Research on Consumers' Participation Willingness of e-commerce Live Platform

Li Weiqing, Sun Rui

Beijing, China

ABSTRACT

In today's society with the rapid development of the Internet, e-commerce live broadcast has become one of the fastest-growing sales methods. It allows consumers to watch and buy the required goods more intuitively and conveniently, greatly improving the shopping experience of consumers, so it is deeply loved by the majority of users. E-commerce has gradually integrated into people's lives, and it has also subtly changed our consumption patterns. In order to adapt to the rapid development of e-commerce live broadcast field, find out the factors that affect consumers' willingness to participate online in e-commerce live broadcast platform, so as to better guide enterprises and users of e-commerce live broadcast platform to make profits. This paper constructs a simple perception model, and uses the methods of interview, questionnaire survey and literature review, and further realizes that four factors, namely, professionalism, intimacy, real-time interaction and usability of anchors, will affect consumers' willingness to participate. By sorting out the data and collecting data, using the method of qualitative analysis and quantitative analysis, the conclusion is drawn: the professionalism, intimacy, real-time interaction and ease of use of the platform of e-commerce live broadcast all positively influence users' willingness to participate. The research conclusion can strengthen consumers' willingness to buy, provide theoretical support and practical guidance for further optimizing the live broadcast e-commerce platform, and improve consumers' willingness to participate in the live broadcast platform.

KEYWORDS: e-commerce live broadcast; Professionalism; Intimacy; Real-time interaction; Ease of use; Willingness to participate

1. Preface

E-commerce is a rapidly developing network marketing model in recent years. It not only enriches the content and scenes of the live broadcast industry, but also injects vitality into the growth of users in the live broadcast industry. Based on the factors influencing consumers' willingness to participate in previous studies, this study explores the influence mechanism of live broadcast e-commerce situational characteristics on consumers' participation in live broadcast from the perspectives of the professionalism, intimacy, ease of use and real-time interaction of anchors, collects data through interviews and questionnaires distributed to all consumers, consults relevant literature and uses relevant models to analyze and verify the theoretical framework and assumptions of the research.

Reviewing and summarizing the previous research results and the current situation of live delivery, this paper extracts the influencing factors of consumers' willingness to participate in live broadcast in the context of e-commerce. Based on this conclusion, it guides the live broadcast platform to promote planned and orderly marketing activities in the era of "live broadcast plus". While attracting traffic, it brings rich profits to businesses and enriches the research results in related fields such as live e-commerce, highlighting the theoretical application value.

2. Literature Review

In recent years, the live broadcast industry has flourished, and live e-commerce has become a brand-new way of shopping. Combining with the current boom of live e-commerce, this paper analyzes and

explores the factors that affect consumers' willingness to participate in the live e-commerce scene by sorting out the literature. Based on the technology acceptance model, this paper adopts the perceived usability factor. Technolog-y Acceptance Model (TAM) is a model put forward by Davis (1989) when using rational behavior theory to study users' acceptance of information systems. Xu Lin (2007) found that the precondition of the influence of online word-of-mouth is the credibility of online word-of-mouth, and its consumers' dependence on platform, risk perception and relationship strength are the common influences. Xuan Yu and Sun Jianghua (2020) used the theory of planned behavior and technology acceptance model as the theoretical basis to study the change of consumers' live shopping from rationality to impulsiveness during the epidemic. Wan Ling (2021) based on the theory of planned behavior and technology acceptance model, built a theoretical framework of influencing factors of purchasing intention of Internet financial products. Wu Chencheng (2021) studied the willingness of teachers and students to adopt the cloud platform of higher education resources by referring to the related theories of reference service quality. Zou Kai et al. (2018) studied the technology acceptance of mobile library users based on TAM expansion model. Liu Zhichao and Zou Xiaoying (2021), based on the stimulus-response theory model, examined the influence and intermediary mechanism of two online shopping scenarios, namely, live shopping and shopping platform recommendation in online celebrity, on consumers' new product adoption. Liu Fengjun (2020) used SEM model to investigate consumers' purchase intention in the third study. Gao Kai and Sheng Yuhua (2021), based on the theory of planned behavior, revealed the mechanism of business entities adopting live broadcast mode to effectively support the development of live broadcast e-commerce of agricultural products. Zhao Baoguo and Wang Yunfeng (2021), based on SOR theory and perceived value theory, studied the influence of e-commerce anchor characteristics on consumers' purchase intention. Xiong Yan and Li Yang (2008) put trust into the technology acceptance model (TAM), and found that perceived usefulness, perceived ease of use and trust all positively influence the intention to use e-commerce, and perceived ease of use has a positive impact on trust. According to the survey, online celebrity is guided by consumers' psychological and behavioral characteristics, and draws closer to consumers to share and spread, thus increasing consumption.

