

# Factors Analysis of Consumers' Purchasing Intention Under the Background of Live E-commerce Shopping

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## Abstract

With the development of 5G network, artificial intelligence, cloud computing, big data and other digital technologies, we have witnessed the E-commerce live broadcasting industry has also jumped on this fast train, injecting fresh blood into People's Daily shopping. The main contribution of this paper is to combine theory with practice to build a model from three aspects: people, goods and market, set up assumptions, and analyze the purchasing factors that affect people's daily shopping. Using SmartPLS software to conduct descriptive statistics, reliability analysis and validity test on the collected questionnaires, the following conclusions and research objectives are drawn: the interactivity of live-streaming, entertainment of live-streaming, promotion price of live-streaming and opinion leaders will have a significant impact on consumers' cognition and emotion, and meanwhile, cognition and emotion will have a significant impact on consumers' purchase intention. Opinion leaders have the greatest impact on consumers' willingness to purchase.

**Keywords:** Live E-commerce, Buying intention, Opinion leaders

## 1 Introduction

The view profitability period of traditional E-commerce has passed, now it wants to maintain the original views and get the attention of new users, E-commerce + live broadcast will link people, goods, field, in today's daily shopping play an increasingly important role. With the development of 5G and artificial intelligence, live E-commerce will incorporate more new technologies and the future development will become more and more optimistic. Short videos and live streaming are the current trend, spreading information quickly with high public acceptance. Since 2020, it has seen a fatal impact on physical sales, with major E-commerce platforms relying on live streaming E-commerce to develop their business in order to capture market share. Mainstream self-media send out excellent hosts to cooperate with internet celebrities to help open up the sales of agricultural products that have lagged due to the epidemic [1]. Although the current live E-commerce is impressive, with the sustainable development, it will easily be obstructed in some key links,

such as: the cost of attracting new customers is getting higher and higher, the intensity of competition is increasing.

The essence of live E-commerce is still E-commerce, including "people", "goods", "field" three links, the temptation to get the lowest price goods on the network and the infectious live scenes, through the personal influence of the host, stimulates consumers' desire to buy [2]. The key to live-streaming is interaction, as the host shows off the goods, enlivens the atmosphere of the live room, and answers the audience's questions to give them a sense of belonging and to get traffic and increase the order rate.

In general, most analyses of consumer purchase factors in the context of live E-commerce have been conducted qualitatively from psychology and communication, while this paper takes a theoretical and practical approach by constructing models, setting hypotheses and studying empirical evidence to analyse the factors affecting consumer purchases from three aspects, people, goods and fields.

## 2 Theoretical Analysis and Model Construction

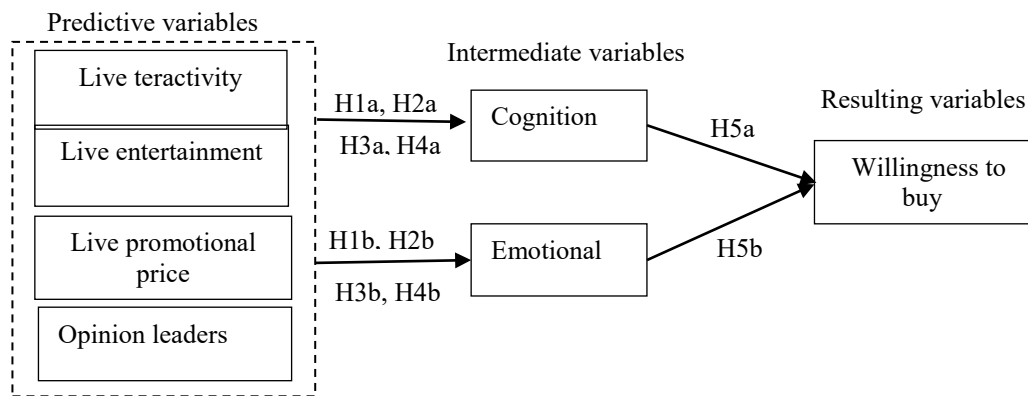
With the development of digital technology and mobile internet, the digital marketing method - live streaming - has emerged. Compared with the traditional "face-to-face" marketing method, consumers shift their attention from the merchant to the anchor, the product symbolic stimulus changes from the salesman's explanation to the webmaster's own influence and the live streaming room's. The social stimulus shifts from family and social class to product reviews, interactive discussions, pop-up messages, etc., the time pressure of the external factors (limited time and limited quantity of live streaming) becomes more and more significant.

