



Research on Consumer Information Processing and Purchase Intention of Live Streaming: Integrating Elaboration Likelihood Model and ABC Attitude Model

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Abstract. This study proposes an extended research model that explores the relationship between consumer information cues and purchase intention in the context of live streaming. The model builds upon previous theoretical methods and research successes and combines the Elaboration Likelihood Model (ELM) and the ABC (Affection-Behavior-Cognition) attitude model. The resulting online purchase intention conceptual model includes intermediate variables, such as cognitive trust and emotional response, and examines the role of attitudes in generating purchase intention. The study's results enrich current theoretical research and have practical implications for live streaming businesses seeking to optimize promotional effects.

Keywords: Information cues · Purchase intention · Information quality · Streamer characteristics · Attitudes

1 Introduction

In recent years, with strong support from national policies, live streaming has grown to become the largest live streaming market in the world in less than five years (Singh, 2020) [1]. As shown in Fig. 1, the value of the Chinese live streaming market is growing at a compound annual growth rate (CAGR) of over 280% and is expected to reach \$171 billion in 2020. This growth is further driven by the COVID-19 pandemic, which is expected to increase live-streaming sales in China to \$423 billion by 2022.

Live streaming brings people, goods and places together as a new way of shopping. The 2019–2020 China Webcast Industry Research Report states that as of June 2021, the number of Chinese webcast users has reached 638 million, accounting for 63.1% of overall Internet users, an increase of 75.39 million from the previous year (Fig. 2). In addition, nearly 46.3% of commercial live-streaming users spend more than one hour per day on live-streaming, and more than 80% of consumers reportedly purchase products recommended by the hosts during live-streaming (CNNIC, 2020).

Online retailers present persuasive messages to encourage customers to make decisions (Erkan & Evans, 2016) [2]. Although some studies analyze consumer behavior from

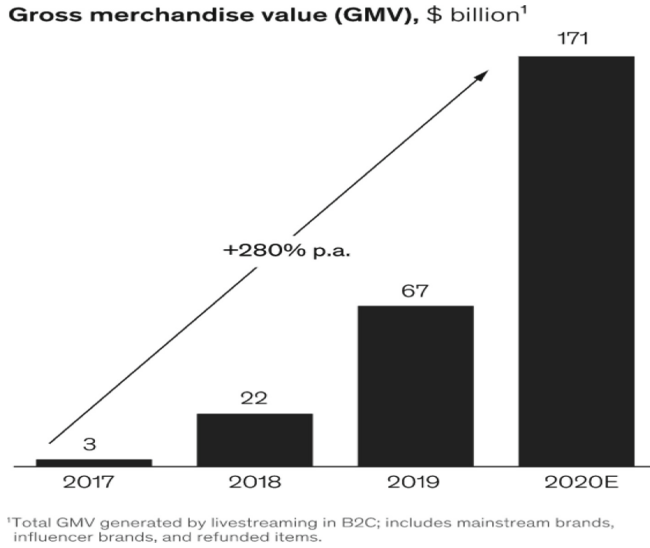


Fig. 1. China’s gross merchandise value (GMV) from online live streaming platforms between 2017–2020 (Source: Everbright Securities; iResearch; McKinsey analysis)