3. Qualitative Analysis and Hypothesis Proposition

3.1. Qualitative analysis

This paper adopts two qualitative analysis methods: literature review and interview. Through literature review, the general direction of research is determined. By interviewing some users who have participated in e-commerce live broadcast (or have seen e-commerce live broadcast), the research content of this paper is further determined. Through qualitative analysis, the main theme of the article and the research variables, namely, professionalism, intimacy, ease of use and real-time interaction of e-commerce live broadcast, are determined, and how these variables affect the participation willingness of e-commerce live broadcast users is studied, so as to put forward scientific and reasonable assumptions. Choose people of different ages around you to interview. Some interview questions are:

1. Do you think the live broadcast process of the e-commerce live room you have seen is professional? What are the aspects of its specialization and non-specialization? Will this affect your purchase intention? Can you give an example?

2. Do you think the anchors of these e-commerce live rooms are kind? How does it affect your purchase intention? Can you give an example of kindness and unkindness respectively?

3. 3 Do you think that compared with the shopping method of browsing product pictures and product introductions, the process of introducing, displaying products and interacting with users in these e-commerce live rooms can make you feel more realistic? Will this increase your willingness to buy? Can you give an example of what sense of reality is in and how it affects your purchase intention?

4. Is there any difference in your trust in these live studios? Does this trust have an impact on your purchase intention? Can you give an example?

5. What do you think of the social presence (feeling of face-to-face communication with the anchor) in these e-commerce live broadcast rooms? Is there a difference? Have an impact on your purchase intention? Can you give an example?

Specifically, the content is the professionalism and intimacy of the anchor in the live broadcast room, the interaction between the anchor and consumers, whether the ease of shopping in the live broadcast room has an impact on consumers' willingness to participate, and whether there are other factors that

affect consumers' willingness to participate in the live broadcast. Through interviews with many subjects of different ages and income stages, the results show that the professionalism of the anchor in the live broadcast room, the intimacy of the anchor, the real-time interaction between the anchor and consumers, the ease of watching live broadcast and purchasing will positively affect consumers' willingness to participate in live broadcast.

3.2. Assumptions are put forward

3.2.1. Professionalism and users' willingness to participate

Professionalism refers to the relevant knowledge, experience or skills possessed by the anchor and disseminated to its fans and live viewers. It is the most basic that anchors of different categories should have industry knowledge and product cognition professionalism. The professionalism of the anchor is reflected in the unique and accurate explanation of the product, the real-time control of the live broadcast process, and the appropriate and reasonable solution in case of emergency. Therefore, this study believes that the higher the professionalism of the anchor, the more users' willingness to participate in e-commerce live broadcast platform will be stimulated. Therefore, the following assumptions are put forward:

H1: Professionalism positively affects users' willingness to participate in e-commerce live broadcast.

3.2.2. Intimacy and users' willingness to participate

Intimacy is the familiarity and warmth generated by the interaction between consumers and anchors in the live shopping room. The intimacy of the anchor will bring the distance between the anchor and the consumers closer, which is mainly reflected in the anchor's approachable live broadcast attitude, humorous tone of explanation and friend-like communication with users. No matter what kind of program it is, it needs a kind feeling of "zero distance" between the anchor and the audience, and the anchor should give the audience full respect. According to the questionnaire, the anchor who always keeps enthusiasm for the new powder and the old powder and gives the commenters corresponding answers with full respect can often get the favor of

more users. Therefore, this study believes that the more affinity the anchor is, the more users are willing to participate in the live broadcast. Therefore, the following assumptions are put forward:

H2: Intimacy positively affects users' willingness to participate in the live broadcast of e-commerce.

