

The Impact of Hunger Marketing on Impulsive Purchasing Behavior in Live-Streaming E-commerce

Minghua Gu^{1,*}

¹Faculty of Business, The Hong Kong Polytechnic University, Hong Kong, China

*Corresponding author:
25046597g@connect.polyu.hk

Abstract:

Hunger marketing is a common marketing strategy widely used by live-streaming merchants. However, research on its impact on consumers' impulse purchasing behavior in this field remains limited. This study draws on the classic S-O-R theory in psychology to construct a structural equation model incorporating host characteristics, promotional incentives, promotional time constraints, perceived value, perceived competitiveness, and impulse purchasing behavior. SPSS and AMOS software were employed to validate and analyze 311 valid questionnaires. The results revealed that host characteristics, promotional incentives, and promotional time constraints all significantly promote impulsive purchasing behavior, with promotional incentives having the most significant effect. Further analysis revealed that perceived competitiveness has a stronger promotional effect on impulse purchasing behavior than perceived value. Additionally, these two factors partially mediate the relationship between promotional time constraints and impulse purchasing behavior. Based on these findings, this study offers recommendations for live streamers and e-commerce platforms, aiming to provide insights for enhancing brand sales and improving consumer experiences.

Keywords: Hunger marketing; live streaming e-commerce; SOR theory; structural equation modeling.

1. Introduction

In the last couple of years, as the design and functionality of mobile internet devices have become increasingly sophisticated, more and more internet users have turned to smartphones to explore the vast expanse of the internet. By June 2025, the total

number of online users in China has reached 1.123 billion, representing an increase of approximately 1.3% compared to the number of Internet users at the end of last year. As smartphones have become the primary device for internet exploration among Chinese users, live-streamed shopping has played a significant role in driving this trend. However,

in recent years, despite live streaming becoming one of the mainstream shopping methods with steadily increasing user penetration, the growth rate of its user base has slowed. This indicates that the live streaming shopping has transitioned from a phase of rapid development into a plateau, with the live streaming industry truly entering its latter half. Live streaming platforms and participating companies now need to keep abreast of consumer trends in a timelier manner and make adjustments flexibly, enhance user loyalty, and thereby maintain sufficient market share. Facing intensifying industry competition and evolving consumer preferences, major e-commerce platforms and businesses are seeking effective marketing strategies to gain a competitive edge and expand their market share. Hunger marketing, a classic marketing model originating in the 1950s, has become a common marketing tactic as research into consumer psychology has deepened. It is particularly favored by merchants in the e-commerce live streaming sector. Hunger marketing in live streaming is fundamentally a form of promotional aggregation. Leveraging the platform's traffic base, it employs various promotion policies, creates a sense of urgency, and provides rich, effective scenarios to meet consumers' personalized online shopping needs. During the process of watching e-commerce live streaming product promotions, it evokes empathy among consumers and rapidly taps into their consumption potential.

This study primarily draws on the common mediation model (SOR theory) in the field of psychology. This theory was proposed by psychologist Robert Sommer in the 1950s. It is used to analyze the mechanisms by which individuals respond to external stimuli and have found extremely widespread application in fields such as psychology, marketing, and advertising communication. Related scholars have found that consumers are influenced by various stimuli from live streamers, products, and shopping environments when watching live streams, which aligns with the elements of "people, products, and places" [1]. Therefore, using "people, products, and places" as stimulus factors (S) and engagement as the internal state of individuals when perceiving stimuli (O), this study aims to explore their impact on impulse purchasing behavior (R). This paper conducts a detailed study of the live-streaming process and systematically summarizes previous research findings to identify the influencing factors of impulsive purchasing behavior among consumers in live-streaming shopping under the scarcity marketing model, from the perspectives of external stimuli and internal responses. External stimulus variables include host characteristics, promotional incentive information, and promotional time constraints, comprehensively considering the primary factors influencing consumers' live shopping decisions on e-commerce platforms. Internal responses focus on two psychological mechanisms: perceived value and perceived

competitiveness. This study explores how these factors influence consumers' internal perceptions and lead to impulsive purchasing behavior under the influence of external environments, as well as the differences in the contribution of each factor to impulsive purchasing behavior.

This paper examines the factors influencing consumers' impulse purchasing behavior under the e-commerce scarcity marketing model from a consumer perspective. The conclusions have certain reference value for live streaming platforms and enterprises in optimizing their marketing strategies. Additionally, it provides a supplementary role in the specialized research of consumer behavior within the live streaming sector.

