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Full Research Paper

Research on the Influence Mechanism of Consumers' Purchase Intention in E-commerce Live Broadcast based on the Extended TAM Model

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Abstract: In this paper, we introduced the perceived value (including product value, celebrity value, service value, image value and economic value) and perceived trust variables to proposed an Extended TAM Model in order to identify key factors affecting Consumers' Purchase Intention in E-commerce Live Broadcast. We collected questionnaire data from 495 participants who have bought goods in E-commerce Live Broadcast in China, and validate the results with structural equation model. The empirical results show that: All kind of perceived value in e-commerce live broadcast significantly and positively affects consumers' purchase intention; Perceived trust in e-commerce live broadcast significantly positively affects consumers' purchase intention. These findings can lead to several management strategies to improve the Consumers' Purchase Intention in E-commerce Live Broadcast.

Keywords: E-commerce live broadcast, perceived value, product value, celebrity value, perceived trust

1. INTRODUCTION

E-commerce live broadcast provides a new type of sales model in which the celebrity recommends products to consumers and interacts with consumers in the form of real-time video through the live broadcast platform, thereby promoting purchases. With the continuous development of social media marketing technology, consumers' daily habits have undergone many changes, and e-commerce live broadcasts have gradually entered consumers' daily lives. In 2017, China's e-commerce live broadcast turnover was 26.8 billion yuan, and it will rise to 1,288.1 billion yuan in 2020, an increase of 4,700% and rapid development. In 2020, the scale of Chinese netizens will be 904 million, and the scale of Chinese e-commerce live broadcast users will reach 309 million, accounting for only 29.31% of the total netizens. There is still a large room for the growth of e-commerce live broadcast users. Compared with the traditional online shopping mode, e-commerce live broadcast integrates the characteristics of e-commerce and live broadcast, and realizes the transition from pictures to real-time video. At the same time, the highly visual interface also increases the sense of presence of consumers from multiple senses. The celebrity provides consumers with fast and convenient services and affordable products through the live broadcast platform to meet the needs of consumers. Whether consumers participate in e-commerce live broadcast is the key to the success of the e-commerce live broadcast model, and it is also the core issue of e-commerce live broadcast companies. Therefore, it is necessary to analyze the formation mechanism of Consumers' Purchase Intention in e-commerce live broadcast to provide reference for the innovative development of e-commerce live broadcast.

In this paper, we explored key factors impacting Consumers' Purchase Intention to e-commerce live broadcast in China, which include product value, celebrity value, service value, image value, economic value and perceived trust, etc. Specially, We added celebrity value as a new dimension of perceived value. In e-commerce live streaming, celebrities highlight the functions and quality of products to enrich consumers' product knowledge, improve their abilities to identify products, thus may enhancing consumers' Purchase Intention^[1]. We extended the Technology Acceptance Model (TAM) method to model the factors impacting customers' propensity of technology adoption in E-commerce Live Broadcast context. Data collected from 495

respondents (fans of E-commerce Live Broadcast) were used to test the extended TAM model. Several managerial implications were derived from the analysis and further studies were suggested^[2].

2. LITERATURE REVIEW

Technology Acceptance Model (TAM) is a theoretical model based on Rational Action Theory (TRA)^[3], first proposed by Davis (1989), which aims to study individuals' beliefs, attitudes, intentions and relationships in organizational environments. relationship between actual behaviors^[4], arguing that consumers' acceptance and use of new technologies are influenced by behavioral intentions, and behavioral intentions are influenced by customers' attitudes toward the targeted new technologies^[5]. The technology acceptance model is based on After more than ten years of development, a number of similar conceptual models have emerged, each with different determining variables^[6], which can well explain the individual's technology acceptance behavior in the organizational environment, but with the development of mobile Internet and mobile With the development of e-commerce, KIM et al.^[7] found that acceptance behavior is more a reflection of consumers' choices rather than organizational suggestions. In the process of voluntary consumption, consumers pay more attention to whether the goods can meet their own value needs, so On the basis of value theory, it is proposed to construct a perceived value acceptance model from two dimensions of perceived benefit (usefulness and entertainment) and perceived cost (ease of use and perceived cost). Judgment paradigm, which emphasizes predicting usage behavior through rational cognitive judgment, and relevant empirical studies show that it lacks strong final explanatory power for the prediction of user acceptance and continuous usage behavior. To sum up, the external context variables adopted by scholars mainly include individual variables, system variables and environmental variables^[8]. At present, the model has been verified and expanded by a large number of scholars in different fields, and it can well explain the consumer purchase intention in the online shopping situation^[7].

