

Research Article

Mediating Effect of Emotional Response Between Streamers' Characteristics and Consumer Purchase Intention in E-Commerce Live Streaming

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ABSTRACT

Objective: This study aims to explore how streamers' characteristics affect consumers' purchase intentions in e-commerce live streaming. Specifically, the study examines this relationship through the mediating role of emotional responses.

Design/Methods: The study sample included 325 e-commerce live streaming consumers from Guangzhou, the most developed city in China for the e-commerce live streaming industry. Random sampling was used in a questionnaire survey to obtain data, while the Statistical Package for the Social Sciences (SPSS) and Analysis of Moment Structures (AMOS) were employed to verify the research hypotheses.

Findings: The characteristics of streamers in e-commerce live streaming directly and indirectly impact consumers' purchase intentions. Streamers' characteristics also partially mediate consumers' purchase intentions through emotional responses. Additionally, the results support the mediation model.

Practical Significance: The results revealed that the role of streamers is vital in e-commerce live streaming. Furthermore, streamers' professionalism, trustworthiness, and attractiveness significantly affect consumers' purchase intentions. The findings will aid merchants in choosing the right streamers and provide direction for live streaming, improving the professionalism, trustworthiness, and attractiveness of streamers, and increasing sales during live streaming.

Originality/Value: The present study contributes to the existing literature by explaining how streamers' characteristics relate to consumers' purchase intentions. The study also examined the mediating processes, thereby promoting an understanding of how consumers' emotional responses influence their purchase intentions.

Keywords: e-commerce live streaming; streamer; purchase intention; emotional response; SOR theory; streamers' characteristics.

ARTICLE INFO

Received: 22 June 2024 | Accepted: 1 August 2024 | Available online: 23 August 2024

CITATION

He Ch, Hashim N, Kamarudin S, et al. Mediating Effect of Emotional Response Between Streamers' Characteristics and Consumer Purchase Intention in E-Commerce Live Streaming. *Environment and Social Psychology* 2024; 9(7): 2931. doi: 10.59429/esp.v9i7.2931

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1. Introduction

1.1 Research background

In the development of the online shopping process, live streaming with goods has emerged as a significant branch of network broadcasting. In 2022, the market size of e-commerce live streaming reached 3.5 trillion yuan, reflecting the explosive growth of this sector and a rapid increase in market share. E-commerce live streaming presents product information in a two-way, real-time, and scene-driven manner through streamers' explanations, which actively attract users^[1]. Thus, this novel business marketing model has garnered much attention. Streamers with high popularity, traffic support, experience, professional knowledge, and other characteristics have launched live platforms with goods, bringing them into the public's line of sight^[2].

1.2 Problem statement

More and more scholars have studied the relationship between streamers and consumers. Existing studies have confirmed that factors affecting streamers' ability to attract consumers' attention and drive purchases can be divided into external factors^[3], such as the selection of live streaming platforms, the construction of live streaming scenes, and personal characteristics of streamers, such as popularity, professionalism, interaction, accuracy, and convenience of information dissemination^{[4][5]}.

Research on online shopping consumer behavior suggests that cognitive factors are predictive of consumers' purchase intentions^{[6][7]}. However, there are shortcomings in these studies, as they often ignore the factors related to consumers' emotional responses. For rational consumers, cognitive responses typically become the dominant factor affecting purchase intentions, leading them to make decisions by analyzing the functionality and cost performance of products. Conversely, emotional consumers pay more attention to their own emotional responses. Excitement and pleasant emotions can trigger their desire to buy, thus prompting them to make purchases.

Some scholars have found that consumers' emotional responses are more significant in predicting their purchase intentions, and changes in emotional responses are closely related to changes in purchasing behavior^[8]. In the purchasing decision-making process, due to limited processing resources, consumers need to make decisions in a relatively short time. The decisive factor affecting consumers' purchase intentions is emotional response rather than cognitive response^[9]. Therefore, studying the influence of emotional response on consumer behavior is equally important.

This study adopts the stimulus-organism-response (SOR) model, with streamers' characteristics as the independent variable, consumers' purchase intention as the dependent variable, and consumers' emotional response as the mediating variable, to explore the correlation between these factors and consumers' purchase intentions, and to build the research model. At the same time, an empirical analysis of the research results is carried out. The purpose of this study is to explore how emotional responses mediate the relationship between streamers' characteristics and purchase intentions in e-commerce live streaming and to provide suggestions for merchants based on the research conclusions. These suggestions can help merchants improve the professional level, credibility, and attractiveness of streamers, select and train suitable streamers, and increase live streaming sales.

1.3 Significance of the study

Based on the SOR model, this paper constructs a mechanism model of streamers' influence with consumers' emotional response as the mediating variable. The S-O-R theory shows that consumers stimulated by the shopping environment are prone to strong emotional responses^[10]. Some qualitative studies

in the past have recognized that emotion may play an important role in impulsive buying and is a potential trigger for such behavior.

