




# Investigating Factors that Influence Purchase Intentions in Live-Streaming Contexts Through the Elaboration Likelihood Model: The Perspectives of Para-Social Interaction and Information Quality

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Received: 1 May 2024 / Accepted: 25 June 2024  
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## Abstract

This research is grounded in the Elaboration Likelihood Model and investigates the determinants of purchase intentions within live-streaming settings. It differentiates between peripheral cues (para-social interaction and source credibility) and central cues (information quality), which are pivotal in shaping consumer attitudes and, subsequently, purchase intentions. Furthermore, this study assesses the moderating roles of product involvement and product consistency. Data were gathered through an online survey, yielding 299 valid responses. The findings indicate that para-social interaction, source credibility, and information quality significantly and positively influence consumer attitudes when neither product involvement nor consistency is accounted for. The analysis of the moderating variables presented diverse outcomes. Specifically, product involvement significantly influences the cognitive processing routes of the audience, aligning with prior research; viewers with low involvement form attitudes predominantly through para-social interaction and source credibility, whereas those with high involvement depend more on information quality. Conversely, despite its significance in prior studies, product consistency did not exhibit a substantial moderating effect in this research context. These results provide valuable insights for both academic research and practical applications in online marketing strategies.

**Keywords** Elaboration likelihood model · Information quality · Para-social interaction · Live-streaming · Purchase intention · Source credibility

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## 1 Introduction

In recent years, online live-streaming has surged in popularity across various platforms, including Facebook, YouTube, and Twitch, which have become premier venues for such broadcasts. Twitch, a leading gaming live-streaming platform, reported 1.047 billion views, 49.65 billion chat messages, and 502,300 new streamers in 2023 alone [1]. Moreover, the live-streaming market experienced substantial growth, escalating from \$12.4 billion in 2022 to \$14.9 billion in 2023, with a compound annual growth rate (CAGR) of 20.6%. It is projected to reach \$32.1 billion by 2027 at a CAGR of 21.2% [75]. This rapid expansion and mainstream adoption of live-streaming technology have prompted brands to adapt their marketing strategies swiftly. Engaging consumers through live-streaming for product promotion and sales, whether via live shopping sessions or collaborations with streamers, has emerged as a prominent trend. Despite this, a Nielsen [61] report indicated that while 84% of marketers incorporate live streaming into their media strategies to target audiences, only 49% regard it as an effective advertising medium. Consequently, live streaming has significantly influenced viewer behavior, with streamers becoming a new category of internet celebrities, thereby catalyzing the growth of influencer marketing and the influencer economy. The immediacy and interactivity of live streaming continue to attract a significant viewership, with over 30% of internet users watching live-streamed content at least weekly, according to a survey by Laborde [51]. Looking forward, the potential for further market development in online live streaming remains robust. Nevertheless, drawing viewers' attention and encouraging them to purchase products featured during live streams pose ongoing challenges for brands aiming to integrate live streaming into their broader marketing activities.

According to data from the Market Intelligence & Consulting Institute (MIC) [2], approximately 14.6% of gaming live-stream viewers tip the streamer, and 12.9% purchase products the streamer endorses, suggesting that the selection of appropriate streamers for endorsements can significantly enhance sales. Yuyuan's research [94] highlighted live streaming as a dynamic and interactive communication platform, particularly beneficial for small and medium-sized enterprises using it as a marketing tool. The immediate and highly interactive online exchanges between streamers and viewers can prompt behaviors advantageous to streamers, such as providing feedback and buying virtual gifts [32]. Furthermore, this intense level of online interaction helps build greater trust between potential customers and either businesses or streamers, thus aiding brand development [41].

Influencer marketing offers several advantages, including lower costs, rapid real-time engagement, and the use of amateur endorsers, who are often perceived as more credible and persuasive than well-known political figures or celebrities. Additionally, the simplicity of platform operation and its integration into daily life have significantly heightened corporate interest in influencers, leading to increased investment in the platforms they utilize. Consumer interactions can significantly influence other consumers, making social platforms effective tools

for firms to engage with potential customers who actively communicate, evaluate products, share experiences, and recommend products or services [34, 35]. Furthermore, according to Cheung and Lee [13], social media marketing exploits platforms such as Facebook for content sharing, information dissemination, and the cultivation of fan relationships and community cohesion. Given these factors, live-streaming platforms have emerged as new venues rich with influencers and embodying characteristics of social platforms, thus encouraging numerous companies to pursue partnerships with them.

