting employees' willingness to participate (Martinez, 2017; Jonathan, 2017). Therefore, it is necessary to explore the factors of trust.

## 2.4. Continuous Participation Intention

Crowdsourcing innovation platform is essentially an information system. Bhattacharjee (2001) applied the Expectation Confirmation model to the field of information system and developed the continuous use model of information system. The theory holds that the perceived usefulness and satisfaction of users after using an information system for the first time directly affect their intention to continue using the system, and the satisfaction depends on the perceived usefulness and the degree of Expectation Confirmation.

The existing literature on the continuous participation behavior of contractors is mostly based on different theoretical perspectives. Scholars mostly use technology oriented theories such as planned behavior theory, social exchange theory and sustainable use of information system. For example, Kaur et al. (2016) found that individual's willingness to continue to use will be positively affected by user attitude and satisfaction through the research on Facebook brand community. Many scholars also use the theory of expected value, social learning process, purchase value theory, group participation model and other relationship oriented theories to explore the factors affecting the intention of crowdsourcing employees to participate continuously. They believe that crowdsourcing innovation activities are essentially a collection of people and relationships, and the interactive relationship of various participants is an important factor to promote users' continuous participation.

## 3. Research Hypothesis

### 3.1. Relationship between Service Quality and Continuous Participation Intention

Users' intention to continuously use products or services can be used as an indicator to judge loyalty and measure users' future behavior. After receiving the product or service, users will have a perception of the product or service according to the actual experience, and affect the possible actions in the future. As a network platform for the public to participate in crowdsourcing, the quality of information and services provided by crowdsourcing websites determines the quality of operation of crowdsourcing websites. The better the quality of the crowdsourcing community, the better the reputation and application performance of the platform, which can enable users to participate in crowdsourcing tasks more easily and quickly, and communicate more conveniently and quickly with the platform and other users, the greater the possibility of the public entering the platform and the greater the possibility of their intention to continue to participate in the tasks of the crowdsourcing platform. Based on this, this paper puts forward the following hypothesis:

H1: The service quality of crowdsourcing innovation platform has a significant positive impact on users' continuous participation intention.

### 3.2. Service Quality, Flow Experience and Continuous Participation Intention

The user's flow experience will also affect the user's behavior intention. If the service quality of the online crowdsourcing innovation platform is high, it will enhance the flow experience of users, so that users can be more absorbed in learning, communication, tireless and excited in the online crowdsourcing innovation platform (Kohler, 2019). Improving the service quality of crowdsourcing innovation platform can improve user satisfaction, make users more immersed in crowdsourcing tasks, enjoy the fun of participating in tasks, and obtain a higher level of experience. Therefore, this paper puts forward the following hypothesis:

H2: The service quality of crowdsourcing innovation platform has a significant positive impact on user's flow experience.

Previous studies have shown that flow experience can affect purchase attitude and willingness (Bittner, 2014). When users have a flow experience in the process of network use, they will get

a sense of pleasure and satisfaction, which will affect users' continuous use of the website (Lin, 2007). A good participation experience helps to enhance users' positive evaluation and emotion towards the platform and promote their continuous participation in crowdsourcing tasks. Therefore, this paper puts forward the following hypothesis:

H3: Flow experience has a significant positive impact on users' continuous to participation intention.

H4: Flow experience plays an intermediary role between the service quality of crowdsourcing innovation platform and users' continuous participation intention.

### 3.3. Service Quality, Trust and Continuous Participation Intention

When there is mutual trust between individuals, individuals are more willing to cooperate and interact (Nahapiet, 1998). For crowdsourcing websites, it is very important to establish a set of guaranteed contract mechanisms. Only in this way can we provide good services for users and attract more individuals to participate in crowdsourcing activities. In crowdsourcing activities, the employer and the contractor are in a state of information asymmetry; Trust can effectively improve information asymmetry and reduce transaction costs (Bruwer, 2013). Therefore, this paper puts forward the following hypothesis:

H5: The service quality of crowdsourcing innovation platform has a significant positive impact on user's trust.

