



# Research on the Influence of Live Streaming E-commerce on Consumers' Impulsive Purchasing Behavior

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**Abstract.** Compared with traditional e-commerce, live streaming e-commerce has the dual characteristics of commodity circulation channels and shopping scenes, bringing consumers better shopping experience and achieving sales transformation. Based on S-O-R model, this work constructs a research model of consumers' impulsive purchasing behavior. By analyzing the sample data, the antecedent variables and intermediate variables of consumers' impulsive purchasing behavior were explored, and suggested strategies were developed for merchants to cultivate e-commerce anchors, so as to promote the healthy development of live streaming economy.

**Keywords:** Live Streaming E-commerce · Impulsive Purchasing Behavior · Network Marketing

## 1 Introduction

The cost of traditional TV shopping is high and the operation mode is relatively simple, which cannot achieve the interaction with the audience. With the development of new technologies such as big data and AR, e-commerce has gradually expanded to new areas. Live streaming and virtual experience have empowered e-commerce platforms, and new growth points have emerged for the Internet economy. The all-round product display, live streaming atmosphere and marketing strategies of anchors and merchants all have a certain impact on consumers' impulsive purchasing behavior.

In recent years, the number of netizens watching live streaming continues to increase, and the total amount of transactions continues to rise which prompt more and more merchants to pay attention to the huge commercial potential hidden by live streaming e-commerce. The purpose of this work is to help merchants develop scientific and effective marketing programs to improve sales profits.

From the perspective of consumer psychology, this work explores the influencing mechanism of live streaming e-commerce marketing characteristics on consumers' impulsive purchasing behavior, seeks for the stimulus factors affecting consumers' behavior, and builds a research model. Combined with the analysis results, this work provides theoretical guidance for the practical activities of live streaming e-commerce participants, and relevant marketing implications for their practical activities.

## 2 Literature Review

### 2.1 S-O-R Theory

Mehrabian and Russell proposed the S-O-R theory in 1974, also known as the Stimulus-Organism-Response model [1]. Its connotation means that external stimulus information can ultimately affect external behavior by affecting individuals' internal emotions and cognition.

S-O-R model has been widely used in related research on online shopping. Based on the S-O-R model, Zhang Yafei studied how consumers' flow experience and social presence affect their impulse purchase intention [2]. Gong Xiaoxiao took the flow experience as the internal psychological state of the user's body and built a theoretical model between the atmosphere cue and impulse purchase intention [3]. In this work, the stimulus variable (S) refers to various marketing characteristics stimuli of live streaming e-commerce, the organism variable (O) refers to the internal psychological process of consumers' behavioral response to external stimuli, and the response variable (R) refers to consumers' impulsive purchasing behavior.

### 2.2 Live Streaming E-commerce

Live streaming e-commerce is an emerging business form developed based on live streaming platforms and anchors and consumers' online shopping needs. Regarding the definition of live streaming e-commerce, the academia has no unified definition. Liang Jin believes that live streaming e-commerce is a business model for commercial activities based on social media environment and web2.0 technology [4]. Yan Jiangang defined live streaming as a commercial activity carried out by main broadcasters through mobile electronic devices with the help of Internet communication [5]. In addition, some researchers have explored and analyzed the advantages of e-commerce live broadcasting and found that this new form of achieving marketing purposes through live broadcasting attracts consumers' investment with its strong liquidity, sense of interaction, entertainment and promotion and buying atmosphere, which improves the sales conversion rate more effectively than the traditional e-commerce mode.

### 2.3 Consumers' Impulsive Purchasing Behaviour

Stern summarized impulsive purchasing into four types according to factors such as rational decision making, planned purchase and shopping situation of consumers: (1) Pure impulse purchase (2) Recall impulse purchase (3) Suggestion impulse purchase (4) Planned impulse purchase [6]. Weinberg and Gottwald believed that impulse purchase was a positive spontaneous behavior and an emotional response to some stimuli in the shopping environment [7]. In the era of the popularity of online shopping, external stimuli created by merchants emerge in an endless stream, which makes consumers more likely to have emotional purchasing behaviors and impulsive behaviors becomes more frequent.