2. Research Design

2.1 Variable Description and Hypothesis Formulation

The personal characteristics and behavioral traits exhibited by live streamers during programs often have a direct impact on viewers, thereby triggering their impulse purchasing behavior. Relevant studies indicate that the characteristics of e-commerce live streamers and perceived quality can significantly enhance consumers' willingness to place orders [2]. Additionally, the personal charm exuded by live streamers creates a strong sense of connection and immersion among consumers, greatly enhancing their shopping experience. This not only positions host as decision-making advisors for consumers but also enhances consumer trust in hosts and platforms, strengthening the bond between businesses and consumers. Some scholars also argue that under the influence of situational factors, e-commerce hosts can leverage their charm, interactive attributes, and other traits to stimulate consumers' sense of value and promote impulsive purchasing intentions [3]. Given this information, the following hypotheses are conjectured:

H1: Host characteristics significantly and positively influence consumers' perceived value.

Promotional incentives in e-commerce live streaming typically create a sense of urgency among consumers by offering discounts, coupons, and other promotional activities, making them feel they might miss out on an opportunity. While these incentives increase consumers' willingness to purchase, they also trigger impulsive buying and higher purchase satisfaction. Beyond the direct value provided by the discounts themselves, the variety of promotional activities, the fun of the games involved, and the appeal of participating all contribute to enhancing consumers' perceived value of the product and brand. Therefore, this study posits the following hypothesis:

H2: Promotional incentives significantly and positively

influence consumers' perceived value.

Time is one of the key factors that decision-makers cannot ignore, and it plays a significant role in encouraging consumers to place orders in live streaming rooms. Under the pre-set countdown timer for flash sales and the intense atmosphere created by live streamers, consumers naturally feel a sense of urgency as the countdown ends. This leads to a perceived opportunity cost of "regretting not buying," which hinders their rational decision-making process. It transforms their potential purchasing intent into actual purchases, reduces their awareness of purchasing risks, and enhances their perceived sense of benefit, thereby generating positive perceived value. Researchers have noted that when online retailers promote products under time-limited promotions with short durations and high time pressure, it effectively enhances consumers' perceived value cognition and facilitates their purchasing decisions [4]. Given this, the following hypotheses are presented:

H3a: Time restrictions on promotions significantly and positively influence consumers' perceived value.

H3b: Time restrictions on promotions significantly and positively influence impulsive purchasing behavior.

H3c: Time restrictions on promotions significantly and positively influence consumers' perceived competitiveness.

Perceived value is the actual or potential benefits and satisfaction that a product or service provides to consumers. When making purchasing decisions, consumers subjectively perceive the value that a product or service provides, and this perceived value directly influences their tendency to make purchasing decisions. Related scholars argue that perceived value has three dimensions: quality dimension, emotional dimension, and knowledge dimension. They point out that in decision-making process, perceived value can effectively improve consumers' perception and connection with the brand, thereby enhancing the happiness levels of consumers who decide to purchase the product [5]. Research indicates that promotional purchase restrictions achieve their effects in two ways: first, by imparting a sense of scarcity to the product, thereby eliciting higher perceived value from consumers; second, by accelerating consumers' heart rates, thereby generating stronger purchasing desires [6]. Given these circumstances,

the following hypotheses are presented:

H4: Perceived value significantly and positively influences consumers' impulse purchasing behavior.

Perceived competitiveness is used to describe consumers' perceptions of a product or service relative to its competitors. It includes product characteristics, price competitiveness, and brand image. Relevant scholars have analyzed the factors influencing consumers' impulse purchasing behavior through popularity cues and concluded that perceived competitiveness promotes impulsive purchasing [7]. Based on this, the following hypothesis is proposed:

H5: Perceived competitiveness has a significant positive impact on consumers' impulse purchasing behavior.

According to consumer psychology and existing research, perceived value is consumers' subjective evaluation of the "benefits" and 'costs' of a product. Perceived competitiveness is consumers' judgment that "not purchasing immediately may result in missed opportunities." These two factors, which are based on consumers' subjective perceptions, are influenced by external environmental stimuli [8]. As an external stimulus factor imposed by live streamers, promotional time incentives can evoke emotional and cognitive responses among live stream viewers, thereby generating perceived value and perceived competitiveness, and promoting impulse purchases. Considering these, the following hypotheses are postulated:

H6: Perceived value serves as a mediator in the relationship between promotional time constraints and impulse purchasing behavior.