This research confirmed this through questionnaire surveys and data analysis, finding that different streamers elicit various emotional responses from consumers due to their own characteristics and differences in live broadcast attributes. In most cases, consumers experience pleasant and arousing emotions during the shopping process, which in turn guide the production of purchase behavior, especially in the context of impulse buying. Professional streamers can alleviate consumers' doubts and uncertainty through detailed product introductions and actual use demonstrations, fostering a positive emotional response that promotes purchasing behavior. Streamers with high visibility and good reputations can typically bring consumers more trust and a sense of security, reducing psychological barriers to purchase and enhancing confidence in purchasing decisions. An attractive and professional streamer can provide consumers with a pleasant visual experience, enhance trust and goodwill, thereby stimulating positive emotional responses and increasing the desire to buy.

This discovery provides a new perspective in the field of digital marketing and consumer behavior, expanding the scope of application for existing theories. Additionally, this study highlights the key role of emotional responses in impulsive buying, helping e-commerce companies design better marketing strategies to stimulate positive emotions among consumers, thereby improving sales performance.

Moreover, the findings of this paper have important implications for e-commerce strategies and marketing methods. By understanding the characteristics of streamers and the mechanism of live content on consumer emotional responses, enterprises can optimize streamer selection and live content design, improve consumers' shopping experiences, and increase sales conversion rates.

2. Literature Review

2.1 E-commerce live streaming

Live streaming commerce is a new form of social commerce where real-time social interaction via live streaming facilitates online product sales^[11]. Streamers (social influencers, celebrities, numerous self-employed sellers, or ordinary people) showcase products, perform demonstrations, and offer special discounts to consumers during live streaming. Consumers can interact with streamers and other viewers by submitting messages while watching. Meanwhile, they can also buy products without exiting the live streams^[12]. Live streaming can be divided into three parts: firstly, platforms embedded in traditional commercial websites, such as Amazon or Taobao; Secondly, social media platforms that integrate shopping channels, such as Facebook and Douban. Thirdly, platforms that initially provide e-commerce live streaming services and platforms that incorporate online business activities, such as Twitch^[13].

2.2 Streamers' characteristics

Streamers refer to the characteristics and attributes of opinion leaders with influence and appeal in a specific field or social circle. Ohanian (1990) examined celebrity characteristics by dividing source characteristics into professionalism, trustworthiness, and attractiveness. Several Chinese scholars studied live-streaming Internet celebrities and discovered that trustworthiness, attractiveness, and professionalism are the most significant characteristics in attracting consumers' purchase intentions^[14]. In summary, the attributes of online opinion leaders are separated into three dimensions: streamer trustworthiness (ST), streamer professionalism (SP), and streamer attractiveness (SA).

2.3 The SOR theoretical model

The SOR theoretical framework (stimulus-organism-response) is based on the traditional stimulus-response model and includes an intermediate variable organism (Organism) to describe human inner activities. The SOR model was proposed by Russell and Mehrabian in 1974, as depicted in **Figure 1**.

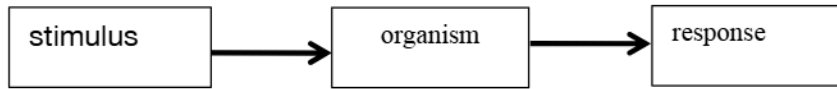


Figure 1. The SOR model (Russell & Mehrabian, 1974)

SOR indicates that when an individual is given a certain environmental stimulus, the individual does not directly produce a response but shifts the corresponding changes through the transformation of the organism's state. This theory explains that external stimuli influence the internal psychological level of the body, which is displayed in the individual reaction attitude and behavior response.

Donovan and Rossiter (1982) first applied the SOR model to the consumer environment. After being stimulated by the offline retail environment, consumers will experience acceptance or avoidance behaviors^[15]. Subsequently, numerous scholars worldwide have applied the SOR model to the online shopping environment to investigate the relationship between external stimuli, consumers' inner psychological state, and consumption intention or behavior^[16].

Luo et al. (2021) based on the SOR theoretical model, studied the main factors influencing consumers' purchase intentions in a live streaming environment. They built a research model and found that cognitive and emotional changes play a significant mediating role between streamers' identity background, streamers' ability to sell products, preferential and interactive stimuli, and consumers' purchase intentions in live streaming. This shows that the interaction between stimulus factors and consumption responses requires an intermediate bridge. Specifically, streamers determine, to a certain extent, the degree of consumers' understanding of the production, function, utility, and other product qualities. A clear and thorough introduction of products will make consumers happy and satisfied, and this emotional change will increase their willingness to buy^[17].

Meng et al. (2020) discussed the influence of various characteristics of online celebrities live streaming on consumers' purchase intentions. The study found that the personalities, interaction styles, and product recommendation methods displayed by different online celebrities during live streaming elicit various emotional and psychological reactions from consumers, thus affecting their purchase decisions. For example, some internet celebrities may attract consumers who prefer a relaxed shopping experience with their humorous style, while others may attract consumers focused on product quality and functions through professional product knowledge and detailed explanations. Additionally, the image, reputation, and social influence of internet celebrities also affect consumers' trust and purchase intentions to varying degrees. These studies indicate that live streaming by online celebrities is not just a simple product promotion but also involves establishing emotional connections with consumers to stimulate their purchase motivation^[14].