Live-streaming platforms, characterized by their real-time interactivity, enable viewers to engage with broadcasters and fellow audience members through features such as chat and rewards [78]. This interaction has transformed broadcasters into a new type of influencer, blending traditional celebrity attributes with social media engagement. Historically, influencers such as bloggers gained recognition through text-based content. As the internet has evolved, these influencers have transitioned from text-based to image-based and ultimately to multimedia influencers, engaging audiences through live streaming, video recordings, and other digital methods. Today's influencers are diverse, with many, including live streamers, achieving celebrity status through their platforms. Due to the interactive nature of live streaming, these influencers are often seen as trustworthy by viewers [22, 44].

Previous research on live-streaming audience behavior has explored various aspects, including viewers' ongoing engagement with broadcasters and their intent to purchase virtual gifts [12, 40, 93]. Wohn et al. [89] examined both tangible and intangible forms of audience support for broadcasters and companies. With the rise of online shopping, some studies have employed the Elaboration Likelihood Model (ELM) to understand how different cues during online shopping influence consumer attitudes and lead to purchase intentions [97]. This study applies the ELM to live streaming to investigate how interactivity, a key differentiator from traditional endorsements, affects consumer behavior.

Live streaming is inherently persuasive, with the success of streamers in influencing viewer behavior being critical. The Source Credibility Model [64] identifies expertise, trustworthiness, and attractiveness as key factors in persuasive communication. Additionally, the perceived quality of information provided by streamers significantly impacts viewer behavior [11]. Unlike traditional online shopping, live streaming creates a para-social interaction, which is a unique form of engagement between viewers and streamers [38]. This study examines para-social interaction and source credibility as peripheral cues, while the detailed information provided by streamers about products serves as central cues. The aim is to categorize consumers into those processing information centrally or peripherally and to observe how these processing routes affect attitude changes under various levels of product involvement.

Furthermore, the consistency between endorsers and the products they promote has been a focus of study, with consistency found to enhance brand recall and influence [60, 85]. This study incorporates product consistency as a moderating variable to assess its impact on the effectiveness of endorsements. In summary, this research explores the impact of para-social interaction and the credibility of live streamers on consumer attitudes towards products, the effect of audience involvement and

product consistency on these relationships, and how these factors influence purchase intentions. The findings aim to contribute both to academic knowledge and practical applications in marketing. By employing the ELM, this study addresses the contemporary relevance of this model in a live-streaming context, assessing how streamer-audience interactions and information dissemination influence consumer behaviors. These insights will guide businesses in selecting appropriate live streamers for product endorsements, optimizing their marketing strategies based on the level of audience engagement, and maximizing the effectiveness of live streaming as an advertising medium.

This study is based on the ELM and explores purchase intentions within live-streaming settings. For peripheral cues, the study focuses on para-social interaction and source credibility, while for central cues, it examines information quality. These factors influence consumers' attitudes toward products in live-streaming contexts, subsequently affecting their purchase intentions. Additionally, the study investigates the moderating effects of product involvement and product consistency. The aim is to understand the factors influencing purchase intentions within live-streaming settings from the perspectives of live-stream interactions, streamer characteristics, and information quality.

## 2 Literature Review and Hypotheses Development

### 2.1 Elaboration Likelihood Model

ELM, developed by Petty and Cacioppo [69] within the field of social psychology, delineates two distinct pathways through which attitude change may occur: the central route and the peripheral route. Individuals engaging with the central route critically evaluate the information, considering both its merits and drawbacks. In contrast, those adopting the peripheral route require less cognitive effort, relying instead on cues such as the attractiveness of endorsers [55].

Bhattacharjee and Sanford [6] distinguished between these cognitive processes. Specifically, individuals utilizing the central route focus primarily on the content of the message, whereas those on the peripheral route consider external cues, such as the traits or messages of endorsers, rather than the core product information. This distinction underscores the varying degrees of cognitive effort expended between the two routes. Involvement is a crucial factor within the ELM, influencing the route an individual is likely to take based on their engagement level [68].

The persuasiveness of a message is influenced by the level of involvement: high involvement enhances the impact of message quality [70, 71], while low involvement increases the persuasiveness of the message source's attractiveness [70, 71]. Consumers with specific goals and adequate expertise tend to invest more effort in analyzing the content, whereas those with less relevance or expertise are more inclined to respond to peripheral cues [97].

Historically, the ELM has been employed to assess the effects of advertising strategies. Celuch and Slama [9] utilized the model to differentiate between cognitive and affective responses to advertisements, while Cho [14] investigated the effectiveness

of web-based banner advertisements. As e-commerce has evolved, the importance of online consumer reviews has increased, prompting applications of the ELM in digital contexts. Park et al. [66] explored the impact of online product review quantity and quality. Sher and Lee [82] found that review influence varies with consumer involvement, with highly involved consumers prioritizing content over quantity.