3.2.3. Real-time interactivity and user participation willingness

Real-time interaction is a process in which people communicate, work or play together in society. There are many anchors who broadcast live. If the anchor of this studio can't create some interesting places for a long time, it is common for the audience to leave the studio. Therefore, when we watch a live broadcast, we often watch a lot of anchors constantly saying some hot topics to communicate with the audience, which also increases the interactivity of the whole live broadcast room. For example, the barrage function and even the wheat function in the live broadcast room have greatly improved the interactivity of the live broadcast room and attracted more users to participate. Therefore, this study believes that the higher the real-time interaction, the more users will participate in the live studio. Therefore, the following assumptions are put forward:

H3: Real-time interaction positively affects users' willingness to participate in e-commerce live broadcast.

3.2.4. Ease of use and users' willingness to participate

Ease-of-use is an important aspect of usability, which means that the product is easy for users to learn and use, reduces the burden of memory, and is satisfied with the use. With the continuous improvement of Internet functions, mobile phones and computers have more functions, but for older users, they can't adapt to too complicated operating software, and complicated operation is undoubtedly a burden for them, and they need a simpler and easier-to-use operating platform. Therefore, this study believes that the higher the usability of the live broadcast platform, the more users of different ages will be attracted. Therefore, the following assumptions are put forward:

H4: Ease of use positively affects users' willingness to participate in e-commerce live broadcast.

Based on the technology acceptance model and other theoretical models, combined with the above assumptions, the theoretical model proposed in this paper is shown in Figure 1.
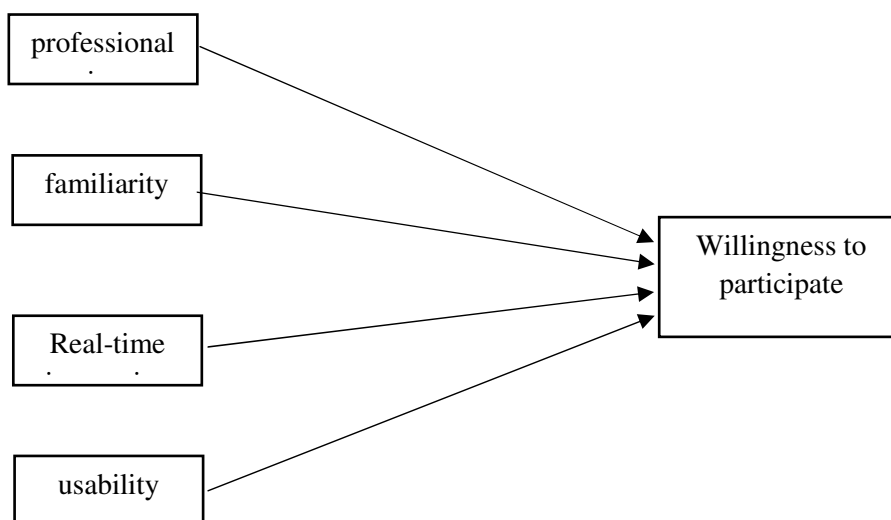
Figure 1 Theoretical model

4. Research method

4.1. Scale design

Through literature review, it is known that the four aspects of interactivity, entertainment, authenticity and visibility confirm the influence of live shopping characteristics on consumers' impulse buying and purposeful purchasing behavior. Because the live broadcast mode of e-commerce has the characteristics of immediacy and real-time, real-time interactivity is proposed. Because e-commerce live broadcast is social, it puts forward the intimacy existing in social life. Because e-commerce live broadcast is mainly a way for consumers to buy goods, it is added to the scale considering its ease of use.