Similarly, Liu et al. (2020) analyzed the influence of live streaming by internet celebrities on consumers' purchase intentions and its mechanisms. They pointed out that consumers greatly value the improvement of their consumption experience and quality of life in live shopping. Research shows that live streaming by online celebrities can provide an immersive shopping experience, allowing consumers to not only learn about product information but also enjoy the fun and satisfaction of shopping while watching the live stream. By interacting with the audience, answering questions, and showing the product's effects on the spot, internet celebrities enhance consumers' sense of participation and trust, thereby increasing their purchase intentions. Additionally, the personal charm of internet celebrities and the emotional connection established with the audience also promote consumers' purchasing behavior to a certain extent. The study further highlights the

importance of consumer experience in modern e-commerce and suggests that companies should improve consumers' overall shopping experience and quality of life by optimizing live streaming^[18].

3. Research models and hypotheses

Based on the SOR theory, ST, SP, and SA were selected as the three-dimensional variables of streamers' characteristics that act as the external stimulus factors of the current study. Consumer emotional response is considered consumers' inner body response, O, and response, R. This factor is defined as the consumers' purchase intention. **Figure 2** illustrates the proposed conceptual framework.

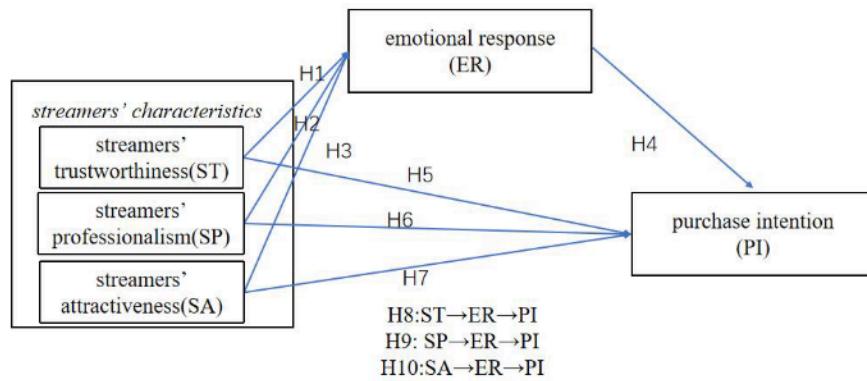


Figure 2. Conceptual framework

Notes: ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; ER = emotional response; PI = purchase intention.

3.1 Streamers' trustworthiness and emotional response

Streamers' trustworthiness (ST) represents the extent to which streamers are considered honest, upright, and trustworthy^[19]. Viewers tend to hold positive emotions and trust the brand or product promoted by streamers who are considered trustworthy. When the brand or product is deemed reliable, it leads to purchasing behavior^[20]. Based on this suggestion, the following research hypothesis is proposed.

H1: Streamers' trustworthiness positively impacts consumers' emotional response.

3.2 Streamers' professionalism and emotional response

Streamers' professionalism (SP) is the ability of streamers to recommend products based on their knowledge and experience^[20]. Han and Xu (2020) revealed that the professionalism of e-commerce streamers when recommending products encourages consumers' inner trust and excitement^[21]. Hence, the following hypothesis is proposed.

H2: Streamers' professionalism positively impacts consumers' emotional response.

3.3 Streamers' attractiveness and emotional response

Streamers' attractiveness (SA) is the personal characteristics of streamers reflected through the appearance and style of live streamers^[20]. SA adds warmth to the live streaming and brings pleasure to the audience, allowing them to immerse themselves in the pleasant live-streaming atmosphere and enjoy the experience, which facilitates placing orders in their favorite live-streaming room^[16]. Therefore, the following hypothesis is forwarded.

H3: Streamers' attractiveness positively impacts consumers' emotional response.

3.4 Emotional response and purchase intention

Emotional response denotes an individual's affective reaction to the attitude object, which is related to the individual's internal feelings and affective state^[22]. Crawford and Melewar mentioned that an environment that can produce a happy and relaxed emotional attitude of consumers would encourage consumers to buy^[23]. Some scholars disclosed that the emotional state of pleasure may increase consumers' impulse purchasing intention^[24]. Thus, the current study suggested the following hypothesis.

H4: Emotional response positively impacts consumers' purchase intention.

3.5 Streamers' trustworthiness and purchase intention

Based on the explanation of streamers and the understanding of store word-of-mouth, consumers can improve their trust in streamers and thus generate strong purchase intention^[25]. Additionally, streamers can influence consumers' trust in streamers through their characteristics, such as interactivity and professionalism, and thus influence consumers' purchase intention^[26]. Therefore, the following hypothesis is proposed.

H5: Streamers' trustworthiness positively impacts consumers' purchase intention.

3.6 Streamers' professionalism and purchase intention

Liu et al. (2021) highlighted that SP is a critical source of consumer perception and significantly impacts their purchase intention. Hence, the present study proposed the following hypothesis^[27].

H6: Streamers' professionalism positively impacts consumers' purchase intention.

