

How do the Linguistic Feature of Streamers in Online Live-Streaming Affect Purchase Intention? —Integrating PLS-SEM and NCA for Deeper Insights on the Perspective of ELM

Haipeng Zhao^{1*}, Fumitaka Furuoka², Rajah A/L Rasiah³

^{1, 2, 3} University of Malaya, Asia-Europe Institute, 50603 Kuala Lumpur, Malaysia

Abstract:- As a popular marketing method, live-streaming mainly achieves sales goals through real-time online interaction between streamers and viewers. In this context, the selection of streamer linguistic features significantly stimulates consumer purchase intentions. This study focuses on streamers in online live-streaming platforms, using PLS-SEM and NCA methods to examine the latent variable and coefficient path. Build the Elaboration Likelihood Model (ELM) to construct the factors influencing consumer purchase intentions based on the central route and the peripheral route and empirically analyze the impact of product factors and streamers' features on consumer purchase intentions in online live-streaming. The study found that product quality, product discounts, streamer linguistic features, streamer attractiveness, and streamer interactivity positively impact purchase intentions. In the central route, product quality and price discounts affect consumer purchase intentions through utilitarian value. In the peripheral route, streamer linguistic features, streamer professionalism, and streamer interactivity affect consumer purchase intentions through hedonic value. However, the influence of streamer linguistic features on hedonic value is insignificant. In the central route, perceived utilitarian value and hedonic value play a good mediating role between streamer linguistic features and consumer purchase intentions.

Keywords: Online live-streaming, ELM, Perceived value, Purchase intention.

1. Introduction

With the advancement of network technology and the continuous upgrading of public consumption demands, live-streaming shopping on the Internet has gradually become a new consumption model for the vast number of netizens (Wang et al., 2022; Xin et al., 2023). Concurrently, online live-streaming marketing has gradually become an important way to stimulate consumption, and live-streaming has also become a new driving force for promoting social and economic growth (H. Chen et al., 2023; Meng et al., 2021; Su, 2019). However, with the rapid rise of live-streaming on the Internet, issues such as the quality of live-streaming products, excessively high product prices, sales fraud, and the professional quality of online live-streaming practitioners have begun to emerge (Cenfetelli & Benbasat, 2019; Huang & Suo, 2021). These not only harm the interests of consumers but also lead live-streaming on the Internet to gradually evolve into a form of fast consumption culture, which has a negative impact on the long-term development of live-streaming on the Internet (Lu & Siegfried, 2021; Zhang et al., 2021). Therefore, clarifying which content features of streamer in online live-streaming affect consumers' purchase intentions will help online platforms and businesses quickly formulate strategies, thereby promoting the healthy development of the online live-streaming industry and ensuring the long-term competitive advantage of online companies.

Online live-streaming uses Internet media platforms and employs live video streaming to promote and market products and brands (Apasrawirote & Yawised, 2022; Cai et al., 2018). Many scholars have expressed

appreciation for this emerging sales strategy. Currently, research in the field of online live-streaming mainly focuses on its development status, feature, and future trends, and has achieved considerable research results (Cai et al., 2018; Ho & Rajadurai, 2020; T. Zhang et al., 2022). However, in the online live-streaming environment, there is relatively little research on how the linguistic content features of streamer influence consumers' purchase intentions (Chen, 2021). The "watch while you buy" mode of online live-streaming places higher demands on the immediacy, synchronicity, and live interaction between streamer and consumers (Xu et al., 2020). The real-time image transmission of live-streaming further strengthens the integration and synchronization between the real and virtual worlds (Li et al., 2022; Wang et al., 2022). Compared with traditional online and physical store shopping, this sales strategy has a significant impact on consumers' purchase intentions (Chandruangphen et al., 2021; Wang et al., 2018). Although past research results provide us with some references, they cannot be fully integrated into the context of online live-streaming.