### 3 Research Hypothesis and Conceptual Model

#### 3.1 Research Hypothesis

Based on the S-O-R theory, this work extracts the following variables: anchor, entertainment, interactivity, content quality, preferential promotion, trust, audio-visual experience and crisis awareness. This work proposes the following hypotheses:

- H1a: The anchor positively affects trust.
- H1b: The anchor positively affects the audio-visual experience.
- H2a: The entertainment positively affects trust.
- H2b: The entertainment positively affects the audio-visual experience.
- H3a: The interactivity positively affects trust.
- H3b: The interactivity positively affects the audio-visual experience.
- H4a: The content quality positively affects trust.
- H4b: The content quality positively affects crisis awareness.
- H5a: Preferential promotion negatively affects trust.
- H5b: Preferential promotion positively affects crisis awareness.
- H6: Trust positively affects impulsive purchasing behavior.
- H7: The audio-visual experience positively affects impulsive purchasing behavior.
- H8: The crisis awareness positively affects impulsive purchasing behavior.

#### 3.2 Model Construction

Based on the above hypotheses and the S-O-R theoretical model, the research model is constructed by taking the marketing stimuli such as anchor, entertainment, interactivity, content quality and preferential promotion as antecedent variables; trust, audio-visual experience and crisis awareness as intermediate variables, and impulsive purchasing behavior as outcome variable, as shown in Fig. 1.

The model can be described by the following expression:

$$Y = \beta_0 + \beta X + \varepsilon \tag{1}$$

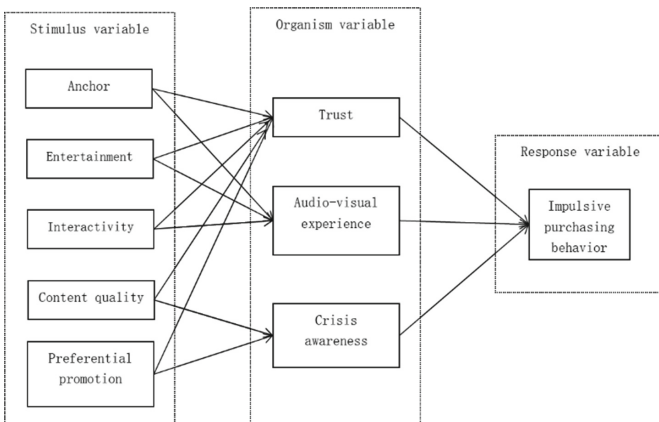


Fig. 1. Research model

In formula (1),  $Y$  represents the impulsive purchasing behavior;  $X$  represents the antecedent variables and intermediate variables;  $\beta$  represents the degree of correlation between  $Y$  and  $X$ ;  $\varepsilon$  represents the error matrix.

## 4 Data Analysis

The method of random sampling was adopted to conduct the survey, and the questionnaire was distributed through the form of electronic questionnaire. A total of 222 electronic questionnaires were distributed, 21 invalid questionnaires were excluded, with effective recovery of 86.5%.

The sample data was processed by SPSS software, the relationship between variables was tested by regression analysis, and the correctness of the hypothesis was verified. Finally, the empirical analysis results were obtained.

### 4.1 Descriptive Analysis

Through the descriptive statistical analysis of the sample data, the basic situation of the survey object is comprehensively understood. In terms of gender, the ratio of male to female is close to 1:3. In real life, women pay more attention to shopping experience and prefer comparison and selection. In terms of age, the proportion of people aged 21–25 is as high as 79.6%, indicating that the main research object of this paper is young people, which is partly related to young people's preference for pursuing new things. In terms of average monthly consumption, the consumption level of most people is concentrated in the range of 1000–3000.