H7: Perceived competitiveness mediates the relationship between promotional time constraints and impulse purchasing behavior.

2.2 The Construction of Theoretical Models

In summary, based on SOR theory, the three external stimulus factors that measure hunger marketing (host characteristics, promotional incentives, and promotional time limits) are used as independent variables in the model. The two internal mechanism factors (perceived value and perceived competitiveness) are used as mediating variables in the model to reflect the consumer's internal state. Impulsive purchasing behavior is used as the dependent variable to reflect the consumer's behavioral response. Theoretical model can be seen in Figure 1.

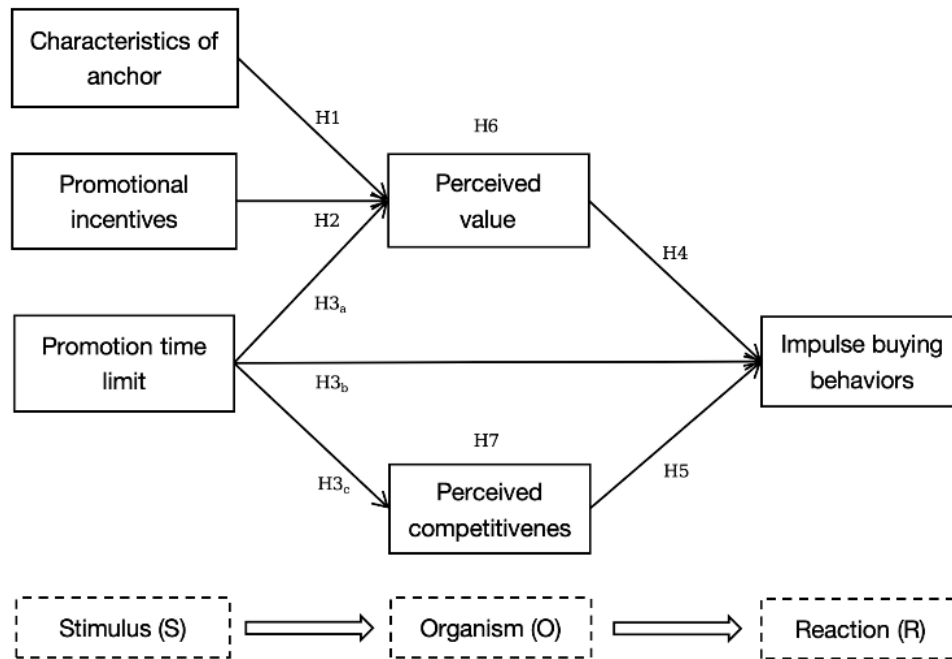


Fig. 1 Theoretical model.

3. Data Collection and Data Analysis

3.1 Questionnaire Design and Data Collection

The data for this study was collected from an online survey published on the Wensheng platform. The questionnaire primarily consists of two sections. The first section includes demographic variables, aiming to collect basic information about consumers, including gender, age, education level, monthly income, monthly online shopping expenditure, and their basic opinions on the behavior of live streamers under the hunger marketing model. The second part is the main body of the questionnaire, which uses a five-point Likert scale to collect consumers' subjective evaluations on a scale from 1 (strongly disagree) to 5 (strongly agree) across six dimensions: live streamer characteristics, promotional incentives, promotional time constraints, perceived value, perceived competitiveness, and impulse purchasing behavior. This section of the questionnaire is adapted from [9]. A total of 311 valid questionnaires were collected.

3.2 Data Analysis and Hypothesis Testing

3.2.1 Descriptive statistical analysis of basic information of respondents

Table 1 displays the demographic characteristics of the eligible sample. Among them, 159 males (51.1%) and 152 females (48.9%) completed the questionnaire. In terms of

age distribution, the young population aged 18 to 24 has become the main participant in live-streamed flash sales, accounting for nearly 50%. This demographic is also the primary target consumer group currently being pursued by e-commerce platforms. Based on educational attainment distribution, the sample population primarily consists of individuals with a high school education or below. This educational level is more susceptible to the influence of live streamers, aligning with the target audience for live streaming. In terms of monthly online shopping expenditure, the majority of respondents spent between 500 and 1,000 yuan. Considering the significant discounts offered in live streaming shopping, this consumption range aligns with the basic characteristics of live streaming audiences. Notably, over 70% of respondents believe that "limited-time flash sales" and other scarcity marketing strategies, along with the atmosphere in live-streaming sessions, are highly important in influencing their purchasing decisions. This indicates that the sample collected through the questionnaire has good representativeness of the live-streaming audience. Additionally, based on backend data, respondents are geographically distributed across the country. In summary, the sample has good representativeness.