Currently, academia mainly focuses on researching how external factors of online live-streaming, such as the scene and feature of the live stream, influence consumers' purchase intentions, but often overlooks the deep-seated influence of consumers' individual traits on their purchase intentions (Ma, 2021). Based on this, this paper analyzes the processing of consumers' live-streaming information in the context of online live-streaming from the perspective of the linguistic content features of streamer, and discusses the mechanism of the role of consumers' cognitive differences in their purchase intentions through empirical tests. In fact, in the process of consumers processing information, there are significant individual differences, which lead consumers to choose different ways to process information, thereby causing changes in attitudes and behaviors (Ko & Chen, 2020; Recktenwald, 2017). Previous research mainly focused on the concept of "people," that is, exploring how groups such as online opinion leaders, internet celebrities, and streamer influence consumers' purchase decisions. For example, Chen (2020) observed that the higher the perceived value of products recommended by streamer, the stronger willingness of their fans to purchase (Y.-H. Chen et al., 2020); Zhang (2020) and his team demonstrated that online opinion leaders can indirectly influence consumers' purchase intentions through perceived value, among other means (Zhang et al., 2020). In addition, existing literature has also focused on the information transmission process in online live-streaming and the role consumers play in this process (Recktenwald, 2017; Zhang et al., 2020). However, there is little research on the feature of live-streaming content and the quality of products.

Therefore, this study takes the content features of online streamer as the antecedent variable, hedonic value and utilitarian value as the mediating variables, and consumers' purchase intention as the independent variable (Wongkitrungrueng et al., 2020; Xie et al., 2022). This study uses empirical research to explore how the content features of streamer affect consumers' preferences for products during live-streaming. Based on the viewpoint of the Elaboration Likelihood Model of persuasion (ELM), consumers' intentions and abilities will affect their ability to process information in detail (Gao et al., 2021). When consumers are firmly intentioned and able to process data, they are more likely to make decisions by actively collecting and processing information (Xiao et al., 2023; Yang & Lee, 2024). Conversely, when consumers' ability and intention to process information are weak, they are more likely to be influenced by streamer in making decisions (Yang & Lee, 2024). Consumers' traits will have different effects on the route and impact of their purchase intentions. Therefore, this study chooses the linguistic content features of online live-streaming as the focus of research, based on the theoretical framework of the Elaboration Likelihood Model, to explore in-depth how product feature and streamer attributes influence consumers' purchase intentions and reveal the interaction mechanism between antecedent variables and consumers' purchase intentions (Chen et al., 2022; Fecheyr-Lippens, 2010; Hilvert-Bruce et al., 2018; Zeng et al., 2023)..

2. Literature Review and Research Hypothesis

A. Elaboration Likelihood Model (ELM)

The Elaboration Likelihood Model of persuasion (ELM) is essentially a theory about the thinking processes that might occur when we attempt to change a person's attitude through communication, the different effects that particular persuasion variables play within these processes, and the strength of the judgements that result. Unlike the "single effect story" of earlier models, the ELM believes that any one variable can influence attitudes in a

number of different ways and can serve to either increase or decrease persuasion through several different mechanisms (Tormala et al., 2006; Tormala & Petty, 2004).

Currently, it is mainly applied in advertising and information communication. The ELM posits that due to differences in motivation and ability to process information, consumers will use different ways to process the information they acquire, mainly including the Central route and Peripheral routes (Ahmadi & Hudrasyah, 2022; Mishra et al., 2023; Peng et al., 2024).

When consumers are motivated and able to process information, they carefully consider and evaluate the relevant clues based on their accumulated knowledge and experience and then change their attitude and behavior (H. Chen et al., 2023; Ng et al., 2022; Rahmi et al., 2024). This process is called the central route. In this process, consumers pay more attention to a series of information related to the product and think and evaluate the product carefully. Therefore, online streamer can persuade consumers using the central route to convey rational appeals such as product quality and price (Joo & Yang, 2023; Ng et al., 2023).