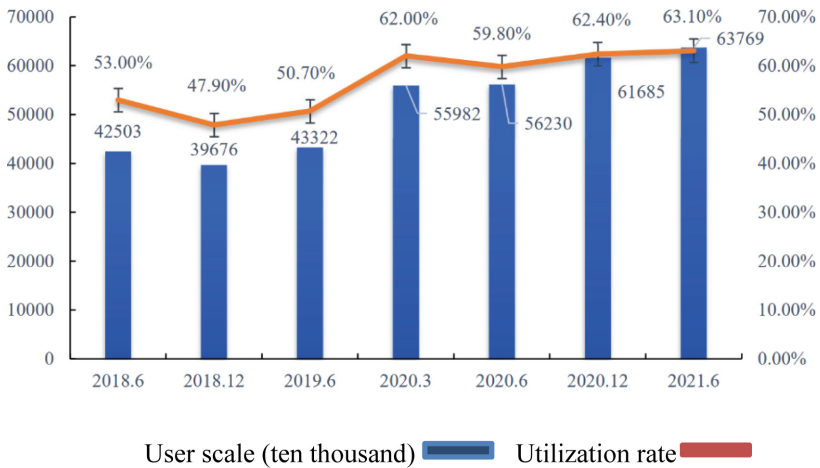


Fig. 2. Network Live Streaming User Scale and Usage Rate from June 2018 to June 2021 (Source: CNNIC China Internet Development Statistics Survey).

specific theoretical frameworks, only a few studies integrate theories such as stimulus-user-organization-response (S-O-R) (Ji & Zhuo, 2020) [3], use and gratification (U&G) theory (Cai & Wohn, 2019) [4], integrated SOR and TAM (Jiang & Li, 2021) [5], motivation theory (Cai et al., 2018) [6], and immersion theory (Gong et al., 2019) [7] to

analyze the overall consumer experience when watching live streams. Furthermore, previous investigations have ignored the relationship between information cues and differences in consumer engagement and self-efficacy with live streaming purchase behavior. Therefore, this study sought to address the following questions: (1) What informational cues in live streaming affect consumers' purchase decisions? (2) Why do information cues affect consumers' purchase decisions through different channels of live streaming?

This paper uses the Explanatory Likelihood Model (ELM) to categorize information cues in live broadcasts and investigate how different messages influence consumers' purchase behavior through different routes. In contrast to the TAM and SOR models, the ELM model proposes how individuals are influenced by two different persuasive routes when receiving information: the central and peripheral routes influence purchase decisions and attitudes when stimulated by cognitive and affective factors (Petty and Cacioppo, 1986) [8]. Since attitudes have a more comprehensive meaning in social psychology, considering cognitive, affective and behavioral components, they are inter-related (Rosenberg & Hovland, 1960) [9]. Therefore, the present study brought together the ELM and ABC attitude models for research (Chen et al., 2020) [10].

This study not only broadens the application of ELM in the field of live streaming, but also contributes to the enrichment of theoretical research in the field by building an extended research model.

2 Literature Review

2.1 Live Streaming

Live streaming is an innovative commercial marketing model that utilizes internet-based platforms to present product information to users in a scene-based, bidirectional, real-time, and interactive manner while prioritizing active user participation (Wei et al., 2021) [11]. There are three principal types of live streaming: the first is embedded in traditional business websites such as Amazon and Taobao; the second is incorporated in social media platforms with shopping features such as Facebook and Douyin, while the third pertains to gaming platforms that include online business activities, such as Twitch (Wongkitrungrueng et al., 2020) [12].

2.2 Purchase Intention

Purchase Intention refers to the likelihood of a consumer purchasing a product or service, which positively influences the possibility of engagement with such a product (Schiffman, 2010) [13]. It is a subjective expectation of future purchases by consumers, and can predict purchase behavior (Ye et al., 2020) [14].

2.3 Information Clues

Information clues refer to the information that can grab the attention of individuals while they search for information and provide indications which aid in decision-making (Yang et al., 2009) [15].

2.4 Elaboration Likelihood Model (ELM)

The Elaboration Likelihood Model (ELM) was first proposed by American scholars Petty and Cacioppo in 1986 to explain the process of attitude change in individuals during persuasion. The model has been widely used to study individual attitudes, user behavior, and social communication ever since. It is believed in academia that the model has a good explanatory power for the formation of consumer attitudes and the effective use of persuasion techniques. The theory suggests that due to differences in individual involvement and self-efficacy, the process of attitude change involves two information processing paths, the central route and the peripheral route (Petty & Cacioppo, 1986) [8].

