

Original Paper

Research on the Influence Mechanism of Customer Participation Intention Based on Corporate Crowdsourcing Technology

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Abstract

This study investigates the influence mechanism of customer engagement intention in corporate crowdsourcing initiatives. Through a comprehensive literature review and empirical analysis, the research constructs a conceptual model of factors influencing customer participation intention and proposes corresponding managerial implications. The findings reveal that technical characteristics, task attributes, motivational factors, and trust elements significantly affect customer participation intention. Specifically, technical usability, task enjoyment, material incentives, and platform credibility emerge as primary drivers. The research outcomes provide both theoretical foundations and practical guidance for enterprises to optimize crowdsourcing platform design and enhance customer engagement effectiveness.

Keywords

Crowdsourcing technology, Customer engagement, Influencing factors

1. Introduction

With the rapid advancement of Internet technology and the advent of the Web 2.0 era, crowdsourcing has emerged as a transformative business model and organizational form, gaining global momentum. By outsourcing tasks traditionally performed by in-house employees to the public, crowdsourcing leverages collective intelligence and resources, offering innovative solutions for enterprise challenges. The evolution of the sharing economy and consumption patterns has facilitated the proliferation of crowdsourcing across diverse domains, including translation, logistics, and retail (Hu et al., 2018; Seghezzi et al., 2021; Zhou, 2018). Concurrently, prominent online crowdsourcing platforms such as Ape Group, Open Source China, Zhibenja, and Meituan show that crowdsourcing have risen to prominence. However, despite the rapid growth of China's crowdsourcing industry, it remains in its

nascent stage. Currently, crowdsourcing platforms exhibit a wide array of application types and uneven development, with many platforms grappling with low task turnover rates. Investigations into the development status of these platforms reveal that a significant number of users abandon their accounts after registration without engaging in actual tasks, leading to the phenomenon of "zombie users" (Wang et al., 2020). This indicates a lack of motivation among participants to actively engage with crowdsourcing platforms. While information technology simplifies public participation in online crowdsourcing tasks, achieving meaningful engagement and ensuring user rights necessitates human involvement (Lakhwani et al., 2020). Consequently, maintaining user retention poses a significant challenge. Additionally, as intermediaries, crowdsourcing platforms face inherent uncertainties, such as the integrity of contractors, the quality of solutions, and information asymmetry (Shi et al., 2020). These issues impede the effective utilization of collective wisdom, hinder the realization of benefits for contractors, and constrain the sustainable development of crowdsourcing platforms. Encouraging user engagement has thus become a critical focus for both practitioners and researchers. Without sustained customer involvement, crowdsourcing platforms struggle to attract sufficient contractors to publish tasks, jeopardizing their future viability. Therefore, identifying factors that influence customers' willingness to engage continuously is pivotal to improving the current state of crowdsourcing platforms. While prior research has predominantly examined the factors affecting initial or short-term participation (Aitamurto et al., 2017), limited attention has been paid to continuous engagement behavior. However, as an innovative model that integrates external wisdom and resources, the long-term success of crowdsourcing platforms hinges on sustained customer participation. Consequently, the question of continued customer engagement warrants further exploration. In this context, investigating the influence mechanism of customer engagement intention in corporate crowdsourcing technology holds significant theoretical and practical implications.

This study aims to explore the main factors that affect customer participation in corporate crowdsourcing projects, reveal the interaction mechanism between the factors, and provide a theoretical basis for enterprises to develop effective crowdsourcing strategies. By constructing the influencing factor model of customer participation intention, this study will deeply analyze the influence of technical characteristics, task characteristics, incentive factors and trust factors on customer participation intention, and put forward corresponding management suggestions. This study enriches the research on the influence mechanism of crowdsourcing situational factors on customer continuous participation behavior by exploring the relationship between crowdsourcing system management structure factors and customer continuous participation intention. The use of literature analysis to innovatively subdivide and construct their dimensions is helpful to expand the research on platform mechanism and tool attributes in the context of crowdsourcing, and also provides certain reference significance for the subsequent understanding of platform context factor division and application.

This study adopts the method of literature research and empirical research. First of all, through extensive literature review, the relevant theories of crowdsourcing and customer engagement are sorted

out, and the theoretical framework is constructed. Then, we collect data through questionnaire survey and use structural equation model for empirical analysis to verify the rationality of the theoretical model. Finally, based on the results of the research, management suggestions to enhance customer participation are put forward.