When consumers have little motivation to process information, they often change their attitudes and behaviors through heuristic clues related to the information content (MacInnis et al., 1991; Suri et al., 2003). This process is the peripheral route. In this process, consumers pay less attention to the quality of the information, and their evaluation of the product is independent of its performance. Instead, it integrates more emotional thinking, relying on the streamer's recommendation to complete the purchase (Lee et al., 2022; Pop et al., 2020; Won & Kim, 2020).

The ELM reveals the process of consumers processing information from online streamer, effectively explaining the process of attitude and behavior change of consumers under different routes, and can be well applied in the research of influencing factors of consumer purchase intention in online live-streaming (Babić Rosario et al., 2020; Song et al., 2021; Tyrväinen et al., 2020). Therefore, this study is based on the actual development of online live-streaming, using the ELM to explore the impact routes and mechanisms of online live-streaming linguistic feature on consumer purchase intention under the central path (product factors) and the peripheral path (streamer feature), to provide theoretical references for the sustainable and healthy development of online live-streaming and help live-streaming platforms and businesses carry out live-streaming marketing activities more efficiently (Hussain et al., 2020; Kumar et al., 2023; Shahab et al., 2021).

B. Research Hypothesise

2.2.1 Product Quality (PQ)

In the current prevalence of online live-streaming, the quality of products are most concerning issue for most consumers (X. Chen et al., 2023; Dong et al., 2022; Ginting & Harahap, 2022). Only products of high quality can convert customer flow into sales, thereby increasing consumer repurchase rates (Gong et al., 2022; Ji et al., 2022). In online live-streaming, consumers with more product knowledge will pay special attention to product quality and price, investing enough time and cognitive resources to make comprehensive judgments about the quality of the recommended products based on their relevant product information (Zhang et al., 2023). Then, they will make corresponding behavioral decisions according to the judgment results. When the product quality meets or exceeds consumer expectations, purchase intentions will increase correspondingly. Therefore, this paper proposes the following hypothesis:

Hypothesis 1: Product quality positively influences consumer purchase intentions.

2.2.2 Products Discounts (PD)

Products discounts refer to the benefits consumers receive when shopping through online live-streaming, including low pricing, coupons, red packet subsidies, rebates, etc. Zhang believes that consumers will explore the product only when the price is within an acceptable range (Zhang et al., 2023). Like other transaction modes, price is a significant consideration for consumers when shopping in online live-streaming. "Good quality and good price" are the keys to the success of online live-streaming (Apasrawirote & Yawised, 2022; Xu et al., 2020; Zheng et al., 2022). live-streaming rooms attract consumer attention through price concessions such as lotteries, coupons, and discounts; consumers compare price information, carefully select products with high-cost performance,

actively participate in live-streaming promotion activities, and strive to purchase satisfactory products at the most favorable prices (Lu & Chen, 2021; Wongkitrungrueng et al., 2020). The higher the price concession, the more likely it is to attract consumers and prompt them to purchase. Therefore, this paper proposes the following hypothesis:

Hypothesis 2: Products discount positively influence consumer purchase intentions.

2.2.3 Streamer Feature (SC)

In online live-streaming, streamer are the protagonists, and their linguistic content is an indispensable source of product information. streamer feature, attractiveness, and professionalism play a key role in whether they can effectively drive product sales. streamer attractiveness is manifested through the streamer's appearance, voice, and live-streaming style. Knoll & Matthe proposed that the attractiveness of internet celebrities enhances the effectiveness of their endorsements, promoting consumer purchases of endorsed products (Knoll & Matthes, 2017; Silvera & Austad, 2004). The intuitive aesthetic experience and charismatic personality displayed by streamer in live-streaming can attract consumers to continue to invest time and attention, increasing the likelihood of purchasing products recommended by the streamer (Jun et al., 2023; Muda et al., 2014). Therefore, this study proposes the following hypothesis:

Hypothesis 3: streamer feature positively influence consumer purchase intentions.