In previous studies, Table 1 demonstrates that the most significant central cue of the ELM is the information quality, which reflects the reliability and persuasive power of the information. The most representative peripheral cue of the ELM is the Streamer's characteristics, which refer to the Streamer's professionalism, credibility, and attractiveness, according to the information source theory (Li et al., 2021) [16].

2.5 ABC (Affection-Behavior-Cognition) Attitude Model

This model postulates that attitudes encompass three dimensions: cognition, emotion, and behavioral tendency (Fig. 3).

The interaction of cognitive, affective, and behavioral components completes the psychological process of attitude formation (Liu, 2016) [17]. Cognitive responses refer to beliefs and knowledge about the attitude object, and affective responses refer to the individual's emotional reactions related to the attitude object (Rosenberg & Hovland, 1960) [9]. Cognitive trust is related to consumers' confidence or willingness to trust in the competence and reliability of service providers (Kim et al., 2003) [18] and is seen as the cognitive response to consumer attitudes. Barrett and Russell (1998) suggested that positive emotional arousal consists of two aspects: pleasure and arousal, and positive emotional arousal is considered as the affective response to consumer attitudes [19]. Therefore, this study examines the role of cognitive trust and positive emotion as mediating variables of the two dimensions of attitude in shaping consumers' onsite purchase intentions.

3 Research Hypothesis and Model Construction

3.1 The Impact of the Central Path Factor (Information Quality) on Perceived Trust and Purchase Intention

Information quality is the main criterion for persuasion and communication (Floh & Madlberger, 2013) [20]. Viewers can assess the trustworthiness of a product and make a purchase decision based on the information obtained during the live broadcast. Information quality is a precursor to trust, the most common antecedent, and drives behavioral intentions (Uzir et al., 2021) [21].

As a result, the following research hypotheses are proposed:

H1: Live streaming information quality has a positive influence on consumers' cognitive trust and purchase intention.

Table 1. Research ELM in the field of information system and commerce (Source: Author)

Author	Research object	Central route	Peripheral route	Findings
Li et al. (2021)	Consumers' purchase intention in live streaming	Information Completeness Information Accuracy Information Currency	Streamer Trustworthiness Streamer Attractiveness Bullet-screen Consistency Co-viewer Involvement	Both central and peripheral clues affect consumer's perceptual persuasion and lead to their behavioral intention (including purchase and reaction intention). Mindfulness positively regulates the relationship between perceptual persuasion and behavioral intention.
Sun (2021)	Consumer behavior intention in live streaming	Information quality service quality price advantage	anchor credibility buying atmosphere	In "central path", information quality drives users' purchase intention most obviously through user attitude; In the edge path, anchor credibility has the most obvious direct effect on users' purchase intention.
Li et al. (2021)	Consumers' purchase intention in live streaming	Information quality	Anchor professionalism Anchor trustworthiness Anchor attractiveness consumer involvement	In addition to the streamer professionalism, central clues have a significant impact on users' cognitive attitudes, edge clues have a significant impact on users' cognitive attitudes and emotional response attitudes, and impulsivity has a positive moderating effect on central route.
Huang et al. (2021)	Consumers' purchase intention impulsively in live streaming	Information quality System quality	Platform interaction Anchor professionalism Anchor trustworthiness	The immersive experience and satisfaction of consumers are formed by the central route and the marginal route, and there is a positive correlation between the immersive experience and satisfaction and the impulse purchase intention.
Chen et al. (2021)	Consumers' purchase intention in live streaming	Perceived product quality Brand awareness	Perceived product knowledge of anchors Other members' endorsement Value similarity	All the three factors (i.e. perceived product knowledge of streamers, other members' endorsement and value similarity) have significant effects on consumers' trust in the streamer and purchase intention. Brand awareness is found to have no significant effect on consumers' trust in product and purchase intention.