In this paper, the characteristics and situational factors of e-commerce live broadcast are divided into four angles: professionalism, intimacy, real-time interaction and usability, which are used as antecedent variables that affect consumers' willingness to participate. At the same time, the willingness to participate is regarded as the outcome variable. Therefore, the model is designed that the characteristics of e-commerce live broadcast and situational factors affect the intermediate variables, and the intermediate variables play an intermediary role, and the final result variables generate purchase intention.

4.2. Pre-investigation

In the pre-investigation, interviews with different groups were conducted at first. At this stage, through detailed interviews with no less than 20 people, I learned about different factors and other ideas of different age groups, different genders and even different individuals that affect their purchase intention in e-commerce live broadcast. After all the interviews were completed, it was found that there were some confusing variables and variables with low impact on most groups during the data sorting period. These problems were repeatedly discussed and revised, and finally the expression and starting point of variable setting were improved. After the interview, it was handled efficiently, which prevented the later problems from being enlarged like snowballs. This urges us to establish a theoretical model more accurately, preliminarily draw up the independent variables of the project, and conveniently imagine the questionnaire variables to be published in the next step and their specific contents.

5. Data analysis

This study is divided into five modules, namely descriptive statistical analysis, factor analysis, reliability analysis, validity analysis and regression analysis. The data analysis of this paper is mainly operated by SPSS, and the results of this survey are analyzed and interpreted by collecting questionnaires, collecting data and processing data.

5.1. Descriptive statistical analysis

As shown in Table 1, a total of 177 questionnaires were collected in this survey, including 82 male respondents, accounting for 46.3% of the total number, and 95 female respondents, accounting for 53.7% of the total number. Compared with the pre-survey, the formal questionnaire survey has a more balanced ratio of men to women and age, and the data is more authentic.

Table 1 Descriptive statistical analysis results

	Topic item	frequency	percentage	Effective percentage	Cumulative percentage
gender	man	82	46.3	46.3	46.3
	woman	95	53.7	53.7	100.0
age	18-24 years old	fifty-six	31.6	31.6	31.6
	25-30 years old	34	19.2	19.2	50.8
	31-39 years old	forty-two	23.7	23.7	74.6
	40-49 years old	26	14.7	14.7	89.3
	50-59 years old	18	10.2	10.2	99.4
	60 years old and above	one	.6	.6	100.0
income	Less than 50,000 yuan	29	16.4	16.4	16.4
	50-100,000 yuan	fifty-two	29.4	29.4	45.8
	100-200,000 yuan	53	29.9	29.9	75.7
	200,000-300,000 yuan	19	10.7	10.7	86.4
	300,000-400,000 yuan	nine	5.1	5.1	91.5
	400-600,000 yuan	eight	4.5	4.5	96.0
	More than 600,000 yuan	seven	4.0	4.0	100.0
standing on Internet	Less than 1 year	21	11.9	11.9	11.9
	1-3 years	25	14.1	14.1	26.0
	3-5 years	26	14.7	14.7	40.7
	5-8 years	38	21.5	21.5	62.1
	More than 8 years	67	37.9	37.9	100.0

5.2. factorial analysis

Factor analysis refers to a multivariate statistical analysis method, which starts from studying the dependence relationship within the index correlation matrix, and sums up some variables with overlapping information and complicated relationships into a few unrelated comprehensive factors. The purpose of factor analysis is to select and eliminate obviously unreasonable items, and make the measurement dimension more rigorous and reasonable. In the part of factor analysis, the extraction method used is principal component analysis, and the rotation method used is Kaiser standardized maximum variance method. See the table below for the processed data.