### 2.1 Presentation of Variables and Models

Combining the above model and analysis, this paper decided to select four influencing factors as predictor variables, namely "live interactivity", "live entertainment", "opinion leader", "live promotion price". "perception" and "emotion" as intermediate variables, and "purchase intention" as the outcome variable. The model is based on the four predictor variables influencing the intermediate variables and the final outcome variable.

The variables and models for this study are shown in Figure 1.

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**Figure 1.** Study variables and model

## 2.2 Research Hypothesis

The following research hypotheses were summarised from the model.

H1a: The interactive behaviour between viewers and between viewers and anchors positively influences consumer perceptions.

H1b: The interactive behaviour between viewers and between viewers and anchors positively affects consumer sentiment.

Adequate interaction between viewers and between viewers and anchors can help consumers build a perception of the product and thus determine whether it is suitable for them to support their next purchase decision [3]. Online interactions directly influence the value that customers can derive from the interaction and ultimately influence consumer purchase intentions and behavior [4]. The interaction between live E-commerce shopping and consumers affects their purchasing behaviour [5].

H2a: The entertainment atmosphere in the live room positively influences consumer perceptions.

H2b: The entertainment atmosphere in the live room positively influences consumer emotions.

The use of interesting and lively language by consumers adds to the atmosphere of the live stream and can attract consumers to this live stream; the increased time spent by consumers will increase their willingness to buy [3]. The entertaining nature of live streaming brings joy and freshness and stimulates consumer enjoyment, value-added content stimulates consumers' emotions and adds to the enjoyment of watching the live stream [6]. The entertaining nature of live streaming sites has a significant impact on consumer pleasure [7].

H3a: Opinion leaders are positively influencing consumer perceptions.

H3b: Opinion leaders are positively influencing consumer sentiment.

Opinion leaders are more influential in their areas of expertise than the general public and can sway public perceptions [8]. The personal charisma of internet celebrities has a significant impact on consumers' perceptions and attitudes in the live internet economy [9]. Consumers are more likely to accept the opinions of opinion leaders who are

homogeneous with them [10].

H4a: Limited time promotional prices are positively influencing consumer perceptions.

H4b: Limited time promotional prices are positively influencing consumer sentiment.

The discounted nature of the product has a positive effect on consumers' willingness to buy [11]. In online shopping, low prices for a limited period of time enhance consumers' motivation to buy and make it easy for consumers to build trust and dependence on the anchor [12]. The lower the price of a product in a consumer's perceived E-commerce platform compared to a physical shop, the stronger the consumer's willingness to purchase [13].

H5a: Consumers' cognitive behaviour during live streaming has a positive impact on purchase intentions.

H5b: Consumers' emotional behaviour has a positive impact on purchase intention during live streaming.

Cognition and emotion play a decisive role in consumers' purchasing behaviour when watching live E-commerce [14]. Pleasant and evocative emotions have a positive impact on consumers' willingness to buy [15]. Consumers' willingness to buy is stronger when they are able to obtain more useful information from the platform [16].

## 3 Study Design and Data Analysis

### 3.1 Scale Design and Data Collection

#### 3.1.1 Scale Design

The scale design for this study is shown in Table 1.

#### 3.1.2 Data Collection

The questionnaires were mainly answered by school students and were collected by creating questionnaires in Wenjuanxing and then copying the links and sending them to QQ, WeChat and Weibo.

This questionnaire consists of two main parts.

The first section consists of demographic characteristics and the use of "live-streaming E-commerce". There are 14 questions covering all the variables used in the study. In this section, there are seven questions, including gender, age, monthly disposable amount, education level, occupation, exposure to live-streaming E-commerce, and platform used to watch live-streaming.