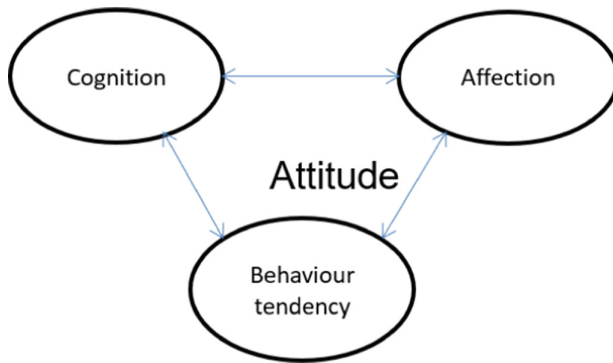


Fig. 3. ABC attitude model (Hovland & Rosenberg, 1960)

3.2 The Impact of Peripheral Information Cues (Streamer Characteristics) on Positive Emotions Arousal and Purchase Intention

Streamer characteristics refer to the unique qualities that streamers possess. Based on information source theory, streamer characteristics can be defined as “streamer expertise, streamer credibility, and streamer attractiveness”. During the live promotion process, streamers use their expertise to introduce the product in detail, allowing consumers to understand and have comprehensive information about the product. This reduces the time and cost for consumers to learn about the product and promotes purchase intention (Chen et al., 2020) [22]. The attractiveness of streaming behavior can provide consumers with an enjoyable and fun shopping experience, thus increasing the added value of the purchase process (Chen et al., 2020) [22]. The higher the credibility of a micro-merchant, the higher the recognition of the product it promotes, which leads to an increased willingness to purchase (McCracken, 1989) [23].

Consequently, the following hypotheses are formulated:

H2a: Streamer credibility has a positive impact on consumers’ positive emotion arousal and purchase intention.

H2b: Streamer professionalism has a positive impact on consumers’ positive emotion arousal and purchase intention.

H2c: Streamer attractiveness has a positive impact on consumers’ positive emotion arousal and purchase intention.

3.3 The Impact of Cognitive Trust and Positive Emotion Arousal on Consumer Purchasing Behavior

According to Djuitaningsih et al. (2020), high-quality information increases recipients’ trust in the message carrier and content, which plays an important role in shaping consumers’ attitudes and purchase intentions [24]. Consequently, the following hypotheses are formulated:

H3: cognitive trust serves as a mediator between information quality and consumers’ purchase intention.

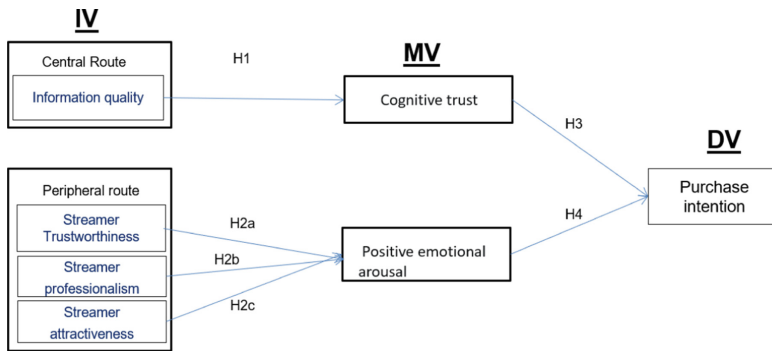


Fig. 4. Research model

Banovic et al. (2021) found that consumers' emotional responses triggered by the shopping environment can elicit their streaming experience, which forms an arousal phase and therefore has an impact on consumers' purchase intentions [25]. Many experts have demonstrated that the emotional experience of pleasure and surprise that consumers feel while shopping influences their impulse buying behavior (Youn & Faber, 2000) [26].

Consequently, the following hypotheses are formulated:

H4: Emotional response plays a mediating role between the Streamer characteristics and consumers' purchasing intention.

The above research model is shown in Fig. 4.

4 Data Acquisition and Analysis Methods

4.1 Questionnaire Design

This study modified the existing measurement items to suit the research context of e-commerce live streaming by considering its unique features. The specific measurement items are presented in Table 2.

