Academic Journal of Management and Social Sciences
ISSN: 2958-4396 | Vol. 3, No. 1, 2023

The Factors Influencing the Sustained Engagement Behaviour of Crowdsourcing Participants

-- A Mediated Regulation

Jiangang Pang and Xin Luo

Faculty of Economics and Management - Business Administration, Southwest University of Science and Technology, Mianyang, China

Abstract: Purpose-Over the past few years, more crowdsourcing sites have emerged and crowdsourcing users have been faced with more temptations, leading to a loss of users on some crowdsourcing sites. In order to retain crowdsourcing users, the aim of this paper is to explore the factors that influence the continued engagement behaviour of crowdsourcing participants. Design/methodology/approach-Based on Maslow's Hierarchy of Needs Theory and Expectation Confirmation Theory, this paper investigates the factors influencing the sustained participation behaviour of respondents, starting from their motivation and experience after initial participation. Based on this, we propose a hypothesis and a model, and use the Yippee Wizards platform as the research object, obtain questionnaire data in the form of task distribution and conduct an empirical test through SPSS. Findings-The results found that economic motivation was the most significant motivator for the recipient to engage in crowdsourcing activities, that belongingness and satisfaction mediated the chain between expectation confirmation and continued engagement behaviour, and that a higher user rating promoted the utility of belongingness on satisfaction. Originality/value-This empirical analysis demonstrates that the level of wizards moderates the relationship between belonging and satisfaction, and that the higher the level of wizards the greater the facilitation effect.

Keywords: Behaviour of Participation; Motivation; Expectation Confirmation Theory; Levels; Continuing Engagement Behaviour.

1. Introduction

Crowdsourcing was introduced by Jeff Howe (2006) as a new business model in which companies distribute tasks that used to be done by employees via the Internet and have them done by non-specific groups of people. Crowdsourcing offers a new way of organizing the workforce for the software and service industries. In recent years, crowdsourcing has become a fast-growing area of research and online content creation and is an important means of addressing the lack of capital and expertise in small and medium-sized enterprises. A study of Tomnod, a satellite-based online mapping project, found that 57% of volunteer comments were motivated by egoistic themes, and that participants' satisfaction with their contribution and sense of achievement influenced the promotion of the crowdsourcing platform or project(Baruch and May et al.,2016).In an online cultural crowdsourcing project without monetary compensation, it was found that volunteers' intrinsic motivations, such as knowledge acquisition and social motivation, played a crucial role in sustaining participation in the crowdsourcing project (Alam and Campbell et al.,2017).The study found that increasing incentives such as monetary rewards generally increased the willingness of the contractor to accept the task and the speed with which it was completed, but did not improve the quality of the work (Rogstadius and Kostakos, 2011). As crowdsourcing is by its very nature the intelligence and collective wisdom of the crowd, and as the success and sustainability of crowdsourcing communities depends heavily on large-scale participation. It is therefore important to explore what motivates crowds to participate in crowdsourcing competitions. Five different sources of motivation are proposed: psychological, cognitive, psychosocial, leadership-follower, emotional (Zhang,2007). Participant motivation is divided into external as well as internal motivation, with the economic motivation weakening internal motivation when personal satisfaction is achieved and the satisfaction supported by participant motivation having a positive impact on their effort(Y Chris Zhao and Q Zhu et al.,2014).Through reading the relevant literature, it is found that most of the previous studies on participants' motivation have taken intrinsic and extrinsic motivation as the starting point and conducted research through expectation confirmation models, while there are fewer applications of wiener rank in such models. Therefore, this paper builds on the previous work by adding user rank as a moderating variable to influence the two mediating variables of belonging and satisfaction, which in turn influence sustained participation behaviour.

2. Motivation in Crowdsourcing

Motivation comes from needs. There are five levels of human needs, namely physical needs, security needs, social needs, respect needs and self-actualization needs. The first two are known as deficiency needs and give rise to material motivation; the last three are known as growth needs and give rise to spiritual motivation. Only after the lower-level needs have been met do the higher-level needs emerge (Maslow,1943). According to self-determination theory, motivation can be divided into internal and external motivation. A participant is internally motivated if he or she is motivated by the pleasure that comes from performing the activity. In the case of external motivation, the activity is a tool to fulfil a certain expectation (Deci and Ryan,1985). Therefore, this paper divides the motivations influencing the participation behaviour of the contracting parties into external and internal motivations, where external motivations include

economic motivation and knowledge learning motivation, and internal motivations include social motivation, self-development and marketing motivation.