Table 2 Factor analysis results

Rotated component matrix a					
	component part				
	one	2	three	four	five
1 professional	.307	.219	.265	**.766**	.284
2 Professionalism	.216	.345	.200	**.798**	.158
3 Professionalism	.396	.246	.395	**.619**	.196
Intimacy 1	.327	.291	**.681**	.283	.215
Intimacy 2	.286	.363	**.716**	.188	.289
Intimacy 3	.339	.212	**.754**	.297	.187
Real-time interactivity 1	.227	.207	.345	.131	**.756**
Real-time interactivity 2	.486	.270	.002	.207	**.623**
Real-time interactivity 3	.340	.069	.240	.263	**.714**
Ease of use 1	.361	**.788**	.226	.122	.088
Ease of use 2	.152	**.775**	.330	.229	.097
Ease of use 3	.045	**.755**	.121	.367	.300
1 participation	**.803**	.110	.287	.140	.211
2 participation	**.824**	-.005	.229	.168	.224
3 participation	**.727**	.301	.204	.233	.229
4 participation	**.804**	.230	.167	.178	.245
5 participation	**.670**	.288	.256	.316	.161

Extraction method: Principal component analysis.

Rotation: Caesar normalization maximum variance method.

A. The rotation has converged after 6 iterations.

As shown in Table 2, principal component analysis is made on five variables: professionalism (3 items), intimacy (3 items), real-time interaction (3 items), ease of use (3 items) and willingness to participate (5 items). In the part of professionalism, it can be seen that the maximum factor loads of the three items fall in the fourth column, which are 0.766 and 0.766 respectively. In the part of intimacy, it can be seen that the maximum values of factor loads of the three items fall in the third column, which are 0.681, 0.716 and 0.754 respectively, all of which meet the requirement of greater than 0.5; In the part of real-time interaction, it can be seen that the maximum factor loads of the three items fall in the fifth column, which are 0.756, 0.623 and 0.714 respectively; the factor loads of other columns are all less than 0.5; In the part of usability, it can be seen that the maximum factor loads of the three items fall in the second column, which are 0.788, 0.775 and 0.755 respectively, all of which meet the requirement of being greater than 0.5, while the factor loads of other columns are all less than 0.5; In the part of willingness to participate, we can see that the maximum factor loads of the five items fall in the first column, which are 0.803, 0.824, 0.727, 0.804 and 0.670 respectively, all of which meet the requirement of being greater than 0.5, while the factor loads of other columns are all less than 0.5. Therefore, the results show that the questionnaire set this time is very successful in terms of professionalism, intimacy, real-time interaction and willingness to participate.

5.3. reliability analysis

Calculate Cronbach's Alpha of each variable, and if it is greater than 0.7, it indicates that the reliability of the measurement scale is good.

Table 3 Reliability analysis results

variable	Topic item	Delete Cronbach's Alpha value of any item.	Cronbach's Alpha value
professionality	1 professional	.806	0.894 jin
	2 Professionalism	.859	
	3 Professionalism	.882	
familiarity	Intimacy 1	.852	0.889 jin
	Intimacy 2	.841	
	Intimacy 3	.833	
usability	Ease of use 1	.782	0.843 jin
	Ease of use 2	.756	
	Ease of use 3	.806	
Real-time interaction	Real-time interactivity 1	.713	0.805 jin
	Real-time interactivity 2	.768	
	Real-time interactivity 3	.722	
Willingness to participate	1 participation	.905	0.924 jin
	2 participation	.908	
	3 participation	.905	
	4 participation	.900	
	5 participation	.916	

As can be seen from Table 3, three items about professionalism, three items about intimacy, three items about ease of use, three items about real-time interaction and four items about willingness to participate are all larger than 0.7, indicating that the questionnaire is well designed in terms of professionalism, intimacy, ease of use, real-time interaction and willingness to participate, and its reliability is true and reliable.

5.4. Validity analysis

Validity refers to the degree to which measuring tools or means can accurately measure the things to be measured, that is, whether the items in the questionnaire can effectively measure the variables to be measured in research. Before the validity analysis, it is necessary to meet the strong correlation between items, which is mainly reflected in two points, one is KMO value and the other is Bartlett spherical test value, so this part is divided into two steps.