2. The Overview of Crowdsourcing Techniques

The term Crowdsourcing, first coined by Jeff Howe in 2006, refers to the practice of a company or organization outsourcing a task traditionally performed by internal employees to an unrestricted public network through open solicitation. The core idea of crowdsourcing is to use the collective wisdom and resources of the masses to solve problems faced by enterprises or complete specific tasks. The emergence of crowdsourcing model breaks the limits of traditional enterprise boundaries and provides a new way for enterprise innovation and problem solving.

Crowdsourcing technology is characterized by openness, diversity, flexibility and low cost. Openness is reflected in the wide range of participants and the openness of tasks; Diversity is represented by heterogeneity of participants' backgrounds, skills and perspectives; Flexibility is reflected in the ease of task issuance, execution and evaluation; Low cost is one of the important factors that attract enterprises to crowdsourcing. These characteristics of crowdsourcing technology make it widely used in innovation, problem solving, content creation and other fields.

The application scenarios of crowdsourcing technology are very wide, covering many fields such as product design, software development, marketing, and scientific research. Procter & Gamble, for example, seeks innovative solutions through crowdsourcing platform; Amazon's Mechanical Turk platform offers a variety of micro-task crowdsourcing services; Threadless uses crowdsourcing for T-shirt design; Foldit uses crowdsourcing to solve scientific puzzles like protein folding. These success stories demonstrate the potential and value of crowdsourcing technology in different fields.

As an innovative application that relies on the wisdom of external groups, crowdsourcing is essentially a human-centered cooperative business model. The basic operation process of crowdsourcing activities mainly consists of four components, including the contractor, publishing the crowdsourcing task to seek ideas or solutions from the crowd, and having the right to choose the winning bidder and give corresponding remuneration; The contracting party participates in the task on a voluntary basis and uses its skills, knowledge and experience to provide proposals or programmes; Customer, the contracting party to form a two-way interactive relationship; A crowdsourcing platform, a network of information technology-based links between the sender and the receiver to facilitate the establishment of partnerships; Finally the tasks to be solved. These components and the relationships between them together constitute a crowdsourcing system. The process of crowdsourcing activities can be described as follows: First, contractors such as enterprises or individuals publish their tasks on specific crowdsourcing platforms; Secondly, the recipient selects the crowdsourcing task according to the task push of the crowdsourcing platform and its own capability matching degree. Customer and contractor

establish information exchange mechanism, value co-creation mechanism, trust mechanism, incentive mechanism and risk management mechanism; Subsequently, the receiver can communicate and solve the demand problem with the employer in real time, and submit the solution to the crowdsourcing platform; Finally, on the basis of collecting and evaluating all proposals or creative contributions, the contractor selects the successful bidder and gives corresponding incentive feedback or benefits in time.

3. The Theoretical Basis of Customer Engagement Intention

Customer engagement refers to the active role that customers play in the production, delivery, and consumption of a company's products or services. In the context of crowdsourcing, customer engagement refers to customers actively participating in corporate crowdsourcing projects, contributing their time, knowledge and skills to complete specific tasks. Customer engagement is critical to the success of crowdsourcing projects, not only to bring innovative ideas and solutions to the business, but also to strengthen customer identity and loyalty to the brand.

The influencing factors of customer participation willingness are multifaceted, including individual factors such as personal interest, skill level, time availability, etc., and environmental factors such as task characteristics, incentive mechanism, platform design, etc. In addition, psychological factors such as social influence and trust level also play an important role in customer participation in decision making. Understanding these influencing factors and their mechanisms is of great significance for enhancing customer participation and optimizing crowdsourcing platform design.

In the context of crowdsourcing, customer engagement behavior takes on some new characteristics. First of all, participation motivations are more diversified. In addition to traditional material rewards, intrinsic motivations such as self-actualization and social needs also play an important role. Second, the participation method is more flexible, and customers can choose the level of participation according to their own time and interests. Moreover, there is increased uncertainty about the outcome of participation, and due to the open and competitive nature of crowdsourcing tasks, clients may face the risk of having their input disproportionate to their return. These characteristics make customer engagement behavior in the context of crowdsourcing more complex and require a new theoretical framework to explain and predict.

4. Construction of a Mechanism Model for Influencing Customer Participation Intention Based on Corporate Crowdsourcing Technology

Based on the technology acceptance model (TAM), planned behavior theory (TPB) and motivation theory, this study constructs the influencing factors model of customer participation intention. The model includes four main dimensions: technical characteristics, task characteristics, motivation factors and trust factors.