3. External Motivation

Economic motivation arises from physiological needs and security needs, mainly because the recipient participates in the crowdsourcing behaviour in order to obtain the corresponding material rewards. The study conducted fieldwork and an exploratory study of six innovative crowdsourcing companies and brokerages, including Innocentive, Ninesigma and YourEncore, and the results showed that monetary reward was one of the factors influencing the engagement of the contracting parties(Feller et al.,2012).A study of the programming competition website Topcoder found that the most direct motivation for the public to participate in crowdsourcing competitions is the monetary prize(Boudreau et al.,2010).A survey of questions related to different motivational components was carried out on the well-known photo platform iStockphoto, which showed that financial income was the most important motivation (Brabham, 2008).In terms of learning knowledge, there is an innate desire for knowledge, which makes it easier for people to understand what is around them and provides information for people to interact with things(Maslow,1943).A study of 433 employees on the Amazon Mechanical Turk platform found that internal motivation was more important and that learning to improve one's job was an important factor in external motivation(Kaufmann et al.,2011).In innovative industries such as crowdsourcing, exploratory learning is an important motivating factor and participants are driven by a desire to solve challenging scientific problems(Lakhani et al.,2007).On this basis, the following hypotheses are formulated:

H1 The economic motivation of the recipient in crowdsourcing has a significant positive effect on participation behaviour

H2 The knowledge learning motivation of the recipient in crowdsourcing has a significant positive effect on participation behaviour

4. Internal Motivation

Internal motivation is proposed by self-determination theory, which states that individuals are internally motivated to engage in an activity, not for external rewards, but out of their own interest in it, mainly including a sense of competence, hobbies, and achievement, and states that internal motivation drives individuals to make hobbies the most important factor in engaging in an activity(Deci et al.,1981).Not all question-answers engage in crowdsourcing activities for material reasons; people often engage in crowdsourcing activities with little or no financial reward, so internal motivation is an important factor in the engagement of the recipient. The study indicates that the internal motivations of users of innovative virtual communities are divided into meeting new people, learning new knowledge, satisfying interests and sharing experiences with others, i.e. social motivation, self-improvement motivation and hobby motivation, with self-improvement and hobby motivation being the more significant ones influencing user behaviour (Ståhlbröst et al.,2011).The virtual community platform not only provides a platform for users to communicate, but also provides each user with the opportunity to promote themselves. A study that integrates personal empowerment, career development motivation into self-development and marketing motivation(Xuanwei Z et al., 2019).On this basis, the following hypotheses are formulated.

H3 The social motivation of the recipient in crowdsourcing has a significant positive effect on participation behaviour

H4 Self-development and marketing motivation of the recipient in crowdsourcing have a significant positive impact on participation behaviour