3.7 Streamers' attractiveness and purchase intention

The streamers' appearance and performance significantly impact the first impression of a live video audience, which is a powerful motivator for building positive interpersonal relationships^[28]. Luo (2021) discovered that interpersonal attraction is a vital characteristic of online opinion leaders, which can evaluate the personality charm of online opinion leaders and verify the positive influence of interpersonal attraction on consumers' purchase intention^[17]. Based on this finding, the following hypothesis is formulated.

H7: Streamers' attractiveness positively impacts consumers' purchase intention.

3.8 The mediating role of emotional response in streamers' characteristics and consumers' purchase intention

Yan et al.(2018) revealed that streamers' attractiveness, reliability, interactivity, and professionalism in Internet live broadcasting positively influence consumers' impulsive purchasing behavior by satisfying and awakening consumers' positive emotions^[29]. The following hypotheses are proposed based on the discussion mentioned above.

H8: Emotional response plays a mediating role between streamers' trustworthiness and purchase intention.

H9: Emotional response plays a mediating role between streamers' professionalism and purchase intention.

H10: Emotional response plays a mediating role between streamers' attractiveness and purchase intention.

4. Methodology and research design

4.1 Instrument

Scale items measuring the constructs were developed from past research and adapted to a live commercial context. Specifically, the measurement of ST, SP, and SA were all from the mature scales of Ohanian (1990)^[30], the measurement of emotional response was based on Hwang et al.'s (2011) ^[31]scale, and the measurement of purchase intention was from Zhou et al. (2020)^[32]. The current study set the confidence level at 95%. All items followed a 5-point Likert scale format ranging from “strongly disagree” (1) to “strongly agree” (5).

This study utilized SPSS 23 and Amos 23 for data analysis. SPSS 23 was chosen for analyzing the quality and reliability of the questionnaire data due to its powerful statistical functions, user-friendly interface, advanced reliability and validity assessment tools, flexible data processing capabilities, and effective data visualization options. These features ensure the accuracy and reliability of data analysis and help achieve the research objectives. Amos 23 was selected for structural analysis because of its powerful structural equation modeling (SEM) capabilities, intuitive graphical interface, ability to handle complex models, and efficient data analysis and model fit assessment tools. These characteristics enable Amos 23 to accurately describe and verify the relationships between variables, helping researchers gain a deeper understanding of the data structure and achieve the research objectives.

4.2 Sample and data collection

According to the "Statistical Report on China's Internet Development" released by the China Internet Network Information Center, the number of Internet users in China reached 1.067 billion as of December 2022. The ratio of male to female Internet users in China is 51.4:48.6, similar to the overall population ratio. The number of Internet users in various provinces, including Guangdong Province, is 97.09 million, ranking Guangdong first in China regarding the number of Internet users^[33].

The present study was conducted in March 2024. A total of 40 respondents participated in the pilot test, with Pearson's correlation values ranging from 0.888 to 0.990 (meeting the criterion of > 0.50) and scale alpha values ranging from 0.927 to 0.995 (meeting the criterion of > 0.70). In summary, the questionnaire demonstrated good validity and reliability, making it feasible for distribution to the target respondents.

Guangzhou, the capital city of Guangdong Province, was chosen as the research destination due to its significant number of Internet users. As a first-tier city in China, Guangzhou's residents are quick to adopt and accept new models and products.

The current study employed random sampling. The Questionnaire Star platform was used to distribute surveys to users who frequently watch live streaming and purchase items during live broadcasts. The survey lasted for one month, and 332 questionnaires were collected. After eliminating those that did not pass the screening questions, 325 valid questionnaires remained, resulting in a recovery rate of 97.89%.

Table 1 shows that the proportion of males and females was 44.9% and 55.1%, respectively. The majority of respondents were aged 21 to 40 years old, accounting for 65.2%. The predominant education level was a college or bachelor's degree, accounting for 61.5%. The characteristics of the study sample were consistent with the gender ratio and age distribution of Chinese Internet users, making the data sufficient and representative for analysis.

Additionally, 65.2% of respondents reported watching live broadcasts 1-6 times a week. The preferred platform for watching live streaming was e-commerce, accounting for 58.8%. Clothing items were the most commonly purchased products in the live streams, accounting for 44%.

Table 1. Sample characteristics (N = 325).

	Item	Frequency	Percent
Gender	male	146	44.9
	female	179	55.1
Age	< 20	42	12.9
	21 ~ 30	109	33.5
	31 ~ 40	103	31.7
	41 ~ 50	55	16.9
	>51	16	4.9
Education background	Junior high school and below	32	9.8
	High school, vocational college, or junior college	56	17.2
	College or undergraduate degree	200	61.5
	Graduate students and above	37	11.4
Frequency of watching live-streaming	1 ~ 6 times a week	212	65.2
	1 ~ 3 times a month	75	23.1
	Less than once a month	38	11.7
Preferred live streaming platform	E-commerce platforms (Taobao or JD.com)	191	58.8
	Social media platforms (Weibo)	35	10.8
	Short video platforms (Douyin or Kuaishou)	99	30.5
	Clothing shoes	143	44.0
Items purchased in the live-streaming room	Beauty and skincare products	65	20.0
	Food	93	28.6
	Others	24	7.4
Total		325	100

5. Data analysis and results

5.1 Reliability and validity testing

SPSS 23 was used to analyze the quality and reliability of the questionnaire data. **Table 2** displays that the Cronbach's α coefficient of the total scale was 0.929, indicating that the reliability of the questionnaire data was very high. The numerical results of Cronbach's α coefficient of each variable exceeded 0.7, which denoted that the reliability of the data of each variable was also very high and good questionnaire quality.