Table 1. Distribution of sample demographic characteristic information.

Basic information statistical characteristics of respondents	Classification	Frequency	Percentage
Age	Under 18 years old	71	22.8%
	Aged 18 to 24	149	47.9%
	Aged 25 to 34	91	29.3%
Education level	High school and below	156	50.2%
	Junior college	69	22.2%
	Undergraduate degree	63	20.3%
	Postgraduate degree or above	23	7.4%
Often watch live streams	Yes	282	90.7%
	No	29	9.3%
The approximate monthly amount of online shopping	No more than 500 yuan	71	22.8%
	More than 500 yuan but no more than 1,000 yuan	122	39.2%
	More than 1,000 yuan but no more than 2,000 yuan	72	23.2%
	More than 2,000 yuan	46	14.8%
For “Time-limited flash sales” and other strategic responses	Very interested	135	43.4%
	Sometimes I’m interested	94	30.2%
	Not interested	57	18.3%
	Not interested at all	25	8.0%
The influence of the live-streaming shop- ping atmosphere on purchasing decisions	A great influence	126	40.5%
	A certain degree of influence	97	31.2%
	A relatively minor influence	60	19.3%
	No influence at all	28	9.0%

3.2.2 Reliability testing and structural equation modeling testing

In this study, hunger marketing, impulse buying behavior,

and consumers’ internal mechanisms were all measured using scales. As shown in Table 2, the questionnaire was generally reliable, with a reliability value of 0.843.

Table 2. Cronbach’s α table of the overall questionnaire.

Cronbach’s	α	Number of items
0.843		26

As shown in the reliability statistics table for each item (Table 3), the Cronbach’s alpha coefficients for host characteristics, promotional incentives, promotional time constraints, perceived value, perceived competitiveness, and impulse purchasing behavior are all greater than 0.7, and the CITC values range from 0.544 to 0.727, all exceeding

0.5, and thus meet the standard values. Based on this, it can be concluded that the questionnaire possesses high reliability.

Table 3. Reliability scale of questionnaire.

Latent variable	Number of items	Measurement items	The revised items and Total correlation (CITC)	Cronbach's α after removing items	Cronbach's α
Anchor characteristics (A)	4	A1	0.690	0.801	0.846
		A2	0.727	0.785	
		A3	0.679	0.807	
		A4	0.636	0.824	
Promotional incentives (B)	3	B1	0.544	0.672	0.731
		B2	0.559	0.639	
		B3	0.584	0.611	
Promotion time limit (C)	3	C1	0.642	0.726	0.798
		C2	0.625	0.743	
		C3	0.661	0.704	
Perceived value (D)	3	D1	0.675	0.739	0.815
		D2	0.684	0.729	
		D3	0.645	0.772	
Perceived competitiveness (E)	3	E1	0.662	0.746	0.814
		E2	0.670	0.738	
		E3	0.660	0.748	
Impulse buying behavior (F)	3	F1	0.695	0.722	0.817
		F2	0.648	0.770	
		F3	0.666	0.752	

Structural equation modeling (SEM), also known as covariance structure modeling, is an important multivariate analysis tool. This model analyzes the relationships between variables based on the covariance matrix of the variables. It is widely applied in fields such as social sciences, economics and finance, psychology, and management. When research involves latent variables that

cannot be directly observed, such as learning motivation or customer satisfaction, traditional statistical methods often struggle to address such issues effectively. In such cases, structural equation modeling can be considered for research purposes. This paper employs SEM to test the hypothesis regarding the relationship between hunger marketing variables and impulsive purchasing behavior.

Table 4. Model fitting test results.

Common indicators	Chi-square degree of freedom ratio χ^2/df	RMSEA	GFI	AGFI	RFI	NFI
Judgment criteria	<5	<0.10	>0.9	>0.9	>0.9	>0.9
Value	1.041	0.011	0.955	0.939	0.929	0.942

Table 4 provides the overall fit of the structural equation model. It can be seen that all fit indices are within the

standard range, indicating that the model fits well.

3.2.3 Results analysis

Table 5. The test results of the model path coefficient.