1. Find KMO value and Bartlett value

Firstly, KMO is used to test the correlation and partial correlation between variables (the values are between 0 and 1). The stronger the correlation between variables, the weaker the partial correlation. The closer KMO statistic is to 1, the stronger the correlation between variables and the weaker the partial correlation. It is generally considered that KMO statistics above 0.7 have better effect. After data analysis, dimension reduction and factor analysis, the results are shown in Table 4.

Table 4 validity analysis results

KMO and bartlett inspection		
Km sampling suitability quantity.		.938
Bartlett sphericity test	Approximate chi-square	2566.967
	freedom	13 six
	significance	.000

The KMO statistic of this questionnaire is 0.938, which is greater than 0.7, so it is proved that the correlation among variables in this questionnaire is strong. Then do Bartlett spherical test, which is used to test the distribution of data and the independence of each variable. If the Significance (sig.) value is less than 0.05 during the test, the data is spherical, which means that the variables are related and the factor analysis is effective. As shown in Table 4, the significant value obtained by Bartlett spherical test is obviously less than 0.05 (0.000 in the figure is the result obtained after keeping three decimal places), that is, there is correlation between variables.

2. Factor analysis.

The results of factor analysis are shown in Table 2. The factor load of each variable in its own system is greater than that of other columns, and the data basically meet the requirements.

5.5. Regression analysis

Regression analysis is an analytical method to study the quantitative change relationship between independent variables and dependent variables. It mainly measures the influence ability of independent variables on dependent variables through the regression model between dependent variables and independent variables that influence dependent variables, and then can be used to predict the trend of dependent variables. The regression method adopted in this paper is multiple linear regression, and the influence of multiple independent variables on one dependent variable is investigated. The dependent variable is the purchase intention explored in this paper. Besides consumer guide, fashion and perceived ease of use, the independent variables also add two control variables: age and gender.

Table 5 Results of regression analysis

model		Non-standardized coefficient		Standardization coefficient	t	significance
		B	Standard error	Beta		
one	(constant)	-.178	.205		-.870	.385
	professionality	.236	.073	.236	3.207	.002
	familiarity	.323	.075	.323	4.308	.000
	Real-time interaction	.340	.064	.340	5.298	.000
	usability	.012	.064	.012	.187	.852
	age	.099	.034	.135	2.907	.004
	gender	-.108	.092	-.054	-1.173	.243
A. Dependent variable: participation						

As shown in the table, the significant values of professionalism, intimacy, real-time interactivity and age are all less than 0.05, while the significant values of ease of use and gender are greater than 0.05, among which the β of professionalism, intimacy, real-time interactivity and age are all greater than 0, which indicates that the professionalism, intimacy, real-time interactivity of the anchor and the age of consumers are positively influencing consumers' willingness to participate, while ease of use and gender have little influence on consumers' willingness to participate.

6. Conclusions and suggestions

According to the data analysis in the fifth part, it can be seen that the professionalism, intimacy and real-time interaction of the anchor in e-commerce live broadcast positively affect consumers' willingness to participate in e-commerce live broadcast of different

ages. Therefore, we can further strengthen the professionalism, intimacy, real-time interaction of the anchor of e-commerce live broadcast platform and adopt different sales strategies for consumers of different ages to increase consumers' willingness to participate in e-commerce live broadcast, thus stimulating consumption. Therefore, I would like to make the following suggestions. First of all, it is very important to cultivate the professional ability of the anchor. Humorous words, appropriate speaking speed, comfortable tone of voice, clear explanation and the most intuitive effect display are all added points in the live broadcast room. By paying attention to these details, the anchor must be able to catch users' attention. Then there is the new idea of interacting with the audience during the live broadcast. Using comments to convey effective information to users, such as lottery and other activities will also stimulate consumers' participation interest. Secondly, in terms of platform use, more customer service should be set up to solve users' problems in platform use, so as to facilitate the use of people of all ages. Although there are one-to-one customer service answers on the platform now, it takes a long time to wait in line for the distribution of customer service, which seriously affects users' experience. Design a simpler live studio model for middle-aged and elderly people, which is simple and easy to use, so as to facilitate the use of middle-aged and elderly users and attract middle-aged and elderly customers.

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