Table 2. Numerical results of Cronbach's α coefficient of each variable.

Items	Cronbach's Alpha of Deleted Item	Cronbach's α	Cronbach's α
ST ST1: I think the streamer is honest.	0.788	0.834	0.929

	ST2: I think the streamer is truthful.	0.738	
	ST3: I consider the streamer to be dependable.	0.785	
	SP1: I think the streamer knows a lot.	0.845	
SP	SP2: I think the streamer is competent in making assertions about things that he/she is good at.	0.834	0.871
	SP3: I think the streamer is an expert in his/her area.	0.833	
	SP4: I think the streamer is an expert in his/her area.	0.826	
	SA1: I think the streamer is very attractive.	0.824	
SA	SA2: The streamer is charming.	0.810	0.860
	SA3: The streamer is beautiful.	0.819	
	SA4: I feel the streamer is very stylish.	0.835	
	ER1: I am thrilled watching the live streaming.	0.891	
	ER2: I feel relaxed watching the live streaming.	0.892	
ER	ER3: I am delighted with watching the live streaming.	0.890	0.911
	ER4: I am very excited to watch the live streaming.	0.887	
	ER5: I was very excited to watch the live streaming.	0.895	
	PI1: I will most likely consider purchasing the products recommended by the Streamers.	0.787	
PI	PI2: I am willing to buy the products recommended by the streamer.	0.803	0.852
	PI3: I would recommend live shopping to my friends.	0.789	

Notes: ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; ER = emotional response; PI = purchase intention.

The validity analysis of the collected questionnaires was conducted to test the correlation between the variables and ensure the rationality and effectiveness of the questionnaire design. Based on the KMO and Bartlett test values of the variables in **Table 3**, the KMO value was 0.925, and the P-value significance was 0.000, which was significant. Meanwhile, the approximate chi-square was 5340.932, the degree of freedom was 351, and the significance was 0. The results indicated that the questionnaire scale data was suitable for factor analysis and that the correlation between variables was good, which suggested that it was suitable for validity analysis.

Table 3. KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.925
Approx. Chi-Square		3634.157
Bartlett's Test of Sphericity	df	171
	Sig.	.000

Notes: ***, **, * represent significance levels of 1%, 5%, and 10%.

5.2 Structural equation model validation

5.2.1 Model fit test

Based on the findings, the questionnaire data is imported into AMOS 23.0, the basic model parameters are fitted, and the original model is modified based on the modified index MI value. Furthermore, the residual term is established, thus reducing the Chi-square value and obtaining a better fit index.

Table 4. Model fit test.

Fitting index	Recommended value	Actual value
X2 / DF	1-3 is excellent, 3-5 is good	1.166
RMSEA	< 0.05 is excellent, < 0.08 is good	0.023
IFI	> 0.9 is excellent, > 0.8 is good	0.993
TLI	> 0.9 is excellent, > 0.8 is good	0.992
CFI	> 0.9 is excellent, > 0.8 is good	0.993
GFI	> 0.9 is excellent, > 0.8 is good	0.950

The main fit test indexes of the fit are listed in **Table 4**. X2/DF is 1.166, which is between 1-3 and excellent; RMSEA is 0.023 and under 0.08, which is excellent; the IFI is 0.993 and over 0.9 is considered excellent; the TLI is 0.992 and more than 0.9 is considered excellent, the CFI is 0.993, and over 0.9 is considered excellent, the GFI is 0.950, and over 0.9 is considered excellent. Therefore, the basic hypothesis model fits the data well.

5.2.2 Convergence validity test

Table 5. Convergence validity and combination reliability test of each dimension of the scale.

	Path relation		Estimate	AVE	CR
Q9	<---	ST	0.781		
Q8	<---	ST	0.830	0.629	0.836
Q7	<---	ST	0.767		
Q13	<---	SP	0.808		
Q12	<---	SP	0.801	0.628	0.871
Q11	<---	SP	0.793		
Q10	<---	SP	0.766		
	Path relation		Estimate	AVE	CR
Q17	<---	SA	0.758		
Q16	<---	SA	0.775	0.607	0.861
Q15	<---	SA	0.808		
Q14	<---	SA	0.774		
Q22	<---	ER	0.805	0.672	0.911

Q21	<---	ER	0.838		
Q20	<---	ER	0.818		
Q19	<---	ER	0.817		
Q18	<---	ER	0.819		
Q23	<---	PI	0.807		
Q24	<---	PI	0.803	0.656	0.851
Q25	<---	PI	0.820		

Notes: ST: streamers' trustworthiness; SP: streamers' professionalism; SA: streamers' attractiveness; ER: emotional response; PI: purchase intention.