Endorser perception also significantly influences consumer attitudes. Freiden [31] highlighted celebrities as effective endorsers due to their perceived credibility. The goal for firms is to transfer the attributes of these celebrities to their products or services [65]. In studies examining endorsements, Callcott and Phillips [8] suggested that celebrities effectively persuade consumers with low involvement when brand differences are minimal. Clark and Horstmann [18] supported this, noting that in markets like shoes, cosmetics, and beverages, where product differences are negligible, celebrity endorsements primarily influence through peripheral cues. This aligns with the findings of Petty et al. [72], indicating that in high involvement scenarios, logical arguments outweigh celebrity influence, which predominates in low involvement settings. Nonetheless, the effectiveness of endorsements, as Perloff [73] argued, depends on the target audience's motivation and information processing capabilities, necessitating careful selection of endorsers based on contextual needs.

In summary, the ELM posits that consumers with high expertise or involvement tend to process information centrally, whereas those with lower levels of expertise or involvement process peripherally. With the rise of live streaming, using hosts as product endorsers has emerged as a novel endorsement model. This study adopts the ELM to explore this new approach, focusing on live-streaming advertorials. Next, it discusses the potential applications of the ELM within this modern advertising context.

## 2.2 The Context of Live-Streaming Advertorials

In recent years, online live streaming has gained widespread popularity as a digital service. Scheibe et al. [78] defined this phenomenon as Social Live-Streaming Services (SLSSs) and highlighted its key characteristics, such as the synchronous interaction between the streamer and the audience. This synchronicity allows viewers to witness streamers' performances in real time and participate in immediate chat interactions. Similarly, Holt et al. [37] described online live streaming as a social media platform where individuals can broadcast live audiovisual content and engage directly with viewers through chat rooms, underscoring its role in facilitating real-time communication and instant information exchange.

The scope of content available through online live streaming is notably varied. Yu et al. [93] identified several categories of live-stream content, including gaming and chatting, illustrating that virtually any type of content that adheres to platform guidelines can be live-streamed. Some streamers convert traditional broadcast content, such as news or live shows, into online streams, while others may focus on interactive activities like gaming, chatting, or showcasing talents in various live formats. Regardless of the specific content, the allure of live streams as a form of entertainment is considerable. Owing to its live nature, streamers often modify their

conversational style or performance in response to audience feedback, fostering a dynamic and interactive communication environment. This interaction can lead to viewers developing a sense of para-social interaction with the streamers [21].

To summarize, live streaming not only facilitates the exchange of information but also engenders para-social interactions among viewers. In this study, such interactions are considered a peripheral cue. Therefore, viewers with lower involvement, who possess less product knowledge, are more influenced by the dynamic interaction with live streamers. This interaction builds trust in the streamer, which then influences their attitudes towards the product. Conversely, viewers with higher involvement scrutinize the product information presented by the streamer during endorsements. The quality of information provided by the streamer plays a critical role in shaping the attitudes of viewers who engage in central route processing, with better quality information more likely to impact their perceptions positively.

### 2.3 Attitudes toward Products and Purchasing Intention

Purchase intention has been widely studied due to its direct link to consumer behavior, with many researchers employing the ELM to explore this relationship. For example, Lee [55] assessed how product review quantity and quality influence purchase intentions at varying levels of involvement using the ELM framework. Similarly, Fan and Miao [26] explored the effects of different cognitive processing routes on word-of-mouth within e-commerce and how these routes affect purchase intentions. Zhou et al. [97] also applied the ELM to examine how source credibility and the quality of arguments impact initial trust in websites, which subsequently affects purchase intentions. In the context of this study, purchase intention is investigated as the dependent variable within live-streaming endorsements to ascertain how para-social interaction, source credibility, and information quality can influence purchase intentions through changes in product attitudes.

The ELM posits that attitude formation is influenced by different cognitive routes, thereby making attitude a critical variable. This study assumes that consumers experience changes in their attitudes before acting, thus identifying purchase intention as the subsequent action following an attitude shift. Schwartz [80] described attitudes as beliefs about behaviors or objects that may lead to action intentions. Jaafar et al. [42] linked consumer purchasing decisions to their behaviors, perceptions, and attitudes, while Chaniotakis et al. [10] highlighted the significant role of consumer attitudes in purchasing decisions. Kotler and Keller [50] defined attitudes as enduring evaluations or feelings toward objects or concepts, noting that various studies have explored changes in consumer attitudes due to different antecedents. For instance, Kim and Na [48] found that congruence between endorsers and endorsed products enhances product attitudes, subsequently influencing consumer behavior.