**Table 1.** Scale design

Variables	Coding	Measurement items
Live interactivity	A1	I am willing to actively interact with the anchor on air
	A2	I am willing to actively interact with other viewers on air
	A3	I'd like to read the pop-ups from other viewers
	A4	I'm willing to post pop-ups
Live entertainment	B1	The anchor should liven up the atmosphere by singing or dancing
	B2	Anchors should create new and innovative live formats and conten
	B3	The live streaming interface and background should be stylish and beautiful
Live promotional price	C1	I will buy an item because it is only on sale in the live room
	C2	I will keep watching because of coupons, gifts or raffles given out during the broadcast. I will buy recommended products because of the popularity of the anchor
Opinion leaders	D1	I will buy because of the anchor's expertise and professional presentation
	D2	I would buy because of the anchor recommendation
	D3	By watching this live broadcast, I gained a comprehensive understanding of the merchandise
Cognition	E1	By watching this live broadcast, I gained a comprehensive understanding of the merchandise
	E2	I can find more valuable items by watching this live stream
	E3	I can improve my shopping efficiency by watching this live stream
Emotional	F1	By watching the live broadcast, I became interested in buying the items presented
	F2	I like and trust the anchor more by watching the live stream
Willingness to buy	G1	I would like to purchase the item during the live broadcast
	G2	I would like to continue watching the live stream afterwards and consider whether to purchase
	G3	Live streaming platforms have a significant impact on my willingness to buy
	G4	I would recommend the host or the product live to friends and family

The second part of the survey is the user's willingness to buy survey, which is used to determine which factors influence the consumer's willingness to buy when watching a live broadcast. This section consists of 7 questions, all of which are measured on a 5-point Likert scale with a scale of 1 to 5, with "1" representing strongly disagree, "2" representing "disagree", "3" for "unsure", "4" for "agree", and "5" for "strongly agree". Respondents were asked to answer all questions based on their real life experience of using E-commerce live-streaming.

A total of 600 questionnaires were returned, excluding some ineligible questionnaires, resulting in 467 questionnaires officially used for analysis, 133 invalid questionnaires were excluded, and the questionnaire's effective rate was 77.8%.

### 3.2 Descriptive Statistical Analysis

First, the composition of the valid sample was analysed. From the statistical results, E-commerce live streaming has a high awareness rate, indicating that E-commerce live streaming has a certain influence in the crowd of online shoppers. however, at the same time, there are a considerable number of people who know about E-commerce live streaming but have never watched it, the reasons behind which also require us to further explore, so that the value of E-commerce live streaming can be further explored.

Secondly, the basic situation of the E-commerce live questionnaire respondents was understood. The basic information on the individual sample is as follows.

In this research, women accounted for 52.5% and men accounted for 47.5%. In terms of gender, more women than men watched live-streaming, fully reflecting this characteristic that women love shopping more. In terms of age, the respondents are mostly concentrated in the age of 18 to 25, the reason being that young people have a high demand for purchases, a strong ability to accept new

trends and a wide range of communication channels. In terms of monthly disposable income, the distribution of disposable income is more concentrated in the range of RMB 1,500 to 2,000, which is related to the student status of the respondents. In terms of academic level, the current sample group is generally highly educated and has a higher level of understanding, acceptance and awareness of live marketing; 88.9% of respondents mainly have a bachelor's degree or above, and compared to 2020, the 2021 group of netizen anchors themselves have increased their education level and therefore cover a more educated fan base. In terms of occupation, the majority of the group watching live-streaming are students, who prefer to shop online due to the shopping conditions and needs. In terms of user usage of live shopping platforms, Taobao, one of the three giants of E-commerce in China, holds the highest percentage, followed by the popular short video app TIKTOK, which accounts for a higher percentage at home and abroad.

### 3.3 Reliability and Validity Tests

SmartPLS is a data analysis software that performs structural equation modelling, and this study uses SmartPLS 3.0 to validate the model by conducting a reliability test.