Table 5 indicates that the AVE of each dimension of variables in the scale exceeded 0.5, hence suggesting good convergence validity. The value of CR exceeding 0.7 indicates good internal consistency.

5.2.3 Discriminate validity test

Table 6. Tests the differential validity of each scale.

	ST	SP	SA	ER	PI
ST	0.629				
SP	0.521	0.628			
SA	0.495	0.613	0.607		
ER	0.555	0.525	0.555	0.672	
PI	0.614	0.592	0.590	0.577	0.656
Square root of AVE	0.793	0.792	0.779	0.820	0.810

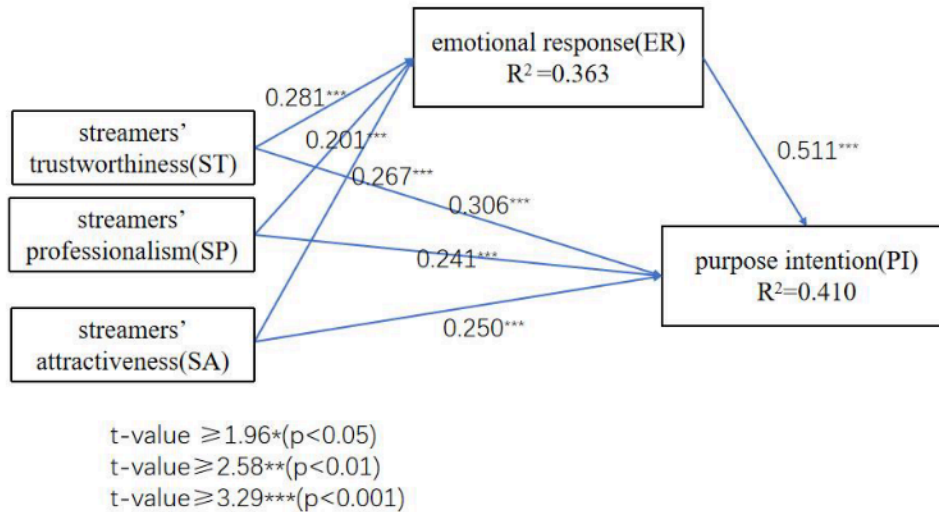
Notes: ST: streamers' trustworthiness; SP: streamers' professionalism; SA: streamers' attractiveness; ER: emotional response; PI: purchase intention.

In **Table 6**, the AVE square root value of ST is 0.793, greater than the correlation coefficient between ST and other factors; the AVE square value of SP is 0.792, exceeding the correlation coefficient between SP and other factors; the AVE value of SA is 0.779, greater than the correlation coefficient between SA and other factors, and the AVE value of ER is 0.820. The value exceeded the correlation coefficient between ER and other factors, and the AVE value of PI is 0.810, which is greater than the correlation coefficient between PI and other factors, denoting that the variables in the scale have good discriminate validity.

5.3 Hypothesis testing and mediation effects

5.3.1 Causality test

The present study utilized linear regression analysis to explore and analyze the relationship between ST, SP, SA, and emotional response and the relationship between emotional response and purchase intention.



Notes: ST: streamers' trustworthiness; SP: streamers' professionalism; SA: streamers' attractiveness; ER: emotional response; PI: purchase intention.

Figure 3. Results of path analysis

Based on the results of the above path in **Figure 3**, ST positively impacted consumer emotional response ($\beta = 0.281^{***}$, t-value = 5.471), thus supporting H1. Meanwhile, SP positively influenced consumer emotional response ($\beta = 0.201^{***}$, t-value = 3.644), supporting H2. SA positively impacted consumer emotional response ($\beta = 0.267^{***}$, t-value = 4.923), supporting H3. Additionally, ; thus, H5 was supported. SP positively impacted consumers' purchase intention ($\beta = 0.241^{***}$, t-value = 4.550), which supports H6. SA also positively affected consumer purchase intention ($\beta = 0.250^{***}$, t-value = 4.793), supporting H7. Consumer emotional response positively impacted purchase intention ($\beta = 0.511^{***}$, t-value = 10.681), supporting H4. This leads to **Table 7**.

Table 7. Results of path analysis.

Hypothesis	Coefficient	t-value	Supported
H1:ST-->ER	0.281	5.471***	Yes
H2:SP-->ER	0.201	3.644***	Yes
H3:SA-->ER	0.267	4.923***	Yes
H4:ER-->PI	0.511	10.681***	Yes
H5:ST-->PI	0.306	6.171***	Yes
H6:SP-->PI	0.241	4.550***	Yes
H7:SA-->PI	0.250	4.793***	Yes

Note: $*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

ST: streamers trustworthiness; SP: streamers professionalism; SA: streamers attractiveness; ER: emotional response; PI: purchase intention.