2.2.4 Streamer Interactivity (SI)

streamer interactivity refers to the exchange of information and communication between streamer and consumers during live-streaming. streamer not only attract consumers with their appearance but also with how they interact with the audience (Choi et al., 2022; Kang et al., 2021; S. Zhang et al., 2022). Wu et al. believe that active communication and interaction between streamer and consumers during online live-streaming can effectively increase consumers' liking for products, enhance consumers' trust in the products recommended by streamer, and thus increase purchase intentions (D. Wu et al., 2023; Zhao et al., 2019; Zheng et al., 2023). Effective interaction between streamer and consumers can increase consumers' understanding of products, help them find products that suit them, enhance their sense of participation, and stimulate their potential needs in a good shopping atmosphere (Cormode et al., 2012). Therefore, this study proposes the following hypothesis:

Hypothesis 4: streamer interactivity positively influences consumer purchase intentions.

2.2.5 Streamer Professionalism (SP)

Streamer professionalism refers to the use of professional skills by streamer to convey product knowledge and experience to consumers (Bingham, 2017; Zhong et al., 2022). Xu found that salespeople who have a better understanding of products are more likely to win consumers' trust, and consumers tend to accept recommendations from information disseminators (Li et al., 2024; Xu & Lyu, 2022). streamer with strong professional abilities and rich knowledge and experience can provide consumers with more comprehensive and accurate product information. Their recommended products are more persuasive, and their professionalism helps eliminate consumer concerns, shorten their decision-making time, and improve transaction speed (Y. Chen et al., 2020; Liao et al., 2023). Therefore, this study proposes the following hypothesis:

Hypothesis 5: streamer professionalism positively influences consumer purchase intentions.

2.2.6 Mediating Role of Utilitarian Value (UV)

Overby et al. starting from consumers' shopping experiences, divided perceived value into utilitarian and hedonic value (Overby & Lee, 2006; Ozen & Kodaz, 2012). This division lays the foundation for future research on perceived value and is a representative classification method. Utilitarian value is the consumers perceived value related to the product when watching online live-streaming (Bridges & Florsheim, 2008; Sarkar, 2011). Kumar et al. proposed that the generation of consumer purchase intentions usually has a certain purpose (Kumar & Kashyap, 2018; To et al., 2007). The higher the perceived practical value, the higher the purchase intention. Lee believes that perceived quality affects consumer purchase intentions through utilitarian value (Lee & Wu, 2017; O'Brien,

2010). In online live-streaming, consumers can comprehensively understand the quality, appearance, functions, and details of products through videos (Wu et al., 2018). This helps increase consumer trust, strengthen the perception of product quality, meet consumers' practical needs, and thus stimulate their purchase intentions. Therefore, this study proposes the following hypothesis:

Hypothesis 6: Utilitarian value plays a mediating role between product quality and consumer purchase intentions.

2.2.7 Mediating Role of Hedonic Value (HV)

Hedonic value refers to the pleasure or enjoyment consumers experience while using a product or service, which is a subjective value (Lee & Wu, 2017; Overby & Lee, 2006). When consumers experience such emotions, under the strong attraction of the product, they are more willing to make corresponding purchase decisions and behaviors. Lee pointed out that when consumers watch live-streaming for shopping, the attractiveness of internet celebrities can enhance the pleasure of the shopping process for consumers (Lee & Wu, 2017). streamer with strong attractiveness can increase consumers' attention to related products, strengthen their interest in products, stimulate their desire to explore live-streaming products, and easily lead consumers to have a positive attitude towards products and a strong desire to purchase (Wenting et al., 2022; S. Zhang et al., 2022; Zhao et al., 2018). Therefore, this study proposes the following hypothesis:

Hypothesis 7: Hedonic value mediates the relationship between streamer feature and consumer purchase intentions.