According to the theory of attribution effect, there must be intermediary processing procedures in the incentive and subsequent behavior of individuals (Bernard, 1985). Therefore, when users trust crowdsourcing innovation platform, this trust will inevitably affect users' behavior intention. The normal operation of crowdsourcing innovation platform needs not only the internet technology system as the carrier medium, but also the cooperation and cooperation among members and between members and the platform. Therefore, this paper puts forward the following hypothesis:

H6: Trust has a significant positive impact on users' continuous participation intention.

H7: Trust plays an intermediary role between the service quality of crowdsourcing innovation platform and users' continuous participation intention.

Based on the above theoretical hypothesis, the research model of this paper is constructed, see Figure 1:

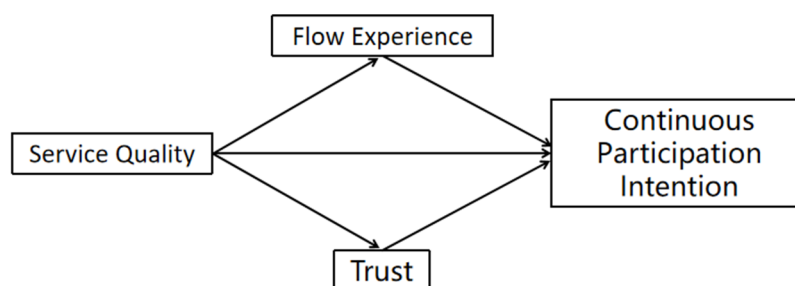


Figure 1. Research Model

## 4. Data Analysis

### 4.1. Samples and Data

A total of 333 questionnaires were distributed in this survey. After excluding the invalid questionnaires, 255 valid questionnaires were recovered, with a questionnaire recovery rate of 76.7%. Through the analysis of demographic variables of the collected data, it is found that among the respondents of this study, men account for 32.5%(84), with women accounting for 67.7% 06% (171 persons). In terms of age, it is mainly 18-45 years old, of which 18-25 years old accounts for 63.7%(163), accounting for 33.5% aged 26-45 (86), accounting for 2.5% of

those aged 46-65 (6). In terms of education level, 70.59% (180) have college or bachelor degree, 6.27% (16) have high school, technical secondary school or below education, 23.14% (59) have graduate degree or above.

### 4.2. Measurement Scale

In this paper, the Likert five level scale is used to measure the questionnaire. From very disagree to very agree, the scores are given from 1 to 5 respectively.

Service quality questionnaire according to the scale prepared by Brady and Rui, the service quality is divided into environmental quality, interaction quality and result quality. Flow experience based on the research scale of Shin and Xiong Wei. Trust based on the research scale of Kim et al. Intention to continuous participate based on the research scale of Bhattacharjee and Alraimi.

### 4.3. Reliability and Validity Analysis

**Table 1.** Reliability and Validity Tests

Variable	Item	Factor Loading	AVE	CR	Cronbach's $\alpha$ Coefficient	
Service Quality	A1	0.781	0.599	0.913	0.913	
	A2	0.732				
	A3	0.719				
	A4	0.811				
	A5	0.791				
	A6	0.793				
	A7	0.785				
	Interaction Quality	A8	0.768	0.612	0.927	0.926
		A9	0.809			
		A10	0.788			
		A11	0.750			
		A12	0.795			
		A13	0.792			
		A14	0.799			
	Consequence Quality	A16	0.767	0.640	0.877	0.877
		A17	0.831			
		A18	0.805			
		A19	0.795			
	Flow Experience	B1	0.807	0.649	0.881	0.881
B2		0.765				
B3		0.840				
B4		0.809				
Trust	C1	0.782	0.618	0.866	0.867	
	C2	0.767				
	C3	0.793				
	C4	0.803				
Continuous Participation Intention	D1	0.794	0.603	0.859	0.857	
	D2	0.773				
	D3	0.747				
	D4	0.791				

See Table 1. Cronbach's for each variable  $\alpha$  the coefficients are greater than 0.8. It indicates that the internal consistency of the scale is good; The combined reliability (CR) of each variable was higher than 0.8, indicating that the combination reliability of the scale is good. The factor load of each question item is greater than 0.7. Ave value is greater than 0.5. It shows that the scale of this study has high validity.