3. RESEARCH DESIGN AND EMPIRICAL ANALYSIS

3.1 Extension of the TAM method

In order to sell products successfully, two core elements in e-commerce live streaming are need: celebrities and products. And E-commerce Live Broadcast is a just new form of online consumption, so various variables impacting Consumers' Purchase Intention are also same to online shopping such as service value, image value, economic value, consumer trust, etc.

This study extends the TAM model by introducing consumer perceived value (including product value, celebrity value, service value, image value and economic value) and consumer trust theories. The extended TAM model is a more comprehensive technology acceptance model that takes into account more factors that influence the acceptance and retention of innovative interactive technologies^[9]. The product value, celebrity value, service value, image value and economic value, and perceived trust are used as the determining variables to analyze their influence on consumers' purchase intention. Then, we propose the following assumptions:

H1: Product value in e-commerce live broadcast significantly affects purchase intention

H2: The celebrity's value in e-commerce live broadcast significantly affects purchase intention

H3: Service value in e-commerce live broadcast significantly affects purchase intention

H4: Image value in e-commerce live broadcast significantly affects purchase intention

H5: Economic value in e-commerce live broadcast significantly affects purchase intention

H6: Perceived trust in e-commerce live broadcast significantly affects purchase intention

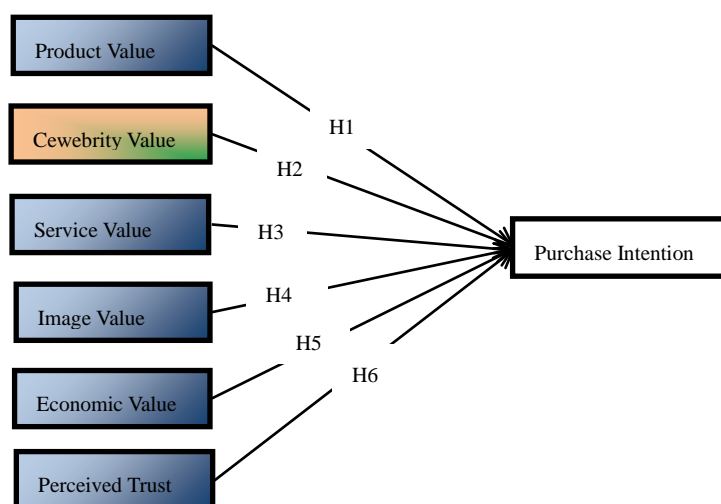


Figure 1. Formation Mechanism of Consumers' Purchase Intention Based on Extended TAM Model

3.2 Data collection

This study used a questionnaire survey method. In the questionnaire design, the literature method was adopted to find the literature data that matched the direction, and adjusted according to the research topic to ensure the validity of the questionnaire data. During the questionnaire distribution stage, questionnaires were distributed on various social platforms such as Weibo and WeChat groups by using Questionnaire. See Table 1