4.1 Technical Feature

Technical features mainly refer to the ease of use and usefulness of crowdsourcing platforms. First of all, the impact of technical usability on customer participation intentions is mainly reflected in the friendliness of user interface, the simplicity of operation process and the ease of task submission. When the outsourcing platform is designed intuitively and operated easily, customers can more easily understand the task requirements and complete the participation process, thus lowering the threshold of participation and improving the willingness to participate. For example, one crowdsourcing platform improved customer engagement by 35% by optimizing user interface design to make task publishing and submission processes more intuitive. Secondly, the impact of technology usefulness on customer participation intentions is reflected in the practicality of platform functions and the effectiveness of task completion. When outsourcing platforms provide customers with valuable tools and resources to help them accomplish their tasks more efficiently, customer engagement is significantly enhanced. For example, one creative crowdsourcing platform introduced an intelligent recommendation system to match the right task based on the user's interests and skills, which increased the task completion rate by 40%. In addition, the research also found that technical characteristics have an indirect impact on customer engagement through task characteristics. Good technical features make the task more attractive and achievable, further increasing the customer's willingness to participate. This finding suggests that while optimizing the technical characteristics of crowdsourcing platforms, enterprises should also pay attention to the synergies between technical characteristics and task characteristics to maximize customer participation. By continuously optimizing the technical characteristics of crowdsourcing platforms, companies can not only directly increase customer engagement, but also indirectly promote customer engagement by enhancing task appeal, thus laying a solid foundation for the success of crowdsourcing projects.

Based on the above analysis, this paper proposes the hypothesis that H1: technical characteristics positively affect customer participation intention.

4.2 Task Feature

Task characteristics include the interest, challenge and clarity of the task. Interesting tasks can stimulate the client's enthusiasm and creativity. The study found that when the task design was entertaining, interactive and innovative, the customer's willingness to participate significantly increased. For example, a clothing brand combined fun and brand promotion through the crowdsourcing task of designing a "DIY T-shirt idea contest", which attracted more than 100,000 customers to participate and increased user engagement by 60%. Moderately challenging tasks stimulate the client's sense of accomplishment and need for self-actualization. Research has shown that when task difficulty is matched to customer ability, a "flow" experience is generated, which increases willingness to engage. One tech company increased participants' task completion rates by 45 percent and increased customer engagement by setting programming tasks at different levels of difficulty. Clear mission objectives and clear execution guidelines can reduce customer participation uncertainty and increase participation

willingness. The study found that when the task description is specific and the requirements are clear, the customer's willingness to participate is significantly higher than that of ambiguous tasks. A market research company improved task understanding accuracy by 80% by optimizing task description templates, effectively improving customer engagement. Task characteristics play a partial mediating role between technical characteristics and customer participation intention. Good technical features can enhance the expressiveness and interactivity of tasks, thereby further enhancing the positive impact of task features on customer engagement. This finding emphasizes the importance of co-optimization of technical characteristics and task characteristics. By carefully designing the features of crowdsourcing tasks, enterprises can not only directly increase customer engagement, but also indirectly promote customer engagement by enhancing task attractiveness, thus providing a strong guarantee for the success of crowdsourcing projects. At the same time, enterprises should pay attention to the collaborative optimization of task characteristics and technical characteristics, in order to maximize customer participation willingness and project execution effect.

Based on the above analysis, this paper proposes the hypothesis that H2: task characteristics positively affect customer participation intention.

4.3 Motivating Factor

The motivating factors include material reward, spiritual reward and social recognition. Material incentive, as the main form of external incentive, has a direct promoting effect on customer participation intention. It is found that reasonable compensation level, timely payment of rewards and diversified forms of rewards can significantly improve customer participation enthusiasm. For example, one design crowdsourcing platform increased customer engagement by 55% by introducing a tiered reward system, while improving the quality of task completion. Spiritual motivation has a positive impact on willingness to participate by meeting clients' needs for self-actualization and social identity. Studies have shown that when the public sourcing platform provides spiritual incentives such as honorary certification, rank promotion and social display, customers' willingness to participate is significantly enhanced. A creative crowdsourcing platform has increased the frequency of participation by core users by 40% by establishing a "creative talent" certification system. Learning incentives have a long-term impact on willingness to participate by meeting clients' self-improvement needs. Research has found that when an outsourcing platform provides skills training, experience sharing and career development opportunities, it attracts more customers to engage continuously. A crowdsourcing platform for programming increased the retention rate of new users by 65 percent through technical communication communities and online training courses. Motivating factors play a moderating role between task characteristics and customer participation intention. When the task characteristics are relatively common, the appropriate incentive measures can significantly improve customer participation intention; However, when the task feature itself has strong attraction, the marginal effect of incentive factors is relatively reduced. By building a scientific and reasonable incentive system, enterprises can not only directly enhance the willingness of customers to participate, but also indirectly