In the realm of live-streaming advertorials, this study suggests that viewers' trust in the host and their perceptions of information quality can foster favorable attitudes towards endorsed products, as consumers often transfer the attributes or their trust in endorsers to the products. Supporting this notion, Lafferty and Goldsmith [52] confirmed that high source credibility significantly enhances persuasive influence

and impacts attitudes [90]. Erdogan [25] also observed that while attractive celebrity endorsers may improve attitudes toward brands, these enhancements do not necessarily directly translate to purchase intentions. Thus, this research treats product attitude as a precursor to purchase intention rather than a direct outcome of trust in endorsers. To summarize, this study views attitude as a critical factor influencing purchase intentions and proposes the following hypothesis:

H1: Attitudes toward products will positively influence purchase intention.

Additionally, attitudes play a key role in linking various cognitive pathways in this study. In the context of live-streaming endorsements, the host's performance can generate a pseudo-social interaction among viewers, while the live-streaming platform facilitates information exchange. Therefore, para-social interaction and information quality are examined as antecedents for peripheral and central cognitive pathways, respectively, to assess their impact on attitudes. Further details on these cognitive pathways will be elaborated in subsequent sections.

## 2.4 Source Credibility

To elucidate the effectiveness of celebrity endorsements in advertising, Hovland et al. [39] and McGuire [57] introduced the Source Credibility Model and the Source Attractiveness Model, respectively. These models address how traits such as expertise, trustworthiness, likeability, familiarity, and similarity impact advertising persuasiveness. Although both models assess endorser effectiveness, they focus on different aspects. The Source Credibility Model, as expanded by Ohanian [64], emphasizes the endorser's perceived reliable qualities, which affect the audience's acceptance of the message. For instance, if an endorser is viewed as professional and trustworthy, the focus is predominantly on the cognitive aspects of the message [4]. Conversely, the Source Attractiveness Model highlights the relational dynamics between the consumer and the endorser, fostering likeability and identification [25].

In traditional marketing and communication, the discourse around source credibility often revolves around how the positive attributes of the message source can effectively influence the receiver's attitude toward the brand or ad and potentially their purchase intention [74]. With the advent of the internet, source credibility has been widely applied in studies across online communities. Johnson and Kaye [45] explored how the perceived credibility of message content affects user engagement in online political discussions. Similarly, Ayeh [5] examined how source credibility acts as a precursor in the technology acceptance model, influencing user attitudes and acceptance of travel-related recommendations on online platforms. Filieri et al. [28] applied the ELM to investigate how relevance, authenticity, reviewer credibility, and rating mechanisms in online reviews affect consumer decision-making.

Building on the foundational work by Hovland et al. [39], subsequent scholars have refined the Source Credibility Model, with Ohanian [64] consolidating it into three core variables: expertise, trustworthiness, and attractiveness. Expertise represents the perceived mastery and knowledge of the source, influencing user interaction on social platforms [91]. Trustworthiness, as described by Friedman et al. [30], reflects the endorser's perceived honesty and integrity, which significantly impacts

message acceptance [59, 84]. Attractiveness encompasses physical appeal and other traits like personality or athletic ability, affecting first impressions and subsequent interactions [25, 46, 58, 76]. These dimensions of source credibility have been extensively utilized in various contexts, including studies on the credibility of online travel information by Ayeah [5] and the credibility of online reviews within the ELM framework by Filieri et al. [28].

Given its validated effectiveness in numerous studies on online communities, source credibility is poised to significantly influence user interaction with message sources. In the realm of online live streaming, expertise is understood as the audience's perception of the host's content knowledge, trustworthiness reflects their reliability, and attractiveness pertains to their physical or charismatic appeal. Thus, this study adopts Ohanian's [64] formulation of the Source Credibility Model, which incorporates attractiveness as a comprehensive measure of live-stream hosts' traits. The primary focus of this research is how interaction with live stream hosts translates into trust and shifts product attitudes, not merely on the individual impacts of expertise, trustworthiness, and attractiveness. Therefore, these traits are combined into a second-order variable of source credibility, leading to the hypothesis:

H2: Source credibility positively influences attitudes toward products.

## 2.5 Para-Social Interaction

The concept of para-social interaction, originally defined by Horton and Wohl [38], describes a type of social relationship that forms between media characters and viewers. Historically centered around television, this interaction allowed viewers to feel immersed in the narrative, developing an illusion of interacting with the characters. This phenomenon is particularly pronounced as viewers begin to see these media characters as friends and imagine themselves as part of the storyline, often following the characters' advice and behaviors.

As the theory evolved, scholars expanded its application beyond television to include radio and film, exploring the psychological impact of media characters on audiences (e.g., [79]). For instance, Rubin and Step [77] observed that radio listeners who felt a strong para-social connection with hosts viewed them as reliable sources, often becoming regular audience members. However, Schiappa et al. [79] clarified that these relationships, while influential, do not constitute genuine interpersonal interactions since the feedback loop is one-sided—characters cannot perceive or interact with viewers.