Table 1. Analysis of sample characteristics

Feature	Index	Number	Proportion
Gender	male	126	25.45%
	female	369	74.55%
Age	under 20	241	48.69%
	21-30 years old	213	43.03%
	31-40 years old	16	3.23%
	41-50 years old	17	3.43%
	over 50 years old	8	1.62%
Education level	Junior high school and below	9	1.82%
	high school or secondary school	19	3.84%
	College or Undergraduate	428	86.46%
	Graduate and above	39	7.88%
Average monthly household income	Below 3000 yuan	405	81.82%
	3000-4999 yuan	24	4.85%
	5000-9999 yuan	44	7.47%
	10000-19999 yuan	14	2.83%
	More than 20,000 yuan	15	3.03%

3.3 Scale design

In order to achieve good reliability and validity of the questionnaire, the items of the questionnaire adopt a five-level Likert scale (1=strongly disagree, 5=strongly agree). The scale mainly measures product value, cewebrity value, service The influence of value, image value, economic value and perceived trust on consumers'

purchase intention, a total of 27 items were designed. See Table 2:

Table 2. Questionnaire Scale Design

Variable	Code	Measurement item
Product Value	PV1	I prefer to buy products in the live broadcast with more guaranteed quality
	PV2	I prefer to buy products on live broadcasts with higher brand awareness
	PV3	I prefer to buy products in the live broadcast which recommended by the cewebrity
Cewebrity Value	CV1	I will buy a product because the streamer gave me a better understanding of the product
	CV2	I will buy a product because the streamer knows what products are right for me
	CV3	I will buy a product because the host has better service
Service Value	SV1	When buying products, I will give priority to well-known websites such as Tmall and JD.com
	SV2	I think "same-day delivery" and "next-day delivery" are the major trends in the development of live streaming online shopping
	SV3	I often follow what other buyers have to say and comment
Image Value	SV4	"Buy anytime, real-time interaction" is important reasons for me to buy products
	IV1	I prefer to buy products in the live broadcast because the products are branded products
	IV2	I prefer to buy products in the live broadcast because the products seemed very nice
Economic Value	IV3	I prefer to buy products in the live broadcast because some producer are visible for customers
	EV1	Logistics costs are an important consideration when I decide whether to buy products in live broadcast
	EV2	If the price of products is higher than usual today, I will choose to buy another day
	EV3	I would give preference to cheaper produce
	EV4	If the price is the same, I will prefer to buy products on the live broadcast platform
	EV5	I think the prices of products are on the high side as a whole
Perceived Trust	EV6	I have a good understanding of the prices of agricultural products that I buy everyday
	PT1	I prefer to buy products in the live broadcast because the cewebrity and the platform are trustworthy
	PT2	I believe the information presented in the live broadcast
	PT3	I believe that the cewebrity will not deliberately publish false information to deceive buyers
Purchase Intention	PT4	I believe the produce recommended by the cewebrity is of good quality
	PI1	I am willing to buy products on the live broadcast platform
	PI2	I am willing to consider purchasing a product while watching a live stream
	PI3	I am willing to recommend to others to buy products on the live broadcast platform

3.4 Scale design

3.4.1 Model reliability and validity analysis

SPSS 21.0 was used to test the scale. The results are shown in Table 3. The KMO value was $0.961 > 0.5$, indicating a high correlation. It passed the Bartlett spherical significance test and was suitable for factor analysis.

Table 3. KMO and Bartlett Test Analysis

	Kaiser-Meyer-Olkin	0.961
Bartlett Spherical Test	chi-squared approximation	12413.396
	df	253
	Sig.	0.000

In this study, confirmatory factor analysis (CFA) of the measurement model was used to test the convergent validity and discriminant reliability level of the model (see Table 4).

Table 4. Model Fit Index Analysis Table

Fit index	Numerical criterion	Numerical value
Chi-square/df	<5.00	4.780
GFI	>0.90	0.878
AGFI	>0.90	0.859
SRMR	<0.08	0.048
RMSEA	<0.10	0.087
NFI	>0.90	0.946
CFI	>0.90	0.954

As shown in Table 5, the CR values of the models are all higher than the critical value of 0.70, and the values are distributed between 0.7 and 0.8, indicating that the internal consistency between latent variables and items has reached a high level. In addition, all AVE values exceed 0.50, indicating that the latent variables have more than 50% explanatory power, the Pearson correlation coefficients between the latent variables are all smaller than the AVE rooting, and the convergence validity of the measurement model reaches the standard.