5. Expectation Confirmation Theory

The Expectation-Disconfirmation Theory (EDT), developed by Oliver (1980), refers to the fact that users have expectations before making a purchase and receive perceived performance after completing the purchase, and that the difference between perceived performance and expectations is the expectation uncertainty. Expectation-confirmation Theory (ECT) was developed from this theory, and since the two theories are not very different, later scholars did not strictly distinguish between them. If the pre-purchase expectation is greater than the actual use expectation, the expectation will be negatively disconfirmed; if the pre-purchase expectation is less than the actual use expectation, the expectation will be positively disconfirmed. This comparison will directly affect the user's satisfaction with the purchase, which in turn affects the user's repeat purchase behaviour. Expectation confirmation is the result of the difference between the user's pre-purchase expectation and post-use perceived performance in the expectation confirmation theory proposed by Oliver, and subsequently some scholars have integrated the "confirm/disconfirm" results in the expectation confirmation model into "expectation confirmation"(Bhattacherjee,2001).A study of users of social networking platforms found that perceived usefulness can be used as an intermediate variable not only between expectation confirmation and satisfaction, but also between expectation confirmation and ongoing engagement behaviour (Harden,2010). A study examining the impact of platform trust and fairness on task solvers' engagement found that the level of confirmation of solvers' expectations contributed positively to a sense of belonging(Wang M M and Wang J J.,2019).This paper is based on the theory of expectation confirmation, in which the expectation is generated after the solver completes the task, and the difference is obtained by comparing the expectation with the pre-completion expectation, if the difference is positive, the solver's expectation is confirmed, they will feel satisfied and will be more willing to participate in crowdsourcing activities. The key to the crowdsourcing community is the participants, which is essentially a technology system through social media, and the ECM model is equally applicable in the study of the ongoing behaviour of the crowdsourcing receivers. When members of a virtual community recognise the community in which they live, they actively participate in community activities, consider themselves part of the community, and defend the interests of the community in different contexts, not allowing others to harm them. Our reading of the literature shows that if a virtual community provides members with a sense of belonging, it can effectively promote and motivate them to participate more actively in the activities of the community, thus providing them with great psychological and physical satisfaction(Zhao et al.,2012).At the same time, if virtual communities can meet members' needs for self-development, they can be motivated to further recognize the

community and develop stronger advocacy attitudes and behaviours, driving the community to grow and develop. By exploring the role and impact of community belonging on virtual community building, it is found that community belonging has a facilitating effect on virtual community building (Marcelo et al.,2011). The following assumptions are made in this paper.

H5 Respondent engagement behaviour has a positively significant effect on expectation confirmation

H6A The degree of confirmation of the respondent's expectations has a positive and significant effect on their continued engagement behaviour

H6B The degree of confirmation of the respondent's expectations has a significant positive effect on the sense of belonging

H6C The degree of confirmation of the respondent's expectations has a positive and significant effect on satisfaction

H8 Respondent satisfaction has a significant positive effect on sustained engagement behaviour

6. The Mediating Role of Belonging

The concept of belonging to a virtual community originates from a sense of community belonging, defined as the feeling that members are important to each other and that their needs can be met through the community(McMillan and Chavis.,1986).On this basis, a sense of belonging to the virtual community, also known as a sense of attachment and membership, was formally introduced, referring to the degree of recognition, loyalty and the importance of the community to the user(Rheingold.,1993).Studies have shown that the higher the sense of belonging of online community users, the more effort they put into participating in community activities and vice versa(Roberts.,1998).Another study, based on social exchange theory, conducted on a Finnish business newspaper's virtual community website, found that user engagement is mainly driven by expected benefits and that user expectations significantly and positively influence the sense of belonging to the virtual community. Users are driven to do more for the benefit of the community, and they also use this to improve their ranking, such as daily active logins, frequency and quality of crowdsourcing tasks. Therefore, it is crucial that the recipient feels a sense of belonging to the crowdsourcing platform in order to follow through with their actions (Tonteri and Kosonen et al.,2011). the following hypotheses are proposed.

H7A Users' sense of belonging to a virtual community has a positive and significant effect on satisfaction levels

H7B Users' sense of belonging to a virtual community has a positive and significant effect on their continued participation behaviour

7. Respondent Level

Solver rank is a game factor that allows solvers to increase their rank by completing tasks. In the crowdsourcing world, it refers to the experience value that an answerer receives after completing a crowdsourcing task, based on the evaluation of the question seeker, and represents the user's overall strength and status in that crowdsourcing community. Many virtual communities now use levels plus virtual currency to stimulate participation, and this is also the case in the crowdsourcing industry. Social exchange theory points out that society is mutual help and the process of social interaction is an exchange process, and the answerer is expected to obtain experience values specific to the platform to improve his or her rank when completing tasks. Some scholars point out that the rank incentive system is different from the usual monetary incentive system, and that it uses rank equity incentives to positively influence the user's participation behavior, such as identity, rank, and rank privileges (Greenberg and Liebman.,1990). in the course of the study the use of network centricity to explore the impact of various social relationships in marketing on opinion leader formation, word-of-mouth communication and knowledge sharing. Fewer scholars have applied social network structure theory to virtual brand communities The virtual brand community is in fact one of the most in fact, virtual brand communities are also a social network with a central network of members. and the network centrality of its members can, to some extent, reflect their in fact, virtual brand communities are also social networks. In general, the position of members in the community in the community often affects their access to information, the quality of interpersonal and the quality of their interpersonal communication, which in turn affects their sense of belonging to the community (Van et al.,2009; Yoon,2012). the following assumptions are made in this paper.