4.2 Investigation and Analysis

This study employed a questionnaire survey to collect data and adopted the structural equation modeling (SEM) to conduct statistical analysis. The questionnaire used a Likert 5-point scale, and participants were requested to rate their experience of e-commerce live streaming based on their feelings and actual experiences. The scale allowed participants to rate from 1 (strongly disagree) to 5 (strongly agree).

The population of this study is 400 Chinese Internet users who have made a live shopping purchase in the past three months, regardless of the demographic characteristics such as the live commerce platform they used, gender, age, education level and region. By expanding the study population, this study aims to improve the validity and generalizability of its findings. Data collection was done through the assistance of the survey platform, WJX (A platform where reliable questionnaires can be collected online), which

Table 2. Measuring items and their source of adoption.

Variables	Measuring item (modified)	Source of adoption
Information Quality (IQ)	<p>IQ1: The commodity information provided in this studio is accurate.</p> <p>IQ2: The commodity information provided in this studio is comprehensive.</p> <p>IQ3: The commodity information provided in this studio is timely updated.</p>	Bhattacharjee et al., (2006) Char Advanced et al. (2015)
Streamer Trustworthiness (ST)	<p>ST1: I think the live streaming content of streamers are credible.</p> <p>ST2: I think the products recommended by streamers are reliable.</p> <p>ST3: I trust streamers.</p>	Ohanian (1991) Liu (2020) Wang (2021)
Streamer Professionalism (SP)	<p>SP: I think streamers have relevant knowledge of this product field.</p> <p>SP2: I think streamers are experts in the industry and have certain leadership authority in this product field.</p> <p>SP3: I think streamers have been specially trained in this product area.</p> <p>SP4: I think streamers have rich practical experience in this product field.</p>	Netemeyer & Bearden, (1992) Gilly et al., (1998) Bansal & Voyer (2000)
Streamer Attractiveness (SA)	<p>SA1: I watched the live streaming of streamers because the appearance of streamers attracted me.</p> <p>SA2: I follow the streamer, because he (she) is charming.</p> <p>SA3: I think streamer are humorous and funny and I like their interesting communication style.</p> <p>SA4: I agree with the values and living habits of streamers.</p>	Ohanian (1991) Liu (2020) Wang (2021)

(continued)

Table 2. (continued)

Variables	Measuring item (modified)	Source of adoption
Cognitive Trust (CT)	CT1: I believe the product I receive will look and function as same as those shown on live streaming room. CT2: I believe that I will be able to use products like those demonstrated on live streaming room. CT3: I think the products I order from live streaming shopping will meet my expectation. CT4: I believe in the information the streamer provides through live streaming shopping.	Wongkitrungrueng & Assarut (2020)
Positive Emotional Arousal (PEA)	PEA1: I felt very happy watching the live streaming. PEA2: I felt very relaxed watching the live streaming. PEA3: I felt very satisfied watching the live streaming. PEA4: I felt very excited watching the live streaming. PEA5: I felt very amazed when I watched the live streaming.	Beatty & Ferrell (1998)
Purchase Intention	PI1: I am very likely to consider buying products recommended by the streamer. PI2: I am willing to buy products recommended by the streamer. PI3: I would recommend live streaming shopping to friends.	Meng et al. (2021)

helped find participants with live streaming experience and administered the questionnaire. SPSS was used to test the data for reliability and validity, correlation analysis, regression analysis, and mediating effect analysis. AMOS 26.0 was used to construct the empirical hypothesis of structural equation modeling (SEM) to test the mediating role of cognitive trust and positive emotion evocation.

5 Conclusion

This study constructs an extended research model that, based on previous research findings, predicts that information cues such as consumers' cognitive trust and positive emotional arousal have significant effects on purchase intentions in live streaming contexts. The integration of Elaboration Likelihood Model and ABC Attitude Model extends previous theoretical methods and provides a more comprehensive and detailed online purchase intention conceptual model for the audience.

The study emphasizes the role of attitudes in generating purchase intention, predicting that attitudes can mediate the relationship between information cues and purchase intention. This research can provide valuable references for live streaming platforms, companies, streamers, and other participants to develop new live marketing strategies.

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