Some consumers participate in consumption to relieve stress and relax. Wu & Gao believes that frequent interaction during live-streaming can make consumers focus on watching the live stream, immerse themselves in it, temporarily escape from real life, forget troubles, and experience pleasure (Wu & Gao, 2020). streamer in online live-streaming, with high-frequency effective interaction, can bring psychological pleasure to consumers (Chen & Lin, 2018; Zhou et al., 2019). Consumers can also gain a sense of group identity through interaction, increasing their acceptance of live-streaming products and generating purchase intentions (Recktenwald, 2017). Therefore, this study proposes the following hypothesis:

Hypothesis 8: Hedonic value plays a mediating role between streamer interactivity and consumer purchase intentions.

Frissell research suggests that streamer with more vital professional abilities can better control the pace of live-streaming and drive consumer emotions (Frissell et al., 1986). Zhang believes that if streamer explain products in a logical, clear, professionally worded manner and have good product selection abilities, viewers will recognize their professional abilities and are more likely to purchase products in the live stream (Dodd et al., 1993; S. Zhang et al., 2022). The stronger the professional ability of streamer, the richer the professional information about products conveyed to consumers (Li et al., 2024; Xu & Lyu, 2022). The less time and effort consumers need to spend searching for target products, the more they will focus on live-streaming and products, enhancing their sense of pleasure and experience and stimulating purchase intentions in a pleasant and relaxed atmosphere (Liu & Liu, 2021). Therefore, this study proposes the following hypothesis:

Hypothesis 9: Hedonic value plays a mediating role between streamer professionalism and consumer purchase intentions.

In summary, the proposed research model is shown in **Figure 1**:

3. Research Methodology

A. Questionnaire Design

The survey for this study is mainly divided into two parts: measuring primary variables and collecting sample information. When designing the questionnaire, mature scales were referenced and modified according to the feature of online live-streaming to ensure that the measurement items are suitable for the research context of online live-streaming. The measurement of research variables used a Likert five-point scale, ranging from 1 to 5, indicating increasing levels of agreement from "completely disagree" to "completely agree."

Product Quality (PQ) was measured using a scale adapted from Wells et al., consisting of 5 measurement items. Product Discounts (PD) were measured using a scale adapted from Xu Lian, composed of 5 measurement items. streamer Attractiveness (SA) and streamer Interactivity (SI) were measured using scales adapted from Ohanian et al., consisting of 5 measurement items each. streamer Professionalism (SP) was measured using a scale adapted from Fang et al. comprising 5 measurement items.

Perceived Value was measured referencing scales from Loiacono and Mathwick's research, measuring from two dimensions: Utilitarian Value (UV) and Hedonic Value (HV), with a total of 10 measurement items. Purchase Intentions (PI) were measured using a scale adapted from Sweeney et al. comprising 5 measurement items.

B. Questionnaire Collection

This study's main subjects are streamer's linguistic feature in online live-streaming. Data collection was conducted using an online questionnaire targeting online users on Tiktok. Tiktok is one of China's most popular short video live-streaming platforms, with a daily active user base of 150 million, making it one of the largest live-streaming platforms in China (X. Wu et al., 2023). Representing Tiktok users, the survey was officially distributed from Jan to Feb 2024, using a self-administered questionnaire distributed randomly over 30 days. A total of 490 questionnaires were collected, and after excluding invalid responses, 478 valid questionnaires were obtained, resulting in an effective rate of 97.55%.

Regarding the demographics of the respondents, 48.1% were female and 51.7% were male. Most respondents were between 21-35 years old (32.8%) and 36-45 years old (29.90%). Regarding education, most had a bachelor's degree (51.3%). Regarding monthly disposable income, 51% of respondents had a monthly income of 5000 yuan or less, 40.6% had a monthly income between 5001-10000 yuan, 6.9% had a monthly income between 10001-20000 yuan, and 1.50% had a monthly income exceeding 20000 yuan. The distribution of the sample is consistent with the consumer profile feature reported by the China Consumers Association, indicating a certain level of representativeness. Details are shown in Table 1.