**4.4. Hypothesis Test**

Firstly, through structural equation analysis on the research model to verify the research hypothesis of this paper. According to the analysis results in Table 2, the data fitness index of the research model meets the fitting requirements:  $\chi^2/df=2.425(<3)$ , RMSEA=0.075(<0.08), CFI=0.955( $\geq 0.9$ ), GFI=0.9( $\geq 0.9$ ), NFI=0.926( $\geq 0.9$ ), IFI=0.955 ( $\geq 0.9$ ), indicating that the model fitting result of this study is better.

**Table 2. Model Fitting Coefficients**

$\chi^2/df$	RMSEA	CFI	GFI	NFI	IFI
2.425	0.075	0.955	0.9	0.926	0.955

The standardized path coefficients between variables obtained through structural equation model analysis are shown in Table 3. According to the analysis results in Table 3, the service quality of crowdsourcing innovation platform website has a significant positive impact on user trust, flow experience and intention to continuous participate (the path coefficients are 0.247, 0.777 and 0.485 respectively). It is assumed that H1, H2 and H5 are supported. Trust has a significant positive impact on the intention to continuous participate (the path coefficient is 0.647), assuming that H6 is supported. The impact of immersion experience on users' intention to continuous participate is not significant, assuming that H3 and H4 are not tenable. Trust plays an indirect role in the relationship between service quality and intention to continuous participation.

**Table 3. Hypothesis Test Result**

Path	Standardized Coefficient	SE	Result
SQ→CPI	0.247*	0.104	Support
SQ→FE	0.777***	0.077	Support
FE→CPI	0.034	0.086	nonsupport
SQ→T	0.485***	0.089	Support
T→CPI	0.647***	0.127	Support

Note: SQ: Service Quality; CPI: Continuous Participation Intention; FE: Flow Experience; T: Trust. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001.

**Table 4. Results of Bootstrap Mediation Effect Test**

Dependent Variable	Independent Variable	Mediating Variable	Mediating Effect Value	SE	Confidence Interval	
					LLCI	ULCI
CPI	SE	T	0.366	0.061	0.261	0.500

In order to further test the mediating effect of trust, this paper uses bootstrap method for nonparametric statistical analysis. The inspection results are shown in Table 4. In the mediating effect test results of the impact of service quality on the willingness to continue to participate, the mediating effect value of trust is 0.366, the confidence interval is [0.261, 0.500], excluding 0, indicating that trust plays a significant intermediary role between service quality and willingness to continue to participate, so H7 passed the test.



## 5. Conclusion

This paper evaluates the service quality of crowdsourcing innovation platform from three dimensions: environmental quality, interaction quality and result quality, discusses the impact of service quality of crowdsourcing innovation platform on users' continuous participation intention, introduces flow experience and trust, constructs a theoretical model, and makes an empirical test and analysis.

The results show that the service quality of crowdsourcing innovation platform has a significant positive impact on users' flow experience, trust and intention to participate continuously. Users' flow experience has a significant positive impact on users' trust, and users' trust has a significant positive impact on users' intention to participate continuously; Trust plays an intermediary role in the impact of crowdsourcing innovation platform service quality on users' intention to continuous participation. However, the impact of flow experience on users' intention to continue to participate is not significant, which shows that when users are immersed in using the crowdsourcing innovation platform, the experience is only temporary, and the experience for a certain period of time is not enough to enable users to continue to use the platform. Only when users have a flow experience when participating in tasks and browsing website pages, they think that the crowdsourcing innovation platform is trustworthy and will not deceive users, Will continue to use the crowdsourcing innovation platform and continue to participate in the tasks on the platform.

## 6. Research Limitations

In this paper, the dimension division of users' intention to continuous participation and flow experience is relatively single, and there is still other exploration space for the dimension division of service quality. Therefore, in future research, we can conduct research and analysis from different dimensions of service quality, users' flow experience and intention to continuous participation, so as to study the relationship between variables more comprehensively.

In terms of questionnaire collection, due to the limitations of conditions, this paper adopts cross-sectional data survey and collects 255 effective samples within a certain time, so the survey samples may not be comprehensive. In the future research, when collecting sample data, we can use the tracking survey method to collect, and conduct a long-term tracking survey on the users of crowdsourcing innovation platform, which can more accurately grasp the dynamic information of platform users.

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