### 4.2 Reliability and Validity Analysis

In this work, the reliability analysis of antecedent variables, intermediate variables and outcome variable were carried out respectively. Cronbach's  $\alpha$  values of antecedent variables are between 0.898 and 0.986, Cronbach's  $\alpha$  values of intermediate variables are between 0.978 and 0.984, and Cronbach's  $\alpha$  value of outcome variable is 0.983, as shown in Table 1. Therefore, the sample data has good reliability.

The KMO value of the whole scale is 0.981, and the significance level is less than 0.001. Based on the above indicators, the sample data are suitable for factor analysis.

### 4.3 Factor Analysis

The principal component analysis method is used to extract the common factors of the antecedent variables. The cumulative variance explanation rate is 93.271%, and the cumulative variance contribution rates of the three intermediate variables of trust, audiovisual and crisis consciousness were all over 70%, which proved that the extracted factors were more effective, as shown in Table 2.

**Table 1.** Reliability analysis

Variables		Number of measured items	Cronbach's $\alpha$ value
Antecedent variables	Anchor	6	0.986
	Entertainment	5	0.942
	Interactivity	6	0.978
	Content quality	6	0.898
	Preferential promotion	6	0.904
Intermediate variables	Trust	5	0.984
	Audio-visual experience	6	0.982
	Crisis awareness	5	0.978
Outcome variable	Impulsive purchasing behavior	7	0.983

**Table 2.** Interpretation of variance of antecedent variables

Total variance explained									
Components	Initial eigenvalues			Extract the sum of squares to load			Rotate the sum of squares to load		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	25.791	88.934	88.934	25.791	88.934	88.934	7.905	27.259	27.259
2	0.428	1.478	90.411	0.428	1.478	90.411	7.750	26.724	53.983
3	0.395	1.364	91.775	0.395	1.364	91.775	6.447	22.231	76.214
4	0.230	0.795	92.570	0.230	0.795	92.570	3.287	11.335	87.549
5	0.203	0.701	93.271	0.203	0.701	93.271	1.659	5.722	93.271

Extraction method: Principal component analysis.

#### 4.4 Correlation Analysis

Through the correlation analysis of variables, the correlation coefficient between entertainment and trust was ( $R = 0.388, P < 0.01$ ), and the correlation coefficient between entertainment and audio-visual experience was ( $R = 0.443, P < 0.01$ ). They are positively correlated, and have a significant correlation.

The correlation coefficient between interactivity and trust was ( $R = 0.381, P < 0.01$ ), and the correlation coefficient between interactivity and audio-visual experience was ( $R = 0.259, P < 0.01$ ). They are positively correlated, and have a significant correlation.

The correlation coefficient between content quality and trust is ( $R = 0.379, P < 0.01$ ), and the correlation coefficient between content quality and crisis awareness is ( $R = 0.449, P < 0.01$ ). They are positively correlated, and have a significant correlation.

**Table 3.** Regression Analysis of antecedent variables and trust

Model	Non-standardized coefficient		Standard coefficient	t	Sig.
	B	Standard error	Trial version		
Anchor	0.277	0.083	0.287	3.336	0.001
Entertainment	0.265	0.091	0.268	2.927	0.004
Interactivity	0.479	0.097	0.479	4.943	0.001
Content quality	0.109	0.108	0.111	1.014	0.012
Preferential promotion	-0.174	0.08	0.179	2.166	0.032

Dependent variable: Trust

The correlation coefficient between preferential promotion and trust ( $R = -0.497$ ,  $P < 0.01$ ), and the correlation coefficient between preferential promotion and crisis awareness ( $R = 0.341$ ,  $P < 0.01$ ).

The correlation coefficient between trust and impulsive purchase behavior is ( $R = 0.457$ ,  $P < 0.01$ ), the correlation coefficient between audio-visual experience and impulsive purchase behavior is ( $R = 0.301$ ,  $P < 0.01$ ), and the correlation coefficient between crisis awareness and impulsive purchase behavior is ( $R = 0.404$ ,  $P < 0.01$ ).