With the advent of the internet, the scope of para-social interactions has broadened. Researchers began to explore how these dynamics translate into online environments, where interactions can be more direct and frequent (e.g., [17, 92]). For example, Kim and Song [49] noted that celebrities sharing personal or professional information on social media could enhance fans' feelings of connection. Similarly, Xiang et al. [91] suggested that para-social interactions on social commerce platforms could spur impulsive purchasing.

The rise of internet live-streaming has transformed viewer engagement, allowing real-time interaction between viewers and hosts [40]. Although the vast number



of participants makes individual interaction challenging, the format allows hosts to engage broadly with their audience, fostering a sense of personal connection. Even scripted interactions by the hosts can foster a perception of intimate, bidirectional communication among viewers [21].

Para-social interaction in this context creates a unique dynamic where viewers perceive hosts as friends and believe that hosts care about their opinions and well-being [40]. This perceived empathy can build trust, and under the principle of reciprocity, viewers may seek deeper engagement with the hosts. Established studies, like those by Bracken [7] and Ledbetter and Redd [54], have shown that such interactions enhance the credibility of the hosts and the media they represent.

Therefore, this study posits that enhanced para-social interaction leads viewers to see hosts as trustworthy, fostering a familiar and intimate bond akin to friendship. This relationship subsequently increases the hosts' influence on viewers' attitudes towards products. Consequently, this research utilizes para-social interaction as a precursor to source credibility and proposes the following hypothesis:

H3: Para-social interaction positively influences source credibility.

## 2.6 Information Quality

Information quality is a critical reference factor for consumer decisions. Seddon and Kiew [81] identified a significant positive relationship between information quality and user satisfaction, a finding also supported by Wang and Strong [88], who emphasized information quality and user satisfaction as key indicators of information system success. Grunert [33] highlighted that product information is a pivotal cue influencing consumer choices. Deliza et al. [23] noted that specific product-related information, such as brand and price, can alter consumer perceptions of products. Additionally, Pelsmacker and Janssens [67] found that high information quality positively impacts consumer attitudes.

In the realm of online live broadcasting, viewers primarily seek to absorb information that interests them, suggesting that content quality significantly influences viewer behavior. Tilly et al. [86] argued that data and information quality are crucial for the success of community platforms and provided a conceptual definition. Wang [87] demonstrated that high-quality information on social media platforms enhances users' trust in the platform or associated brands, increasing their likelihood to accept and act on the information. Further research, such as that by Jiang et al. [43], Dashti et al. [20], and Al-Qudah [3], supports the idea that superior information quality fosters sustained interactions between information recipients and providers. Within the live-streaming context, Xu et al. [92] posited that information quality and para-social interaction drive consumption and information-sharing behaviors, though their interrelationship remains underexplored.

In this study, the live streamer acts as the information provider, influencing viewers' purchase decisions by showcasing products, adding pertinent information, or embedding product-related links during the stream. It is posited that viewers who receive comprehensive and relevant information from the streamer are more likely to

develop positive attitudes towards the products presented. Based on these observations, the following hypothesis is proposed:

H4: Information quality positively influences attitudes toward products.

## 2.7 Product Involvement

The level of involvement is a crucial variable within the ELM that influences the processing routes consumers utilize during attitude formation. According to Petty and Cacioppo [68], the choice between central and peripheral routes in forming attitudes largely hinges on the consumer's level of involvement. Zaichkowsky [96] noted that personal involvement significantly affects how messages are processed, with lower levels of involvement reducing and higher levels increasing the demand for product information.

However, the concept of product involvement lacks a uniform definition across studies. Zaichkowsky [95] described product involvement as the perceived importance of a product based on an individual's interests and needs. Similarly, Nkwocha et al. [63] recognized that product involvement is often defined in various ways but generally pertains to the relevance of a product as perceived by a consumer based on their needs, values, and interests.

In terms of consumer purchasing decisions, individuals with high product involvement are inclined to seek extensive product information, such as detailed specifications or comparisons with similar products, to ascertain the product's quality and value [62]. In contrast, consumers with lower product involvement may be more susceptible to influence by factors such as endorser attractiveness, product popularity, or sales volume.

Given the context of this study, which focuses on product placement within live-streaming environments, product involvement is utilized as the measure of involvement within the ELM framework. Viewers highly involved with a product are likely to prioritize substantial product-related information over mere trust in the live streamer. Conversely, viewers with low product involvement tend to be more influenced by the live streamer's persona rather than engaging in extensive product research. Based on these insights, the following hypothesis is proposed:

H5: For consumers with low product involvement, the influence of source credibility on product attitude is greater than the impact of information quality on product attitude. Conversely, for consumers with high product involvement, the impact of information quality on product attitude exceeds that of source credibility.