H9 The higher the respondent rank, the more significant the positive effect of attribution on satisfaction.

8. Theoretical Model

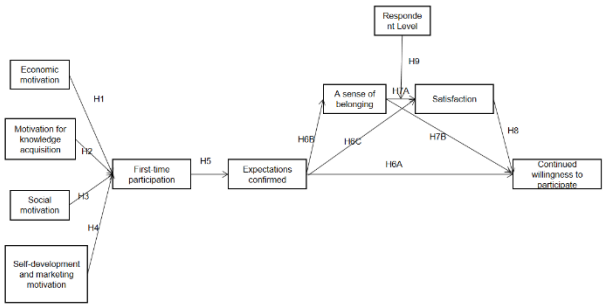


Figure 1. Theoretical

Model of Factors Influencing Respondents' Sustained Engagement Behaviour

9. Methodology and Data Collection

This article selects users of the Yippin Wike crowdsourcing platform as the object of questionnaire distribution. Founded in 2010, Yippin Wike now has more than 26 million registered users, and Yippin Wike gathers millions of organizations, studios and freelancers in categories including design, development, planning, marketing and other quality service providers, helping 5 million knowledge-based talents to achieve online employment and entrepreneurship. It is committed to building a credible and reliable online platform that links millions of SMEs and knowledge and skill workers/institutions in a friendly way, helping both supply sides to grow and succeed, breaking the boundaries of time and space, and becoming the innovator and leader of online platforms in the field of non-physical product trading in China. Therefore, the users of this platform were chosen as the target of this paper, and the motivations of the platform users are all highly representative. The questionnaires were mainly distributed through the Internet, through the Credamo platform on the website of Yipin Weiqi.

Table 1. The final scale and sources

Latent variable	Title item	Cronbach's α
Economic motivation	Access to bonuses	0.790
	Access to material goods	
	Access to additional sources of income	
Social motivation	Use the platform for peer-to-peer communication	0.765
	Easy to communicate on the platform	
	Good communication atmosphere	
	An important way to communicate	
Motivation for knowledge acquisition	Knowledgeable and technical	0.768
	Platform easy access to knowledge	
	The extent to which participants need knowledge	
	Extent to which the crowdsourcing platform can grow knowledge	
Sense of belonging to a virtual community	Degree to which participants identify with the platform guidelines	0.732
	The degree of importance of the participant in the platform	
	The extent to which participants are responsible for the platform	
Expectation confirmation	The extent to which participants feel what is expected	0.762
	The extent to which participants perceive the quality of the service	
	The extent to which participants actually gain	
Satisfaction	Level of participant satisfaction with the platform	0.731
	Satisfaction with the platform's mode of operation	
	Satisfaction with the platform's self-presentation	
Continued engagement behaviour	Prefer to stay on the platform they are currently on compared to other platforms	0.776
	Participants continue to participate in projects on the platform	
	Participants do not leave the platform easily	
Solver level	Participants are regularly noticed and recognized by others in the community	0.708
	Participant leads the community in knowledge exchange with other users	
	The participant's views influence other community members	
First time participants	Experimenting with crowdsourcing platforms	0.755
	Participants participate in a crowdsourcing project	
	Participants interacting with each other	

540 questionnaires were distributed and 514 questionnaires were collected, of which 478 were valid, with a recovery rate of 95.2% and an effective rate of 92.9%. This paper uses SPSS 21.0 as a research tool to study the influence of each motivation on initial participation behaviour, and uses the Process plug-in to study the mediating role of users' sense of belonging between users' expectations and satisfaction and the moderating role of users' rank between sense of belonging and satisfaction under different levels of grouping.