4. Hypothesis testing

A. Reliability and validity test

Firstly, PLS-SEM was used to test the reliability and validity of the scale. Cronbach's Alpha coefficient and Composite Reliability (CR) were used to measure the reliability of the variables. The factor loading coefficients of the variables were all greater than 0.6, and both Cronbach's Alpha coefficient and CR were above 0.7, indicating good reliability and internal consistency of the variables.

Next, the validity of the scale was tested from two aspects: convergent validity and discriminant validity. The Average Variance Extracted (AVE) values were all greater than 0.5, indicating good convergent validity of the variables. The square root of the AVE was greater than the correlation coefficients between the variables, indicating good discriminant validity among the variables.

The VIF values ranged from 1.4 to 2.9, which were less than the standard value of 5. These analyses demonstrate that the variables have good reliability and validity, and the scale is suitable for this study. The test results are shown in Table 2. The assessment of a measurement model's validity is bifurcated into convergent and discriminant validity. As per Table 2, all indicators exhibit AVE values exceeding 0.5, denoting robust convergent validity of the model (Fornell & Larcker, 1981). Regarding discriminant validity, the outcomes of the Fornell-Larcker criterion and the HTMT ratio, derived from PLS-SEM software, are articulated in Tables 3 and Table 4. It is evident that, for the Fornell-Larcker criterion, the square root of AVE for each variable surpasses its correlation coefficients with other dimensions, and for the HTMT ratio, the values amongst variables are below 0.85 (Henseler, Ringle, & Sarstedt, 2014). As a result, the measurement model exhibits notable discriminant validity.

B. Structural modeling

Fig.2 and Table 5 exhibit all the proposed hypotheses, and all hypotheses from H2-H10 were accepted. $AI \rightarrow HV (\beta=0.612, t\text{-value}=18.42)$, $AS \rightarrow H (\beta=0.311, t\text{-value}=9.005)$ and $HV \rightarrow PI (\beta=0.189, t\text{-value}=3.455)$ has a significant connection with green organizational culture. Likewise, $PD \rightarrow UV (\beta=0.328, t\text{-value}=3.455)$ has a significant connection with green organizational culture. Likewise, $PD \rightarrow UV (\beta=0.328, t\text{-value}=3.455)$ has a significant connection with green organizational culture.

value=6.056), PQ to UV ($\beta=0.302$, $t\text{-value}=4.853$), and UV to PI ($\beta=0.484$, $t\text{-value}=8.994$) has a significant association with employee's pro-environmental behavior. Although AC to HV ($\beta=0.017$, $t\text{-value}=0.484$) has a $p\text{-value}$ $0.628 > 0.05$, hence H1 is not supported due to its relationship direction being opposite as hypothesized.

C. Necessary condition analysis

NCA offers a novel approach to dissecting complex causal relationships by pinpointing indispensable conditions that influence outcome variables. Unlike traditional methods, it goes beyond mere identification to quantify the magnitude and constraints of these essential conditions. This technique is particularly adept at isolating the "indispensable yet insufficient" relationships between dependent and independent variables (Dul, 2016; Karwowski et al., 2016). As an enhancement to conventional sufficiency-based analyses, NCA provides a numerical measure of the prerequisite conditions needed to reach a given outcome level, offering insights into their effect sizes and potential bottlenecks.

Initially, the PLS-SEM method was utilized to acquire scores for latent variables, as outlined by Richter, Schubring, Hauff, Ringle, and Sarstedt (2020). Subsequently, the NCA package available in R software was leveraged to execute the NCA analysis, following the guidelines set by (Goertz et al., 2019). The foundational step in an NCA involves plotting a ceiling line that intersects the upper-left data points on an x-y graph, as depicted in Figure 3, where scatter plots for all pertinent relationships are displayed.