5.3.2 Test of mediating effect

The intermediary effect is divided into partial effect and complete effect. In this study, process model 4 of Hayes (2013) SPSS plug-in was used to test the mediation effect. The reason for choosing SPSS Process Model 4 is that Process Model 4 is a widely recognized and convenient statistical tool, which can conduct

accurate and detailed analysis of the mediating effect, and effectively reveal the mediating role of emotional reaction between anchor characteristics and consumers' purchase intention. Its flexibility and accuracy are highly consistent with the purpose of this study, which helps to deeply understand the mechanism of the influence of anchoring characteristics on consumers' purchase intention, and explain the specific path of this influence through the intermediary variable of emotional response. **Table 8** summarizes the findings for the mediation effect.

Table 8. Results of the mediating effect test.

Path	Total effect		Direct effect		Indirect effect		
	β	t-value	β	t-value	β	Bootstrap 95% CI	
						LLCI	ULCI
ST→ER→PI	0.574	10.951***	0.393	6.970***	0.181	0.121	0.248
SP→ER→PI	0.568	10.718***	0.388	6.894***	0.181	0.119	0.277
SA→ER→PI	0.576	10.614***	0.382	6.550***	0.191	0.125	0.268

Note: * represents $P < 0.05$, ** represents $P < 0.01$, *** represents $P < 0.001$.

ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; ER = emotional response; PI = purchase intention.

The findings revealed that emotional response partially mediated the relationship between ST and purchase intention, which supports H8. For instance, ST on purchase intention was 0.574 (t-value = 10.951). Emotional response partially mediated the impact of SP on purchase intention (direct effect $\beta = 0.393$, t-value = 6.970); however, it also created an indirect impact through emotional response (indirect effect $\beta = 0.181$; LLCI = 0.121, ULCI = 0.248).

Emotional response partially mediated the relationship between SP and purchase intention, supporting H9. ST on purchase intention was 0.568 (t-value = 10.718). Emotional response partially mediated the impact of SP on purchase intention (direct effect $\beta = 0.388$, t-value = 6.894); however, it also created an indirect effect via an emotional response (indirect effect $\beta = 0.181$; LLCI = 0.119, ULCI = 0.277).

Emotional response partially mediated the relationship between SA and purchase intention, which supports H10. For instance, SA on purchase intention was 0.576 (t-value = 10.617). Emotional response partially mediated the impact of SA on purchase intention (direct effect $\beta = 0.382$, t-value = 6.550); an indirect impact was also formed through emotional response (indirect effect $\beta = 0.191$; LLCI = 0.125, ULCI = 0.268).

6. Discussion and implications

6.1 Discussion and finding

This study emphasizes that in e-commerce live streaming, the results in Table 7 show that streamers' trustworthiness (ST) positively affects consumers' purchase intentions, supporting H5. Streamers' professionalism (SP) also positively affects consumers' purchase intentions, supporting H6. Additionally, streamers' attractiveness (SA) positively affects consumers' purchase intentions, supporting H7.

The characteristics of streamers influence consumers' purchase intentions, consistent with previous research conclusions^[34]. The reasons for this result may be as follows: First, streamers have an in-depth understanding of the products and industries they recommend, helping consumers comprehensively understand relevant details and product scopes, which fosters emotional trust and goodwill, thereby promoting purchase intentions. Second, the style and charm of the streamers themselves attract continuous

customer attention. Because customers like the streamers, they also like and pay attention to the products they recommend, which promotes purchase intentions.

This study found that consumers' emotional responses positively affect their purchase intentions, supporting H4. Furthermore, ST positively affects consumers' emotional responses, supporting H1. SP positively affects consumers' emotional responses, supporting H2. Similarly, SA positively affects consumers' emotional responses, supporting H3.

Most previous studies believed that consumers' cognitive responses affected purchase intentions but overlooked that this process is related to the characteristics of consumers themselves. For rational consumers, cognitive responses usually dominate purchase intentions, and they tend to make purchase decisions by analyzing product functionality and cost performance. However, emotional consumers pay more attention to their own emotional responses. Excitement and pleasant emotions awaken their desire to buy, thus prompting purchases.

This emotion-driven buying process is especially evident in the live shopping environment. Through real-time interaction, the appeal of the streamer, and the creation of a scene atmosphere, live shopping effectively stimulates the positive emotional responses of emotional consumers, such as happiness and excitement. These emotional responses not only enhance the enjoyment and satisfaction of shopping but can also directly influence purchasing decisions and increase the likelihood of impulsive purchases.

Table 8 shows that emotional responses partially mediate the effect of ST on purchase intentions, but ST also exerts an indirect effect through emotional responses. This indicates that emotional responses play a partial mediating role in the relationship between ST and purchase intentions, supporting H8. This finding suggests that the more consumers trust the streamer, the more they trust the product recommended in the live stream. This is consistent with Park and Lin (2020), who argue that consumers' positive attitudes toward celebrities transfer to endorsed products, thereby affecting consumers' purchase intentions^[35]. Emotional responses play a crucial role in the relationship between streamer characteristics and consumer purchase intentions, which is consistent with previous studies^[17].

Emotional responses partially mediate the effect of SP on purchase intentions, and SP also has an indirect effect through emotional responses. The results show that emotional responses partially mediate the relationship between SP and purchase intentions, supporting H9. This aligns with Luo et al. (2021). Streamers attract consumers to buy products through professional introductions^[17]. However, when the professionalism displayed by streamers is insufficient, consumers may experience distrust or aversion, directly affecting purchase intentions.