To ensure the scientific validity and authority of the scales, the scales used in this paper were drawn from established scales with high reliability and validity from previous studies. After completion of the concept, 100 questionnaires were collected for pre-survey. Feedback from the pre-study indicated that the scale had good reliability and validity. The questionnaire was administered in the form of a Likert 5-point scale (1=completely disagree, 5=completely agree). The final scale and sources are shown in Table 1.

The Cronbach's coefficients for the Motivation, Behaviour and User Perception scales were all above 0.7, indicating that the scales had a reasonable level of reliability and met the requirements of the internal consistency test. The results of the KMO and Bartlett's test for the overall scale indicated that the KMO value for the overall scale was 0.869 or more than 0.8 and was significant. The KMO value for each subscale was greater than 0.8 and significant. This indicates that factor analysis is appropriate. this study used SPSS 21.0 software to conduct descriptive statistical analysis on the data samples and the results are shown in Table 2 below. The results of the descriptive statistical analysis are as follows: 1) Gender distribution of users. Males accounted for 50.6% and females accounted for 49.4%. There was no difference in the distribution of users between men and women. (ii) Age distribution of users: 21.5% of users were between 18 and 25 years old in university, 40.1% were between 26 and 30 years old in entrepreneurship and employment, 28.5% were between 31 and 40 years old, and 8.7% were older than 40 years old. 74.2% of the users have a good level of education, having received a bachelor's degree or above.

Table 2. The results

Characteristic	Type	Sample size	Proportion
Gender	Male	242	50.6
	Female	234	49.4
age	18-25 years old	104	21.5
	26-30 years old	194	40.1
	31-40 years old	138	28.5
	Over 40 years old	42	8.7
Education	PhD and above	2	0.4
	Master's degree	64	16.9
	Undergraduate	272	56.9
	University specialist	118	24.7
	High School and below	22	1.7

This paper examined the closeness of the relationship between the variables through Pearson correlation analysis. The results showed that economic motivation, social motivation, knowledge acquisition motivation, self-development and marketing motivation were all significantly and positively correlated with initial engagement behaviour at the $p<0.01$ level; expectation confirmation was significantly and positively correlated with belongingness, satisfaction and sustained engagement behaviour at the $p<0.01$ level. The results of the analysis were consistent with the hypotheses and the research hypotheses were tentatively confirmed.

Table 3. Examined the closeness of the relationship between the variables through Pearson correlation analysis

Variables	Economic motives	Social motivation	Motivation for knowledge acquisition	Self-development and marketing motivation	First time participants	Expectations confirmed	Sense of belonging	Satisfaction	Solver Level	Continuous engagement behaviour
Economic motives	1.000	0.385	0.306	0.301	0.384	0.250	0.274	0.228	0.422	0.268
Social motivation	0.385	1.000	0.459	0.406	0.409	0.338	0.376	0.280	0.476	0.336
Motivation for knowledge acquisition	0.306	0.459	1.000	0.402	0.419	0.340	0.364	0.247	0.416	0.350
Self-development and marketing motivation	0.301	0.406	0.402	1.000	0.424	0.414	0.366	0.395	0.449	0.351
First time participants	0.384	0.409	0.419	0.424	1.000	0.370	0.365	0.333	0.443	0.458
Expectations confirmed	0.250	0.338	0.340	0.414	0.370	1.000	0.411	0.486	0.497	0.482
Sense of belonging	0.274	0.376	0.364	0.366	0.365	0.411	1.000	0.459	0.453	0.403
Satisfaction	0.228	0.280	0.247	0.395	0.333	0.486	0.459	1.000	0.324	0.426
Solver Level	0.422	0.476	0.416	0.449	0.443	0.497	0.453	0.324	1.000	0.440
Continuous engagement behaviour	0.268	0.336	0.350	0.351	0.458	0.482	0.403	0.426	0.440	1.000

As some of the Pearson correlation coefficients in the correlation analysis results are close to 0.5, there may be some co-linearity. Therefore, this paper carries out the diagnosis of multiple cointegration of each variable based on the variance inflation factor VIF and tolerance. The tolerance is between 0 and 1, and VIF is 1/tolerance. If VIF is greater than 10, there is co-linearity between the variables. According to the results in Table 4, the VIF of each variable was well below 10 for the rest of the variables diagnosed for multicollinearity with continuous participation behaviour as the dependent variable, so there was no multicollinearity between the variables.