## 4.5 Regression Analysis

### 4.5.1 Regression Analysis of Anchor, Entertainment, Interactivity, Content Quality, Preferential Promotion and Trust

As shown in Table 3, it is found that preferential promotion will negatively affect consumers' trust in live e-commerce platforms and anchors, while other variables can have a positive impact on trust.

### 4.5.2 Regression Analysis of Anchor, Entertainment, Interactivity and Audio-Visual Experience

As shown in Table 4, it is found that three variables such as anchor, entertainment, interactivity can all have a positive impact on audio-visual experience.

### 4.5.3 Regression Analysis of Content Quality, Preferential Promotion and Crisis Awareness

As shown in Table 5, it is found that content quality and preferential promotion have a positive impact on the generation of consumers' crisis awareness.

**Table 4.** Regression Analysis of antecedent variables and audio-visual experience

Model	Non-standardized coefficient		Standard coefficient	t	Sig.
	B	Standard error	Trial version		
Anchor	0.392	0.054	0.402	7.284	0.001
Entertainment	0.227	0.069	0.228	3.305	0.004
Interactivity	0.363	0.066	0.360	5.521	0.001

Dependent variable: audio-visual experience

**Table 5.** Regression Analysis of antecedent variables and crisis awareness

Model	Non-standardized coefficient		Standard coefficient	t	Sig.
	B	Standard error	Trial version		
Content quality	0.582	0.076	0.581	7.653	0.001
Preferential promotion	0.379	0.075	0.383	5.055	0.012

Dependent variable: crisis awareness

#### 4.5.4 Regression Analysis of Trust, Audio-Visual Experience, Crisis Awareness and Impulsive Purchasing behaviour

As shown in Table 6, it is found that three variables such as trust, audio-visual experience, crisis awareness can promote consumers to have impulsive purchasing behavior.

**Table 6.** Regression Analysis of intermediate variables and outcome variables

Model	Non-standardized coefficient		Standard coefficient	t	Sig.
	B	Standard error	Trial version		
Trust	0.150	0.077	0.150	1.959	0.052
Audio-visual experience	0.347	0.095	0.349	3.660	0.000
Crisis awareness	0.435	0.083	0.441	5.265	0.001

Dependent variable: impulsive purchasing behavior

## 4.6 Results

Anchors, entertainment and interactivity positively affect trust and audio-visual experience, indicating that the more frequent interaction between anchors and consumers, and the more it can promote consumer consumption.

Content quality has a significant positive effect on trust and crisis awareness. Through high-quality live streaming content, consumers will have a comprehensive understanding of product information and more trust in merchants. Meanwhile, cost-effective products will also promote competition, thus stimulating consumers' crisis awareness.

Preferential promotion has a negative effect on consumer trust. Therefore, promotion is not the best marketing strategy. On the contrary, it will reduce consumers' trust in merchants, anchors and platforms, and raise doubts about product quality. However, preferential promotion has a significant impact on the generation of crisis awareness. When consumers encounter the limited promotional activities, they will increase impulsive purchasing behavior due to the reduction of consideration time.

## 5 Conclusions

As a new network marketing mode, live streaming e-commerce transforms product marketing into service marketing, it should vigorously carry forward its advantages in the future.

Firstly, platforms should carry out multi-scene live interactive activities. Consumers can intuitively feel the appearance and use of goods, and the real-time interactive atmosphere can also make consumers have a sense of intimacy and immersion, so that they can better integrate into the shopping atmosphere.

Secondly, platforms should improve the professional quality of network anchors. A series of "rollover" incidents in the live streaming industry of e-commerce also show that with the gradual rational consumption consciousness of consumers, e-commerce anchors are required to produce more quality content in the future, so the professional skills of anchors are particularly important.

Lastly, anchors should reasonably guide consumers' purchase behavior and reduce irrational consumption. Enterprises should give full play to the advantages of live delivery, improve the sense of participation and identity of consumers, guide consumers to rational and healthy consumption, and reduce the frequency of return and exchange of consumers, which is conducive to reducing the operating cost of enterprises and improving the satisfaction of consumers, so as to achieve a win-win situation for enterprises and customers.

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