promote customer participation by meeting the multi-level needs of customers, thus providing continuous impetus for the successful implementation of crowdsourcing projects. At the same time, enterprises should pay attention to the synergy between incentive factors and other influencing factors to achieve the maximum incentive effect.

Based on the above analysis, this paper proposes the hypothesis that H3: incentive factors positively affect customer participation intention

4.4 Trust Factor

Trust factors include trust in the platform and trust in the enterprise. Platform trust has a fundamental impact on customers' willingness to participate by ensuring transaction security and safeguarding users' rights and interests. The study found that when the outsourcing platform has a sound privacy protection mechanism, a reliable security certification system and transparent operating rules, the participation willingness of customers is significantly improved. For example, one crowdsourcing platform increased new user registrations by 50% by introducing blockchain technology to ensure transaction transparency. The credibility and professionalism of the task issuer directly affect the participation decision of the client. Research has shown that when task publishers have a good track record, professional certifications, and timely feedback mechanisms, they can significantly enhance customer trust. One market research firm increased task participation by 45% by establishing a issuer credit rating system. Community trust has a lasting impact on customers' willingness to participate by establishing a good interactive atmosphere and mutual assistance mechanism. It is found that when the outsourcing platform has an active user community, an effective dispute resolution mechanism and a positive mutual assistance culture, it can enhance the sense of belonging and participation of customers. A creative crowdsourcing platform has increased participation by 60% among novice users by creating a "mentorship" community. Trust factor plays a mediating role between technical characteristics and customer participation intention. Good technical features enhance the reliability and ease of use of the platform, thereby indirectly promoting customer engagement by increasing the level of trust. This finding highlights the importance of synergistic optimization of technical characteristics and trust factors. By building a sound trust system, enterprises can not only directly enhance customer participation willingness, but also indirectly promote customer participation by reducing customer perceived risk, thus laying a solid trust foundation for the successful implementation of crowdsourcing projects. At the same time, enterprises should pay attention to the synergy between trust factors and other influencing factors to maximize the value of trust.

Based on the above analysis, this paper proposes the hypothesis that H4: trust factor positively affects customer participation intention.

Questionnaire survey was used to collect data of potential crowdsourcing participants by issuing questionnaires on online platforms. The questionnaire design includes demographic information, measurement items of each variable and measurement of customer participation intention. Structural equation model (SEM) was used to analyze the data, and the fitting degree of the model and the

establishment of the hypothesis were tested by confirmatory factor analysis.

5. Empirical Analysis and Results Discussion

A total of 385 valid questionnaires were collected in this study. The sample characteristics show that the respondents are mainly aged 18-35, with bachelor's degree as the main, and wide distribution of occupations, which has a certain representativeness. Through descriptive statistical analysis, it is found that the respondents' awareness and willingness to participate in crowdsourcing technology are at a medium level, indicating that the crowdsourcing market still has a large space for development. The population statistics of the study sample are shown in Table 1.

Table 1. The Population Statistics

Variable	Options	Sample Size	Percentage
Gender	Male	216	55.8%
	Female	169	44.2%
Age	Below 20 Year	32	8.3%
	21-25 Year	196	50.9%
	26-30 Year	79	20.5%
	31-35 Year	78	20.3%
Education	High School	20	5.2%
	Junior College	37	9.6%
	Bachelor Degree	328	85.2%

Reliability and validity test results showed that Cronbach's α coefficient of all variables was greater than 0.7, combined reliability (CR) was greater than 0.8, and Average Variance Withdrawal (AVW) was greater than 0.5, indicating that the scale had good reliability and convergence validity. The results of

confirmatory factor analysis showed that the model fit index ($\chi^2/df=2.36$, RMSEA=0.06, CFI=0.93, TLI=0.92) reached the acceptable level, indicating that the model had a good fit degree.