Table 4. Measure whether there is collinearity between variables

Model	Covariance statistics	
	tolerances	VIF
Constants		
Economic motives	0.744	1.344
First time participants	0.650	1.538
Expectations confirmed	0.608	1.644
Satisfaction	0.653	1.531
Sense of belonging	0.646	1.547
Solver Level	0.545	1.835
Social motivation	0.634	1.577
Motivation for knowledge acquisition	0.671	1.491
Self-development and marketing motivation	0.647	1.547

This paper uses Harman's single factor analysis method to test the collected data for common method bias using SPSS 21.0 software for exploratory factor analysis. The results of the unrotated exploratory factor analysis extracted a total of 9 factors with a characteristic root greater than 1. The maximum factor variance explained was 23.679% (less than 40%), and the data used in this study did not have serious common method bias, so it did not affect the conclusions of this paper.

Table 5. Test the data for deviation

Ingredients	Initial Eigenvalues		
	Sum	Variances (%)	Accumulation (%)
1	7.577	23.679	23.679
2	1.871	5.847	29.526
3	1.417	4.427	33.953
4	1.376	4.299	38.252
5	1.343	4.198	42.450
6	1.206	3.769	46.219
7	1.158	3.619	49.839
8	1.109	3.465	53.303
9	1.056	3.299	56.603

10. Empirical Analysis

Table 6. Multiple regression analysis

	Non-standardized factor b	Standard error	t	Sig.
Constants	1.153	0.31	3.726	0.000
Economic motives	0.188	0.059	3.173	0.002
Social motivation	0.134	0.066	2.016	0.045
Motivation for knowledge acquisition	0.170	0.057	2.998	0.003
Self-development and marketing motivation	0.168	0.057	2.923	0.004

This paper conducted a multiple regression analysis of the two external and two internal motivations selected for the study as independent variables on the dependent variable initial engagement behaviour and found that economic motivation ($b=0.188$, $p<0.001$), social motivation ($b=0.134$, $p<0.05$), knowledge acquisition motivation ($b=0.17$, $p<0.01$),

self-development and marketing motivation (b= 0. 168, p< 0.01) were significant. Hypotheses H1, H2, H3 and H4 hold.

The direct effects between the variables were analyzed by estimating Bootstrap 95% confidence intervals for the mediating effects using the SPSS 21.0 macro program Process, by randomly selecting 5000 samples among the subjects, and direct effects were significant if the confidence interval did not include 0. The results of the path coefficients and direct effects are shown in Table below. The results show that the standardised path coefficient between expectation confirmation and continued engagement behaviour is 0.286 (p<0.001), indicating that expectation confirmation has a significant positive effect on continued engagement behaviour, so hypothesis H6A is valid; the standardised path coefficient between expectation confirmation and sense of belonging is 0.365 (p<0.001), indicating that expectation confirmation has a significant positive effect on sense of belonging, so hypothesis H6B holds; the standardized path coefficient between expectation confirmation and satisfaction is 0.324 (p<0.001), indicating that expectation confirmation has a significant positive effect on satisfaction, so hypothesis H6C holds; the standardized path coefficient between the two mediating variables, belongingness and satisfaction, is 0.319 (p<0.001), indicating that belongingness has a significant positive effect on satisfaction, so hypothesis H7A The hypothesis H7B holds; the standardized path coefficient between sense of belonging and sustained engagement behaviour is 0.193 (p<0.01), indicating that sense of belonging has a positive and significant effect on sustained engagement behaviour; the standardized path coefficient between satisfaction and sustained engagement behaviour is 0.188 (p<0.01), indicating that satisfaction has a significant and positive effect on sustained engagement behaviour, and hypothesis H8 holds.