## 2.8 Product Consistency

The alignment between endorsers and products has long been recognized as beneficial for endorsed products, with several scholars emphasizing its importance. Kamins [47] posited that when endorsers' characteristics align with those of the endorsed product, consumers are more likely to develop positive attitudes. Similarly, Choi and Rifon [16] demonstrated that a match between attractive female actors and aesthetically appealing products significantly enhances consumers' attitudes toward

advertisements. In the context of celebrity endorsements, the attractiveness of celebrities has been considered a peripheral cue that is particularly effective in conditions of low product involvement [15, 27]. Additionally, consistency between endorsers with expertise and related products has been shown to elicit trust in the endorsers' knowledge rather than their attractiveness, as exemplified by athletes promoting energy drinks [85].

Building on this research, Lee and Koo [56] argued that consistency between a celebrity's attractiveness and product attractiveness typically results in lower product involvement, indicating a likelihood of processing information through peripheral routes. Conversely, when consistency is based on professional expertise, consumers tend to exhibit higher product involvement and are more inclined to use central routes for processing information. Thus, high consistency, whether related to attractiveness or professional knowledge, tends to influence the corresponding cognitive processing route positively.

In practice, viewers engaged in central route thinking may assess the relationship between a live streamer and the product based on consistency derived from professional knowledge. Those who rely on peripheral route thinking might focus on attractiveness. Regardless of the evaluation method, high perceived consistency between the live streamer's characteristics or qualities and those of the product is likely to foster more favorable attitudes.

Based on these insights, this study proposes that high product consistency enhances the formation of positive product attitudes through both central and peripheral thinking routes. Therefore, the following hypotheses are formulated:

H6: Product consistency positively moderates the relationship between source credibility and attitudes toward products.

H7: Product consistency positively moderates the relationship between information quality and attitudes toward products.

### 3 Research Design and Analysis

This study focused on audiences who had watched online live-stream endorsements, utilizing a web-based survey distributed through Facebook groups related to live streaming (e.g., gaming communities) and online forums such as PTT Live. The survey comprised three sections: The first section explored participants' viewing habits, including frequency and duration of watching live streams and preferences for specific live streamers. The second section captured variables relevant to the research model, such as para-social interaction, source credibility, information quality, product attitude, product involvement, product consistency, and purchase intention. The third section collected demographic data, including age, gender, occupation, and income. Participants were instructed to reflect on their most recent experience watching an online live-stream endorsement when responding to the survey.

The survey items, except those for product involvement, were measured using a 7-point Likert scale (1 = strongly disagree, 4 = neutral, 7 = strongly agree). Product involvement was assessed using a 7-point semantic differential scale. All survey items were adapted from previously validated scales to ensure reliability and

relevance to the study context. For instance, purchase intention items were based on Shaouf et al. [83], product attitude on Lafferty and Goldsmith [53], information quality on Elliott and Speck [24], and source credibility on Ohanian [64]. Para-social interaction was measured using items from Hu et al. [40] and Hartmann and Goldhoorn [36], product involvement from Zaichkowsky [96], and product consistency from Cunningham and Regan [19].

The survey garnered 366 responses. After discarding 15 responses from participants who had not watched live-stream endorsements in the past six months and 52 due to incompleteness or consistency issues, the effective sample size was 299. The demographic profile showed that over 60% of respondents were male, predominantly aged between 21 and 30, with 98% holding a college degree or higher, and over 80% had been watching live streams for more than a year.

Data analysis was conducted using SmartPLS 3.0, which confirmed the reliability and validity of the measurement model. The Cronbach's  $\alpha$  values ranged from 0.852 to 0.977, and composite reliability ranged from 0.899 to 0.953, both well above the acceptable threshold of 0.7 [29]. Factor loadings ranged from 0.810 to 0.962, and the average variance extracted (AVE) for all constructs exceeded the 0.5 threshold, indicating robust convergent and discriminant validity.

Structural Equation Modeling (SEM) analysis tested the hypotheses. Results confirmed that product attitude significantly influences purchase intention (H1:  $\beta=0.731$ ,  $p<0.001$ ), source credibility positively affects product attitude (H2:  $\beta=0.198$ ,  $p<0.01$ ), and para-social interaction enhances source credibility (H3:  $\beta=0.444$ ,  $p<0.001$ ). Information quality also positively impacted product attitude (H4:  $\beta=0.330$ ,  $p<0.001$ ). However, the moderating effects of product consistency on the relationships between source credibility and product attitude (H6:  $\beta=0.032$ ,  $p>0.05$ ) and information quality and product attitude (H7:  $\beta=-0.041$ ,  $p>0.05$ ) were not supported.