5. Conclusions and Discussion

A. Conclusions

Product quality and price discounts influence consumers' purchase intentions in the central route. When consumers are motivated to process information, they are willing to actively collect information on product quality and price, carefully consider product information, and then make purchase decisions. When consumers have sufficient product knowledge, they can evaluate live-streamed products objectively and are less likely to be influenced by others' recommendations. Therefore, product quality and price are vital issues businesses and platforms must focus on. Only by ensuring product quality and offering real discounts can consumers be captured and purchase rates be increased.

In the peripheral route, streamer feature, interaction, and professionalism are the main factors that stimulate consumers' purchase intentions. When consumers' motivation to process information is relatively weak, they usually want to spend less energy and time focusing on relevant information. At this time, the streamer's attractiveness and excellent interactive atmosphere will attract consumers' attention, stimulate their curiosity, and promote the generation of purchase intentions. In addition, when consumers have limited cognitive abilities and find it difficult to make practical judgments about product information, they often need help to make purchase decisions independently and rely more on the streamer. The streamer's recommendation will affect consumers' subsequent behavior. It is worth noting that the impact of professionalism on consumers' purchase intentions has been proven. Streamer with higher professional skills and professional qualities can better control the pace of live-streaming, create a better marketing atmosphere, and more effectively arouse consumers' purchasing emotions.

Practical and hedonic values are important internal mechanisms to increase consumers' purchase intentions. Perceived value is a critical mediating variable through which streamer linguistic feature affects consumers' purchase intentions, and it influences consumers' purchase intentions through the dimensions of perceived practical value and perceived hedonic value. This indicates that in live-streaming, the informativeness, entertainment value, and quality of streamer linguistic content can improve consumers' shopping efficiency, with entertainment value and quality also making consumers feel pleasant. Moreover, informativeness, entertainment value, and quality can also affect consumer' purchase intentions for recommended products or services by mediating perceived value.

B. Theoretical implications

This study is based on the dual-route theory model, starting from the perspectives of the central route and peripheral route and combining users' perceived value in the context of live-streaming to construct a theoretical

model of the relationship between streamer linguistic content feature and user purchase intentions. This provides a new perspective for exploring customer purchase intentions in live-streaming. The study examines the impact mechanism of practical value (product quality, price discount) and hedonic value (streamer linguistic content feature, entertainment value, professionalism) on consumer purchase intentions.

The informativeness of streamer linguistic content feature has a significant positive impact on consumers' perceived practical value; the entertainment value of streamer linguistic content feature has a significant positive effect on consumers' perceived utilitarian value and perceived hedonic value; the quality of streamer linguistic content feature has a significant positive effect on consumers' perceived hedonic value and perceived utilitarian value; consumers' perceived utilitarian value has a considerable positive impact on their purchase intention in the live-streaming room; consumers' perceived hedonic value has a significant positive impact on their purchase intention in the live-streaming room. The results of this study contribute to the relevant theories and practical applications of the factors influencing consumers' purchase intentions of streamer linguistic feature in the live-streaming online environment.

Based on the above research findings, this study proposes the following live-streaming improvement strategies for enterprises, brands, and streamer.