Reliability refers to the reliability, consistency and stability of the measurement results, i.e. whether the test results reflect the stable and consistent true characteristics of the respondent. Further validation of the model can only be carried out through reliability testing. There are four main methods of reliability analysis, the retest reliability method, the replicate reliability method, the fold-half reliability method and the alpha reliability coefficient method.

#### 3.3.1 Reliability Test

In this paper, the most commonly used method of alpha reliability coefficient was selected to measure whether the scale has good reliability. cronbach's alpha takes values

between 0 and 1. It is generally considered that if the reliability is very good through a Cronbach's Alpha value of 0.8 or above; if the Cronbach's Alpha value is between 0.7 and 0.8, it indicates good reliability, if the Cronbach's Alpha value between 0.6 and 0.7, the reliability is generally good, if the Cronbach's Alpha value is below 0.6, the reliability test is not passed.

The reliability test was conducted on the predictive, intermediate and outcome variables of the research by running the Algorithm algorithm in SmartPLS, and the results of the reliability test for this study were obtained, as shown in Table 2, with Cronbach's Alpha values for all variables ranging from 0.703 to 0.879, all above the criterion of 0.7. The combined reliability CR values ranged from 0.802 to 0.924, which were also higher than 0.7, indicating that this study had good reliability.

**Table 2.** Results of indicators related to the reliability test

Variable name	Measurement questions	Cronbach's Alpha	CR
Live interactivity	A1	0.737	0.867
	A2		
	A3		
	A4		
Live entertainment	B1	0.764	0.853
	B2		
	B3		
Live promotional price	C1	0.840	0.842
	C2		
Opinion leaders	D1	0.768	0.886
	D2		
	D3		
Cognition	E1	0.854	0.854
	E2		
	E3		
Emotional	F1	0.832	0.820
	F2		
Willingness to buy	G1	0.828	0.856
	G2		
	G3		
	G4		

### 3.3.2 Validity Test

The main measures of validity are content validity, convergent validity and discriminant validity. Nulmally (1978) states that a predictor variable contains three or more measurement question items to ensure good validity. Therefore, in this study, each variable had three or more measurement question items, and therefore had good content validity. In smartPLS, convergent validity is generally measured by using the mean variance extracted and the factor loading coefficient, and discriminant validity is measured by using the Heterotrait-Monotrait Ratio, and each indicator of validity is obtained by running the Algorithm algorithm in smartPLS.

Table 3 shows the factor loadings and mean variance extracted for the measured question items. Analysis of Table 3 showed that the factor loadings for all variables were above 0.7 and significant at the 0.001 level, the AVE values for all variables were above 0.5. Therefore, this study has good convergent validity.

**Table 3.** Factor loadings and mean variance extractions

Variable name	Measurement questions	Factor load	Average variance extracted (AVE)
Live interactivity	A1	0.789***	0.763
	A2	0.745***	
	A3	0.797***	
	A4	0.890***	
Live entertainment	B1	0.753***	0.674
	B2	0.877***	
	B3	0.799***	
Live promotional price	C1	0.867***	0.784
	C2	0.875***	
Opinion leaders	D1	0.864***	0.753
	D2	0.777***	
	D3	0.875***	
Cognition	E1	0.754***	0.534
	E2	0.866***	
	E3	0.864***	
Emotional	F1	0.897***	0.643
	F2	0.865***	
Willingness to buy	G1	0.834***	0.853
	G2	0.753***	
	G3	0.786***	
	G4	0.780***	

The Heterotrait-Monotrait (HTMT) ratio was used in this study to measure discriminant validity, and if all HTMTs were below 0.85, it indicated good discriminant validity. According to the analysis, all HTMT values were below 0.85, indicating good discriminant validity for this study.

## 4 Hypothesis Testing

### 4.1 Model Goodness-of-fit Tests

This study used SmartPLS 3.0 to test the research hypothesis. Before the hypothesis testing, the SRMR value was tested by running the Algorithm algorithm to verify the model fit, and the test indicator SRMR value was 0.073, which is lower than 0.08, indicating a good fit of the model.