Emotional responses partially mediate the effect of SA on purchase intentions, and SA also has an indirect effect through emotional responses. Studies have shown that emotional responses play a partial mediating role in the relationship between SA and purchase intentions, supporting H10. While many businesses believe that the more attractive the streamer, the more likely consumers are to buy, this study found that emotional reactions play a partial mediating role between streamer attractiveness and purchase intentions. An attractive appearance alone is insufficient; the streamer's professional ability and trustworthiness must also be high to elicit positive emotions from consumers and make them willing to buy.

6.2 Theoretical contribution

These findings make an important contribution to the literature. First, this study proposes a comprehensive research model demonstrating that emotional response plays a partial mediating role between anchor characteristics and consumers' purchase intentions. This finding expands the existing research on consumer behavior theory by emphasizing the key role of emotional response in the purchasing decision process. Traditional research on consumer behavior has mostly focused on cognitive responses, suggesting that

consumers' purchase decisions are mainly based on rational analysis of product information. However, this study proves through empirical data that emotional reactions significantly affect consumers' purchase intentions, especially in contexts such as live shopping.

Secondly, the model in this study integrates three important variables: streamer' characteristics, emotional response, and purchase intention. This provides a new perspective for understanding consumer behavior in live shopping. Characteristics such as the personality, interaction style, and expertise of streamers influence consumers' purchasing decisions by triggering positive emotions such as pleasure and excitement. This mechanism model not only deepens our understanding of the relationship between emotional response and consumer behavior but also provides strong theoretical support for enterprises to formulate e-commerce marketing strategies.

Additionally, this study highlights the importance of emotional responses in impulsive purchases. Previous studies have tended to ignore the role of emotion in the purchasing process, but this study shows that emotional response is a crucial factor in consumer behavior. By understanding how to stimulate consumers' emotional responses through the characteristics of streamers, enterprises can more accurately formulate and optimize live content and strategies, improve consumers' shopping experience and satisfaction, and thus increase sales conversion rates.

6.3 Practical implications

The results show that streamers' characteristics are the most important determinant of consumers' purchase intention. In order to improve consumers' purchase intention, businesses should pay attention to the professionalism, trustworthiness and attractiveness of streamers. These factors not only directly affect consumer interest and trust in the product, but also further enhance purchase intention by triggering a positive emotional response.

Therefore, businesses should choose to focus on cultivating the professional ability of streamers, and regularly carry out professional training and assessment. Ensure that the anchor can clearly convey the advantages and use methods of the product in the broadcast room, and answer consumers' questions, so as to enhance consumers' recognition of the product and confidence in purchasing decisions.

Secondly, the trust of streamers is also an important factor affecting consumers' purchase intention. Merchants should choose streamers with good reputation and influence in the industry, and the products recommended by streamers with high trust are more likely to be accepted and purchased by consumers, because consumers believe that these streamers will not easily damage their reputation to promote bad products.

In addition, the attractiveness and interactive ability of the steamer is also crucial. A streamer with personal charm and attraction can attract more audience attention and participation through his unique style and personality. Merchants can train streamers how to improve interactive skills, truthfully answer audience questions, interactive games, limited time offers, etc., to create a relaxed and pleasant shopping atmosphere, enhance consumers' sense of participation and pleasure, so as to stimulate their desire to buy. Secondly, the appearance of a host is not a crucial factor affecting consumers' purchase intention. In terms of appearance, businesses should consider the type of product and choose streamers that meet the product image, for example, agricultural product sales can choose local farmers as streamers, and their professionalism and trust will be higher.

Finally, businesses should also pay attention to the diversity and innovation of live content. By regularly updating the live content, introducing new product display methods and interactive links, we can maintain

the freshness and interest of the audience. At the same time, by establishing an emotional connection with viewers and understanding their needs and feedback, merchants can continuously optimize live content and marketing strategies to improve consumer satisfaction and loyalty.

6.4 Limitations and future research

This study should acknowledge several limitations. Firstly, convenient sampling was used to collect data. In future studies, stratified sampling can be used, which is more accurate for sampling based on the proportion of men and women and the proportion of age in the selected sites. Secondly, the study mainly discussed Chinese users' attitudes and behaviors towards the live-streaming business, neglecting a certain live-streaming e-commerce platform. Different platforms have different consumer characteristics, which could affect the deviation of the research data. Thirdly, the type of product may vary. Future studies could test research models based on various product types, such as skin care products and clothing. Furthermore, in the live-streaming business, the model should be expanded to create a more comprehensive study.

Author contributions

Conceptualization, Norliana Hashim; methodology, Syafila Kamarudin; software, Changhua He; validation, Changhua He, Mengyao Yu and Lijun Shi; formal analysis, Changhua He; investigation, Changhua He, Mengyao Yu and Lijun Shi; resources, Changhua He; data curation, Changhua He; writing — original draft preparation, Changhua He; writing — review and editing, Changhua He; visualization, Changhua He; supervision, Changhua He; project administration, Changhua He; funding acquisition, Changhua He. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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