Corresponding assumption	Path	Standard coefficient	Non-standard coefficient	S.E.	C.R.	P
H1	Anchor characteristics→ Perceived value	0.211	0.213	0.062	3.438	<0.001
H2	Promotional incentives→ Perceived value	0.461	0.468	0.077	6.078	<0.001
H3 _a	Promotion time limit→ Perceived value	0.301	0.294	0.064	4.559	<0.001
H4	Perceived value→ Impulse buying behaviors	0.197	0.205	0.098	2.094	0.036
H3 _c	Promotion time limit→ Perceived competitiveness	0.382	0.368	0.07	5.287	<0.001
H5	Perceived competitiveness→ Impulse buying behaviors	0.324	0.342	0.067	5.094	<0.001
H3 _b	Promotion time limit→ Impulse buying behaviors	0.173	0.176	0.075	2.342	0.019

By analyzing the path coefficient test results provided in Table 5, this paper can draw the following conclusions: The standardized path coefficient of host characteristics on perceived value is 0.211, with a P-value lower than 0.001, demonstrating that anchor characteristics have a significant positive impact on perceived value. Therefore, hypothesis H1 is valid. The reason for this is that online hosts who demonstrate product expertise and respond promptly are more likely to win consumer favor, thereby establishing strong relationships and enhancing the perceived value of the consumer group.

The standardized path coefficient of promotional incentives on perceived value is 0.461, $p < 0.001$, signifying that promotional incentives have a significant positive impact on perceived value. Therefore, hypothesis H2 is confirmed. This is because the larger discounts offered in live streaming compared to other sales channels often appeal to price-sensitive consumers, increasing their decision-making opportunity costs and generating higher perceived value in the short term.

In the study of the factors influencing promotional time constraints, promotional time constraints have a substantial positive influence on consumers' perceived value

(standardized coefficient of 0.301, $p < 0.001$), perceived competitiveness (standardized coefficient of 0.382, $p < 0.001$), and impulse purchasing behavior (standardized coefficient of 0.173, $p < 0.05$). Consequently, hypotheses H3a, H3b, and H3c are validated. This is because the sense of urgency and product scarcity created by time constraints leave consumers with insufficient time for rational thinking, causing them to subconsciously accept the high-value and high-competitiveness information conveyed by the host, thereby generating higher perceived value and perceived competitiveness for the product. Additionally, this sense of urgency can also accelerate consumers' heart rates, making them more prone to physiological impulse purchasing behavior.

Perceived value (standardized path coefficient of 0.197, $P < 0.05$) and perceived competitiveness (standardized path coefficient of 0.324, $P < 0.001$) both make a significant contribution to enhancing consumers' impulse purchasing behavior. Therefore, hypotheses H4 and H5 are upheld. The analysis results indicate that under the e-commerce scarcity marketing model, the space for consumers to make rational decisions is compressed to a certain extent, while internal mechanisms such as perceived value and

perceived competitiveness are significantly enhanced, placing consumers in a non-rational state and making them more inclined to be active in impulsive purchasing behavior.

Among the three scarcity marketing factors—host characteristics, promotional incentives, and promotional time limits—the impact of promotional incentives on enhancing consumer perceived value is most pronounced. (standardized path coefficient = 0.461, $p < 0.001$). Clearly,

as a group of decision-makers with limited rationality, consumers are more sensitive to diversified promotional incentive policies.

In terms of the promotional effect of perceived value and perceived competitiveness on impulse buying behavior, perceived competitiveness has a stronger effect (standardized path coefficient $0.324 > 0.197$), indicating that consumers respond more strongly to competitive stimuli than to perceived value.

Table 6. The test results of the model's mediating effect.

Effect category	Effect value	S.E.	95% CI	
			Lower limit	Upper limit
Promotion time limit→Perceived value→ Impulse buying behaviors	0.141	0.03	0.082	0.2
Promotion time limit→Impulse buying behaviors	0.188	0.053	0.085	0.291
Total effect	0.424	0.055	0.316	0.532
Promotion time limit→Perceived competitiveness→Impulse buying behaviors	0.095	0.024	0.047	0.143
Promotion time limit→Impulse buying behaviors	0.188	0.053	0.085	0.291
Total effect	0.424	0.055	0.316	0.532

This paper examines the mediating effect of promotional time restrictions in hunger marketing metrics on impulse buying behavior based on Bradley Efron's 1979 Bootstrap statistical analysis technique and with reference to the analytical findings of relevant scholars [10]. Table 6 displays the results of the test.