### 4.2 Hypothesis Testing Results

The entire model was tested using SmartPLS 3.0, and R<sup>2</sup> was obtained by executing the Algorithm algorithm using SmartPLS 3.0; and executing the Bootstrapping repetitive sampling method with 5000 draws, resulting in the hypothesis test results shown in Table 4 and Figure 2.

After testing the research model using SmartPLS 3.0, it was found that R<sup>2</sup> = 0.374 for cognition, R<sup>2</sup> = 0.475 for emotion and R<sup>2</sup> = 0.554 for purchase intention, with R<sup>2</sup> indicating the proportion of the dependent variables in the model that were explained. According to the results of the study, the model in this study explained 37.4% of cognition and 47.5% of emotion, as well as 55.4% of purchase intention. The specific hypothesis testing results are shown below.

Table 4 shows the results of the research hypothesis testing, through Table 4, it can be seen that live interactivity (0.152, p < 0.01), live entertainment (0.278, p < 0.05), live

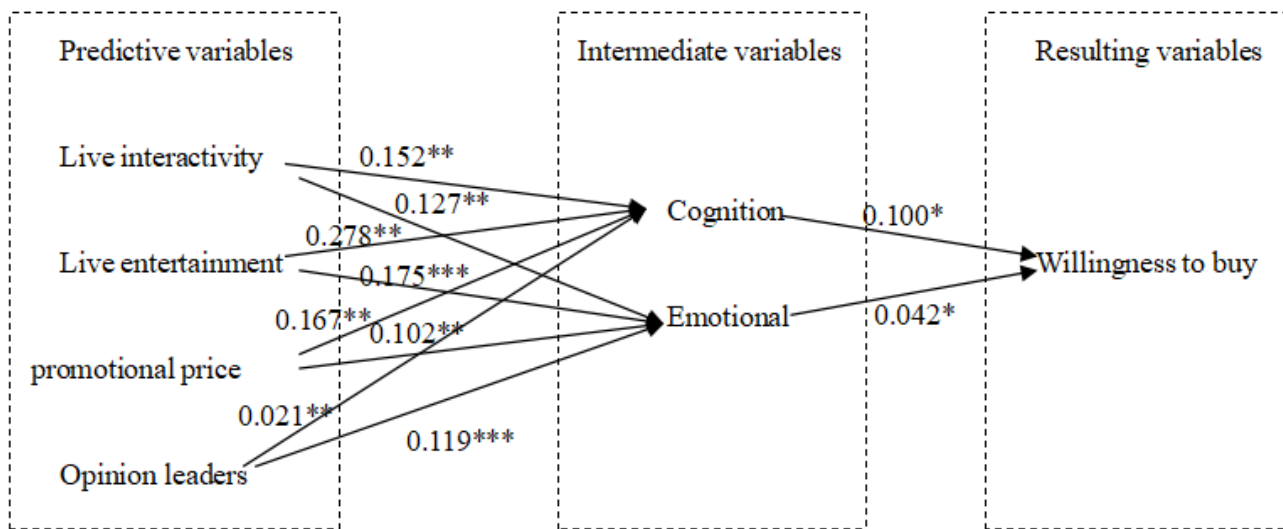
promotional price (0.167,  $p < 0.05$ ), and opinion leader (0.021,  $p < 0.05$ ) all have a significant positive effect on consumer perceptions; meanwhile, live interactivity (0.127,  $p < 0.05$ ), live entertainment (0.175,  $p < 0.05$ ), live promotional price (0.102,  $p < 0.05$ ), and opinion leader (0.119,  $p < 0.01$ ) all had a significant positive effect on consumer sentiment; cognition (0.100,  $p < 0.001$ ) and sentiment (0.042,  $p < 0.05$ ) also had a significant positive effect on consumers' purchase intentions. Thus, H1a-H5a, and H1b-H5b are supported.

**4.3 Regression Analysis**

Regression analysis is used to determine the causal relationship between variables. In this analysis, live interactivity, live entertainment, live promotion price, opinion leader, trust and emotion are used as independent variables of live marketing, and purchase intention is used as the dependent variable of live marketing, and the relationship between them is analysed through regression analysis.