In summary, hypotheses H1 to H4 were statistically significant, supporting the core assertions of the ELM framework in the context of live-streaming endorsements. However, hypotheses H6 and H7, regarding the moderating effect of product consistency, did not achieve statistical significance. These findings are illustrated in Fig. 1.

The moderation effect of involvement level, specifically the validation of hypothesis H5, was thoroughly examined in this study. Based on their levels of product involvement, participants were categorized from low to high using the median of the average values as the dividing point. This resulted in two distinct groups: a low-involvement group and a high-involvement group, each comprising 149 participants. Separate model validations were conducted for each group.

The findings indicate that in the low-involvement group, source credibility significantly influences product attitude ( $\beta=0.206$ ,  $p<0.05$ ), whereas the relationship between information quality and product attitude was not statistically significant ( $\beta=0.143$ ,  $p>0.05$ ). Conversely, in the high-involvement group, source credibility did not significantly affect product attitude ( $\beta=0.180$ ,  $p>0.05$ ), but information quality had a significant positive impact ( $\beta=0.461$ ,  $p<0.01$ ).

These results support hypothesis H5, which posits that "for consumers with low product involvement, the impact of source credibility on product attitude is greater

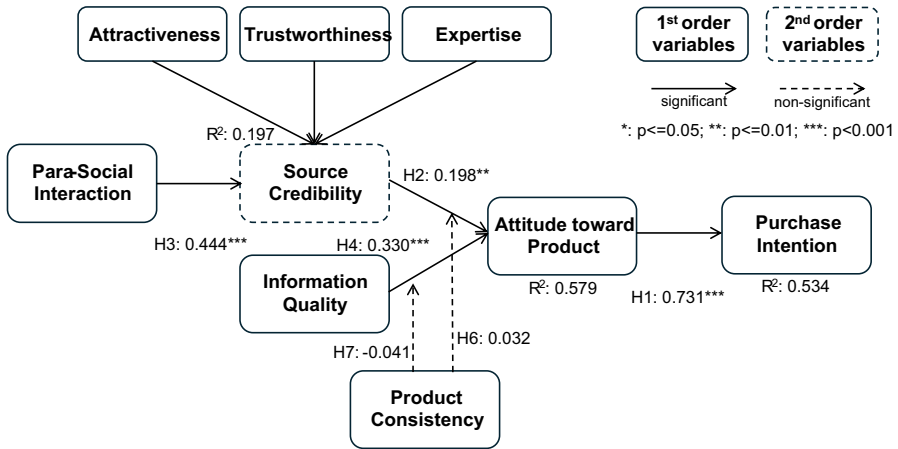


Fig. 1 The results of hypothesis analysis

than the impact of information quality on product attitude; for consumers with high product involvement, the impact of information quality on product attitude is greater than the impact of source credibility on product attitude.” The outcomes of these analyses are depicted in Figs. 2 and 3.

#### 4 Discussion and Conclusion

This study, framed within the ELM, examines the burgeoning field of live-streaming influencer marketing, a rapidly growing marketing form. Live-streaming inherently facilitates interaction between viewers and streamers, fostering a “para-social interaction” where viewers perceive streamers as friends, which in turn enhances trust and positively influences their evaluations of the streamer. Additionally, the verbal and visual content provided by the streamer during live sessions influence viewer

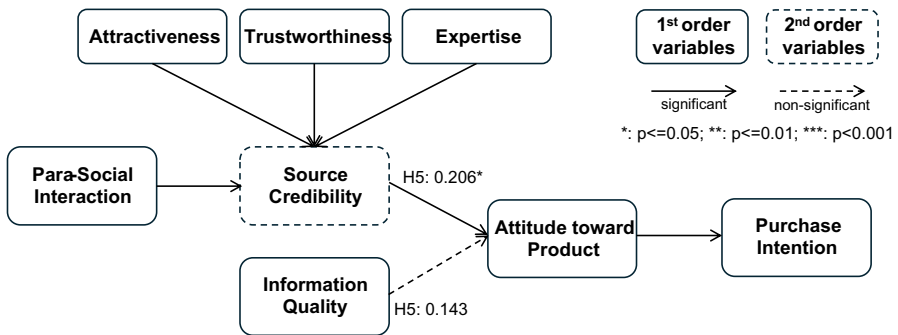
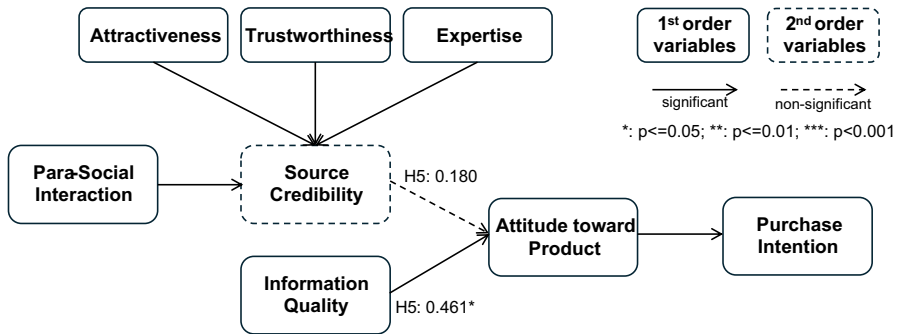