In the causal pathway from promotional time constraints-perceived value-impulse purchasing behavior, the confidence interval for the indirect effect of perceived competitiveness is [0.082, 0.2]. The absence of zero suggests that the mediating effect is significant. Therefore, hypothesis H6 holds. Additionally, the confidence ranges for the total effect and direct effect are [0.316, 0.532] and [0.085, 0.291], respectively. These intervals also do not include 0, indicating that perceived value partially mediates the relationship between promotional time constraints and impulse purchasing behavior.

In the path from promotional time constraints -perceived competitiveness-impulse purchasing behavior, the confidence interval for the indirect effect is [0.047, 0.143] and does not include 0, thus revealing the presence of a mediating role, and hypothesis H7 is accepted. The confidence bounds for the total effect and direct effect are [0.316, 0.532] and [0.085, 0.291], respectively, with neither interval containing 0, further confirming that perceived competitiveness also plays a partial mediating role between promotional time constraints and impulsive purchasing behavior.

4. Conclusion

Based on the findings of the empirical studies discussed above, this paper concludes that anchor characteristics, promotional incentives, and promotional time constraints all contribute to varying degrees to consumers' impulse purchasing behavior. Among these factors, promotional incentives have the most significant effect. Additionally, at the level of consumers' internal perceptions, perceived competitiveness is significantly more effective than perceived value in stimulating impulsive purchasing behavior. Furthermore, after testing for mediating effects, this paper found that perceived competitiveness and perceived value also exert partial mediating effects between promotional time incentives and impulsive purchasing behavior. Based on the above conclusions, the following improvement measures are recommended: First, live streamers should adopt the most optimal presentation strategies based on product differences and consumer group differences to maintain consumers' focus and immersion. During live streams, a shopping atmosphere should be integrated to attract more consumers and enhance their participation, thereby strengthening fan loyalty while promoting impulse purchasing behavior. Second, compared to live streamers, e-commerce platforms can also attract more price-sensitive consumers by introducing diversified promotional incentive policies, such as innovative promotional games and joint discount activities with related companies, thereby sparking enthusiasm for impulse purchases. Finally, instead of simply making consumers

feel the value, e-commerce platforms can also introduce promotional restrictions, including but not limited to time limits and quantity limits on promotions, to make consumers feel the scarcity of resources and thus be more inclined to place orders promptly.

References

- [1] Lian Yi, Fu Tianjiao. Research on the Impact of E-commerce Live Streaming on Customers' Online Purchase Intention: The Mediating Role of Customer Perceived Value. *The Circulation Economy*, 2022, (3): 14-16.
- [2] Zhao Dawei, Feng Jiaxin. Research on the Impact of Key Opinion Leader Characteristics of E-commerce Live-streamers on Consumer Purchases. *Business Research*, 2021, (4): 1-9.
- [3] Han Xiaoyi, Xu Zhengliang. The Impact of E-commerce Live-streamer Attributes on Consumers' Online Purchase Intention: A Study Based on Grounded Theory Method. *Foreign Economic and Management*, 2020, 42(10): 62-75.
- [4] Hong Xing. Online flash sales product pricing strategy under time pressure. *World Scientific Research Journal*, 2021, 7(3): 376-382.
- [5] Muhammad J, Khalid H, Umair A, et al. Brand love: the emotional bridge between tourists' perceived value and well-

being. *Asia Pacific Journal of Tourism Research*, 2020, 25(12): 1329-1342.

- [6] Wang Guocai, Liu Wenjing, Wang Xifeng. Research on the Role Scenarios of Promotional Purchase Restrictions under Different Promotional Methods: A Framing Effect Perspective. *Nankai Business Review*, 2023, 26(4): 58-67.
- [7] Yan Jiaqi, Lou Ligu. Research on the Impact of Popularity Clues in E-commerce Live Streaming on Consumers' Impulse Buying. *Journal of Ningbo University of Technology and Economics*, 2022, 34(1): 45-52.
- [8] Zhang Xie, Cheng Xue, Huang Xin. Oh, my God, buy it! Investigating impulse buying behavior in live streaming commerce. *International Journal of Human-Computer Interaction*, 2022, 39(12): 2436-2449.
- [9] Li Ming, Wang Qan, Cao Yue. Understanding consumer online impulse buying in live streaming E-Commerce: A Stimulus-Organism-Response Framework. *International Journal of Environmental Research and Public Health*, 2022, 19(7): 4378.
- [10] Hayes A F. Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs*, 2009, 76(4): 408-420.