Table 7. The results of the path coefficients and direct effects

	Standardised path coefficients	S.E.	t	P	LLCI	ULCI	Results	Hypothesis
Expectation confirmation → ongoing engagement behaviour	0.286	0.058	4.898	0.000	0.171	0.401	Founded	H6A
Sense of belonging → sustained engagement behaviour	0.193	0.065	2.981	0.003	0.065	0.321	Founded	H7B
Satisfaction → Continuous engagement behaviour	0.188	0.066	2.851	0.005	0.058	0.318	Founded	H8
Expectation confirmation → Satisfaction	0.324	0.054	6.054	0.000	0.219	0.430	Founded	H6C
Sense of belonging → satisfaction	0.319	0.060	5.276	0.000	0.200	0.437	Founded	H7A
Expectation confirmation → sense of belonging	0.365	0.053	6.950	0.000	0.262	0.469	Founded	H6B

Table 8. Use the Bootstrap method to verify the mediated role of the tuning

	Solver Level	Indirect effects	se	t	p	LLCI	ULCI
-1SD	-0.481	0.220	0.079	2.785	0.006	0.065	0.376
SD	0.019	0.338	0.064	5.267	0.000	0.212	0.465
+1SD	0.519	0.456	0.094	4.86	0.000	0.271	0.641

For the moderating effect of answerer rank, the Bootstrap method proposed by Preach (2007) and Hayes (2017) was used to test for the mediating effect of being moderated. This method has been widely used in recent years in both domestic and international research. According to the 74 models of the Bootstrap test procedure developed by Hayes, the corresponding model in this paper is "model 91". The degree of user rank was divided into two groups, the low user rank group (mean - standard deviation) and the high user rank group (mean + standard deviation). The process bootstrap program was executed, model 91 was selected, the sample size was set to the usual value of 5000, the confidence interval was set to 95%, the data centre option was ticked, the interaction term was constructed, and finally the bias-corrected non-parametric percentile method was used to test the moderated chain mediation model, i.e., path 3: expectation confirmation → sense of belonging → satisfaction → continued engagement behaviour. According to Table 7, the indirect effect between attribution and satisfaction was 0.220 (p<0.01) with a confidence interval excluding 0 when the user level was low, and 0.456 (p<0.001) with a confidence interval excluding 0 when the user level was high, which means that the moderating effect of user level between attribution and satisfaction was significant This means that the moderated mediation model holds and hypothesis H8 holds.

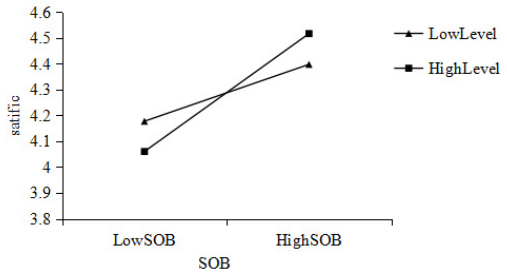


Figure 2. Coordinate result

11. Conclusion

(1) Economic motivation has the greatest impact on initial participation behaviour and is the most significant motivation for users to engage in crowdsourcing activities. This suggests that online crowdsourcing participants are mostly motivated by the desire to receive task bonuses, material rewards and additional income. Therefore, the key to the sustainable operation of the crowdsourcing industry is for the issuer to increase the task bonuses and promote the continued participation of solvers. In addition to increasing the material incentives, the issuer and the platform should also strengthen the influence of non-material rewards on solvers to attract more participants to the crowdsourcing industry.

(2) For low-level users, the platform should start from path 2: expectation confirmation → satisfaction → continuous participation behaviour, and avoid examining only the number of tasks completed and the evaluation of task quality and reputation, such as the ability value = bounty * evaluation coefficient of the Yippin Weiqi platform, which makes it easier for new users not to receive enough tasks and thus be frustrated, reducing their expectation confirmation degree and satisfaction. A platform exchange community should also be established to examine the user's activity, such as daily logins, solving problems related to expertise posted by other users, etc. in order to diversify the rank promotion system. This will not only help to improve their willingness to communicate, but also help to increase the stickiness of new users to the platform they are on to improve their sense of belonging and gradually increase their willingness to continue to participate.

(3) For high level users, the platform should start from path 1: expectation confirmation → sense of belonging → satisfaction → continuous participation behaviour, higher levels can improve the sense of belonging → satisfaction role. Firstly, the platform needs to establish a reasonable evaluation mechanism for completing tasks, so that users can intuitively see the effect of the tasks they have completed and thus confirm their expectations. Secondly, the platform can reduce the corresponding technical service fees level by level according to the user's level.

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