Fig. 2 The results of hypothesis analysis for low product involvement



**Fig. 3** The results of hypothesis analysis for high product involvement

perceptions, rendering “information quality” a critical factor in influencer marketing effectiveness. This study utilizes the ELM to analyze how emotional source credibility and rational information quality act as peripheral and central routes, respectively, affecting viewers’ purchase intentions.

The baseline model suggests that both credible sources and high-quality information lead to favorable product attitudes among viewers, confirming hypotheses H2 and H4. Trust in the streamer prompts positive product attitudes. However, the influence of information quality is also critical; detailed and clear product information, if perceived as useful, can foster favorable attitudes independently of the streamer’s personal appeal. This study also explores para-social interaction as an enhancer of streamer credibility, a contrast to traditional advertising endorsements, where direct responses to viewers are less feasible.

Moreover, this study investigates the role of product consistency as a moderating variable between the two cognitive processing paths. However, the results indicate that product consistency does not significantly moderate these relationships, suggesting its limited role in the live-streaming context. This may be due to viewers perceiving streamers more as peers than formal endorsers, diminishing the need for high consistency between the streamer and the product. Recent shifts in influencer marketing paradigms may have lessened the necessity for strong endorser-product alignment, leading to the non-support of hypotheses H6 and H7.

Analysis of hypothesis H5 supports the impact of product involvement on cognitive processing paths. Viewers with substantial product knowledge seek comprehensive information to inform their opinions, aligning with central processing in the ELM. Conversely, those less familiar with the product rely more on the streamer’s credibility, corresponding to peripheral processing.

#### 4.1 Unique Contributions

This research offers several unique contributions to the field of live-streaming influencer marketing. By applying the ELM in this modern context, the study highlights the model’s relevance in digital marketing environments. It demonstrates how para-social interaction and information quality can serve as key mechanisms

in influencing viewer behavior and purchase intentions. The exploration of product involvement and consistency further enriches our understanding of how different factors interact within live-streaming settings. Additionally, this study provides new insights into the dynamic roles of streamers as both content creators and peer-like influencers, offering a fresh perspective on the evolving nature of online marketing strategies.

## 4.2 Academic Implications

Academically, this study extends the ELM to a modern marketing context, highlighting how the model's principles apply even in innovative environments like live streaming. It provides empirical evidence on how peripheral and central routes influence purchase intentions, enriching the theoretical discourse on consumer behavior in digital media. The findings underscore the importance of emotional and rational appeals in shaping consumer attitudes and behaviors, offering a nuanced understanding of the cognitive processes involved in live-streaming viewership.

## 4.3 Practical Implications

Practically, the findings suggest several actionable strategies for streamers and marketers. Streamers should maintain interactive engagement with their audience to build trust and foster para-social interactions. Providing detailed and high-quality product information is crucial in meeting viewers' information needs and enhancing their purchase intentions. Marketers should consider the unique characteristics of streamers to maximize viewer engagement and attractiveness to advertisers. Additionally, understanding the limited role of product consistency in live-streaming contexts can help marketers develop more flexible and adaptive endorsement strategies.

Despite its contributions, this study has limitations, primarily its sample concentration within Taiwanese online communities, which may not represent broader global trends in live-streaming viewership. Future studies could expand the sample to include diverse international audiences to explore whether geographic variations affect live-streaming marketing effectiveness. Second, product consistency may have different dimensions, and future studies could explore how these dimensions impact live-streaming behavior. Additionally, product consistency might play a direct role beyond a moderating effect. Third, for live stream viewers, in addition to the characteristics of the streamer and the quality of information, the functionalities of the streaming platform (including chat, interface design, and interaction) indeed impact the user experience, which in turn influences subsequent consumer behavior. Moreover, whether the effects of these various factors differ across different types of live-streaming content (such as gaming, education, and history) is also worth exploring in future research. Finally, the reliance on recall for survey responses and the temporal decline in para-social interactions may affect the accuracy of the data. Future research could also reconsider the role of product consistency, possibly repositioning it as an antecedent rather than a moderating variable within the ELM framework to fully explore its influence in live-streaming influencer marketing contexts.

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