Table 5. Composition reliability, convergent validity and discriminant validity analysis table

Fit index	composition reliability	Convergence validity	Pearson correlation and discriminant validity						
	CR	AVE	PV	PV	PV	PV	PV	PV	PV
PV	0.7510	0.5013	0.7080						
CV	0.8364	0.6303	0.7221	0.7939					
SV	0.9057	0.7066	0.7480	0.758	0.8406				
IV	0.8407	0.5693	0.7030	0.764	0.682	0.7545			
EV	0.7871	0.3847	0.5814	0.6107	0.6031	0.6081	0.6202		
PT	0.9061	0.7075	0.7313	0.7032	0.7461	0.7730	0.8021	0.8411	
PI	0.8173	0.5987	0.7534	0.7190	0.6926	0.7609	0.7201	0.7567	0.7738

Note: The diagonal bold is the open root value of AVE

3.4.2 Model overall significance test

The Amos24.0 software is used to test the significance level and path coefficient. The analysis results are shown in Table 6: (1) The path coefficient test of product value and perceived trust in e-commerce live broadcast on consumers' purchase intention reaches a significant level of 0.01, so Suppose H1, H6 are supported. (2) The path coefficient test of the celebrity 's value on consumers' purchase intention in e-commerce live broadcast reaches a significant level of 0.05, so it is assumed that H2 is supported. (3) The path coefficient test of service value, image value and economic value on purchase intention in e-commerce live broadcast reaches a significant level of 0.1, so it is assumed that H3, H4, and H5 are supported. That is to say: product value, celebrity value, service value, image value, economic value and perceived trust all have significant influence on purchase intention.

Table 6. Estimated Parameter Results of Structural Equation Model

Impact path	Estimate	S.E.	C. R.	P-value	Hypothesis	Hypothesis test
PV→PI	0.286	0.057	5.030	***	H1	support
CV→PI	0.139	0.055	2.519	**	H2	support
SV→PI	0.067	0.037	1.806	*	H3	support
IV→PI	0.115	0.060	1.924	*	H4	support
EV→PI	0.101	0.056	1.810	*	H5	support
PT→PI	0.290	0.038	7.567	***	H6	support

Note: * means $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

4. CONCLUSIONS

Based on the Expanded Technology Acceptance (TAM) theoretical model, this study constructs a theoretical analysis framework that affects consumers' purchase intention, and proposes six key factors: product value, celebrity value, service value, image value, economic value, and perceived trust. The extended TAM method examines the relationship between six factors and consumers' purchase intention^[10]. The research conclusions are as follows: (1) The five dimensions of product value, celebrity value, service value, image value, and economic value all play important roles in the formation of purchase intention, especially are the product value and celebrities value. This means that consumers feel that they can create useful value, especially the higher the product value, celebrities value, the more positive their willingness to purchase products in e-commerce live broadcasts. (2) Perceived trust has a significant positive effect on purchase intention, which indicates that consumers' perception of trust affects satisfaction and loyalty, which in turn affects their purchase intention^[11].

Therefore, by focusing on the key factors that motivate consumers to increase their purchase intentions, the marketing strategy should be more effective. E-commerce live broadcast platforms should simplify the interface, so that users can easily find the favorite goods and celebrities, while the service providers must maximize the users' perception of cost and effectiveness^[5]. Enterprises need provide quality goods through careful selections to meet value appeals of consumers. And celebrities should maintain a good relationship with his/her fans, focusing on long-term benefits. At the same time, establish a mature live broadcast e-commerce market supervision mechanism, strengthen consumer word-of-mouth management, expand the positive impact of positive word-of-mouth on consumers, and improve consumer trust^[12].

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