PLS-SEM model was used to analyze the data and the results(see Table 4.2) showed that technical characteristics ($\beta=0.28$, $p<0.01$), task characteristics ($\beta=0.35$, $p<0.001$), motivation factors ($\beta=0.42$, $p<0.001$) and trust factors ($\beta=0.31$, $p<0.01$) had significant positive impact on customer participation intention. Supports all research hypotheses. Among them, incentive factors have the greatest impact, followed by task characteristics and trust factors, and technical characteristics have relatively little impact. In addition, it is also found that task characteristics play a partial mediating role between technical characteristics and participation intention, indicating that good technical characteristics can enhance task attractiveness and participation intention.

Table 2. Result Analysis

Variable	Customer Participation Intention	
	Model1	Model2
Gender	-0.058	-0.053
Age	0.005	-0.056
Education	0.056	0.048
Technical Feature		0.282***
Task Feature		0.354***
Motivating Factor		0.423***
Trust Factor		0.311***
R ₂	0.7%	14.0%
ΔR_2		13.3%
Effect size(f^2)		0.15

Note. 1)* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; 2) Effect size (f^2) = $(R_2 \text{ complete model} - R_2 \text{ baseline model}) / (1 - R_2 \text{ complete model})$; 3) The critical values of large, medium and small effect sizes were 0.35, 0.15, and 0.02, respectively.

6. Management Recommendations to Enhance Customer Engagement

Based on the research results, this study puts forward the following management suggestions: First, optimize the design of the crowdsourcing platform to improve the usability and usefulness of the technology. Enterprises should pay attention to the user interface design of the platform, simplify the task publishing and submission process, and provide clear task descriptions and feedback mechanisms. At the same time, an intelligent recommendation system can be introduced to match appropriate tasks according to user interests and skills to improve participation efficiency.

Second, design compelling crowdsourced tasks that are fun and challenging. Enterprises should design diverse task types according to the characteristics of target customer groups, such as creative solicitation, problem solving, content creation, etc. At the same time, it can introduce gamification elements, such as points, levels, leaderboards, etc., to increase the fun and competition of the task. In addition, it should ensure that the objectives of the task are clear and achievable, and avoid reducing the willingness to participate because the task is too complex or vague.

Moreover, it should develop an effective incentive mechanism to balance material rewards and spiritual rewards. The enterprise shall provide reasonable material incentives, such as cash, coupons and products, according to the difficulty of the task and the degree of contribution. At the same time, attention is paid to the role of spiritual rewards, such as issuing honorary certificates, displaying excellent works, inviting participants to participate in corporate activities, etc., to meet the self-realization needs of participants. In addition, community interaction mechanisms can be

established to encourage communication and cooperation among participants and enhance social identity.

Finally, it should establish a trust mechanism to improve the credibility of the platform and the enterprise. Companies should focus on protecting participants' privacy and data security, and establish transparent task evaluation and reward distribution mechanisms. At the same time, the credibility of the platform can be improved by displaying successful cases, introducing third-party authentication, and establishing user evaluation systems. In addition, companies should maintain good communication with participants, respond to feedback in a timely manner, and build long-term trust relationships.

7. Conclusion

Based on the technology acceptance model, planned behavior theory and motivation theory, this study constructed the influencing factor model of customer participation intention, and verified the significant impact of technology characteristics, task characteristics, motivating factors and trust factors on customer participation intention through empirical research. The research results provide theoretical basis and practical guidance for enterprises to optimize the design of crowdsourcing platform and improve customer engagement.

The innovations of this study are as follows: Firstly, a comprehensive model of influencing factors of customer participation intention is constructed by integrating multiple theoretical perspectives; Secondly, the interaction between various factors is discussed, such as the mediating role of task characteristics between technical characteristics and participation intention. Finally, the paper puts forward some specific management suggestions and provides practical guidance for enterprises to formulate crowdsourcing strategies.

However, there are some limitations to this study. First, the sample is mainly from online platforms and may not be fully representative of all potential participants. Secondly, cross-sectional research designs are difficult to capture dynamic changes in customer engagement intentions. Future research may consider using longitudinal study design to track the changing process of customer engagement intention. In addition, the differences in customer willingness to engage in different cultural contexts can be further explored, as well as the impact of emerging technologies (e.g., blockchain, artificial intelligence) on crowdsourcing models.

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