**Table 4.** Research hypothesis testing results

Research hypothesis	Hypothetical path	Path coefficient	P-value	Support the hypo-thesis or not
H1a	Live interactivity -> Awareness	0.152	0.002	Yes
H1b	Live interactivity -> emotion	0.127	0.078	Yes
H2a	Live entertainment -> Awareness	0.278	0.028	Yes
H2b	Live entertainment -> Emotion	0.175	0.000	Yes
H3a	Live promotional pricing->Awareness	0.167	0.387	Yes
H3b	Live promotional price>Emotion	0.102	0.265	Yes
H4a	Opinion Leaders->Awareness	0.021	0.023	Yes
H4b	Opinion Leader->Emotion	0.119	0.004	Yes
H5a	Perception -> Willingness to buy	0.100	0.265	Yes
H5b	Emotion->Willingness to buy	0.042	0.236	Yes



Note: \*\*\*:  $p < 0.001$ , \*\*:  $p < 0.01$ , \*:  $p < 0.05$

**Figure 2.** Model diagram of hypothesis testing results

Table 5 shows the results of the regression analysis of the live marketing factors and purchase intention. According to the analysis of Table 5, the R-squared value of the model is 0.784, which indicates that live interactivity, live entertainment, live promotional price, opinion leader, cognition and emotion can explain 78.4% of the change in purchase intention. This means that at least one of the following factors has an effect on purchase intention: live interactivity, live entertainment, live promotional price, opinion leaders, perceptions and emotions. The six

influencing factors of live interactivity, live entertainment, live promotional price, opinion leader, cognition and emotion all have a sig value less than 0.05 at the 0.05 level of significance and pass the t-test, indicating that all six influencing factors have an effect on purchase intention and are retained in the equation model.

In addition, the regression equation model found that opinion leaders had the greatest influence on purchase intention, followed by live entertainment, live promotional price and live interactivity.

**Table 5.** Results of regression analysis of live marketing factors and purchase intention

Independent variable	Standardised bata factors	T-value	Sig	F-value	R <sup>2</sup>
Live interactivity	0.336	0.342	0.049		
Live entertainment	0.234	1.247	0.031		
Live promotional price	0.067	0.825	0.044	191.167	0.784
Opinion leaders	0.153	2.375	0.015		
Cognition	0.417	4.294	0.007		
Emotional	0.384	5.421	0.001		

## 5 Conclusion

### 5.1 Research Findings

This study was conducted by collecting questionnaires, based on existing theoretical research, with live interactivity, live entertainment, live promotional price and opinion leader as independent variables, consumer perception and emotion as intermediate variables and customer purchase intention as outcome variables. The theoretical model is empirically validated.

Through the analysis, the following conclusions are drawn, live interactivity, live entertainment, live promotional price and opinion leaders will have a significant impact on consumers' cognition and emotion, among which opinion leaders have the greatest impact on consumers' purchase intention.

### 5.2 Recommendations

Through the study of the literature, as well as the actual findings and research conducted during the course of this paper, the following are some suggestions for the management of the anchor community, live marketing, businesses and consumers.

(1) Recommendations for the development of the anchors. In response to some of the problems with live shopping, How to maintain a sustained level of enthusiasm and tap more commercial value is a problem currently faced by the E-commerce anchor community. In order to increase the influence of anchors, accumulate more traffic and thus increase the opportunities for realisation, the requirements and regulations for anchors are becoming increasingly strict. ① Create personal charisma of anchors to retain loyal customers. ② Improve your professional competence. ③ To maintain a high level of activity themselves. ④ Running the community and focusing on the interests of the fans.

(2) Suggestions for the development of live marketing. ① Preparation for live broadcast. ② Set-up of the environment during the live broadcast. ③ Careful description of all aspects of the product. ④ Emphasis on the unique advantages of the commodity. ⑤ Actively interact with customers and meet their needs for product display

(3) Suggestions for business development. ① Combine with traditional businesses to develop together. ② Optimize the supply chain system. ③ Focus on big data marketing. ④ Driven by consumer needs.

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