C. Practical implications

Provide diversified information and allocate weight reasonably. The results show that the importance of streamer as disseminators of product-related information, the convenience provided to consumers, and the richness of perspectives when evaluating products positively impact consumers' perceived utilitarian value, thereby promoting their purchase intention. Therefore, streamer should introduce basic information, such as product specifications and usage methods, to consumers in detail during the live-streaming process while conducting clear and prioritized promotions to enhance consumer perception. In addition, given the real-time interactivity of live-streaming, streamer should pay attention to customers' questions in the barrage and reply as much as possible to provide more targeted product information. Streamer should create a humorous persona and enhance the interestingness of their linguistic. The entertainment value of streamer linguistic content positively impacts consumers' perceived value, which can positively influence their purchase intention. Therefore, streamer should avoid long periods of straightforward narration during live-streaming and instead intersperse humorous linguistic or introduce topics that appeal to consumers to liven up the atmosphere, making consumers feel relaxed and happy and enhancing their willingness to shop. Focus on linguistic expression and avoid ineffective product promotion. The results show that the quality of streamer linguistic content positively influences consumers' perceived utilitarian and hedonic values, thereby affecting their purchase intention. Therefore, the quality of streamer linguistic content during live-streaming should be emphasized. streamer can use transparent and easy-to-understand linguistic, present product and additional information vividly and diversely, and be as complete and comprehensive as possible, so that consumers can fully understand the products through the live-streaming. This study has several limitations. Firstly, the focus of this survey was to evaluate the outlined framework using samples of Chinese consumers on live-streaming platforms, which may limit the generalize ability of the results to other cultural backgrounds. Therefore, a promising direction for future research could be to reassess the model of this study and use samples from different geographical and racial backgrounds. Secondly, based on a solid theoretical foundation, this study used a cross-sectional survey, making the data susceptible to methodological differences. For future research on consumer purchase intentions on live-streaming platforms, collecting data at different time points and incorporating confounding variables may address this methodological difference. Additionally, this study explores antecedent variables that influence consumer purchase intentions through product feature and streamer linguistic feature. Future research could increase the factors influencing consumers' live-streaming shopping from different perspectives. Furthermore, utilitarian and hedonic values are vital conditions for consumers' green purchases. Future investigations could expand this basic understanding by examining different configurations of consumer green purchases using complexity theory and fsQCA methods, thereby providing platform decision-makers with more streamlined and resource-efficient sustainability solutions.

This study adheres to the norms and rigor of scientific research but still needs to improve. Firstly, this paper only focuses on the impact of three aspects of streamer linguistic feature, namely, attractiveness, entertainment, and professionalism, on consumer purchase intentions. Therefore, other streamer linguistic feature may influence consumer purchase intentions, which are not mentioned in this study. Additionally, the limited number of samples collected, the limited types of sample groups, and the inability to fully control the quality of sample data in this study may lead to sample bias issues, weakening the applicability of the conclusions. Future research needs to improve these aspects in order to better guide practical activities.

6. Limitation

This study has several limitations. Firstly, the focus of this survey was to evaluate the outlined framework using samples of Chinese consumers on live-streaming platforms, which may limit the generalize ability of the results to other cultural backgrounds. Therefore, a promising direction for future research could be to reassess the model of this study and use samples from different geographical and racial backgrounds. Secondly, based on a solid theoretical foundation, this study used a cross-sectional survey, making the data susceptible to methodological differences. For future research on consumer purchase intentions on live-streaming platforms, collecting data at different time points and incorporating confounding variables may address this methodological difference. Additionally, this study explores antecedent variables that influence consumer purchase intentions through product feature and streamer linguistic feature. Future research could increase the factors influencing consumers' live-streaming shopping from different perspectives. Furthermore, utilitarian and hedonic values are vital conditions for consumers' green purchases. Future investigations could expand this basic understanding by examining different configurations of consumer green purchases using complexity theory and fsQCA methods, thereby providing platform decision-makers with more streamlined and resource-efficient sustainability solutions. This study adheres to the norms and rigor of scientific research but still needs to improve. Firstly, this paper only focuses on the impact of three aspects of streamer linguistic feature, namely, attractiveness, entertainment, and professionalism, on consumer purchase intentions. Therefore, other streamer linguistic feature may influence consumer purchase intentions, which are not mentioned in this study. Additionally, the limited number of samples collected, the limited types of sample groups, and the inability to fully control the quality of sample data in this study may lead to sample bias issues, weakening the applicability of the conclusions. Future research needs to improve these aspects in order to better guide practical activities.

Disclosure statement

No potential conflict of interest was reported by the authors.

7. Figures and Tables

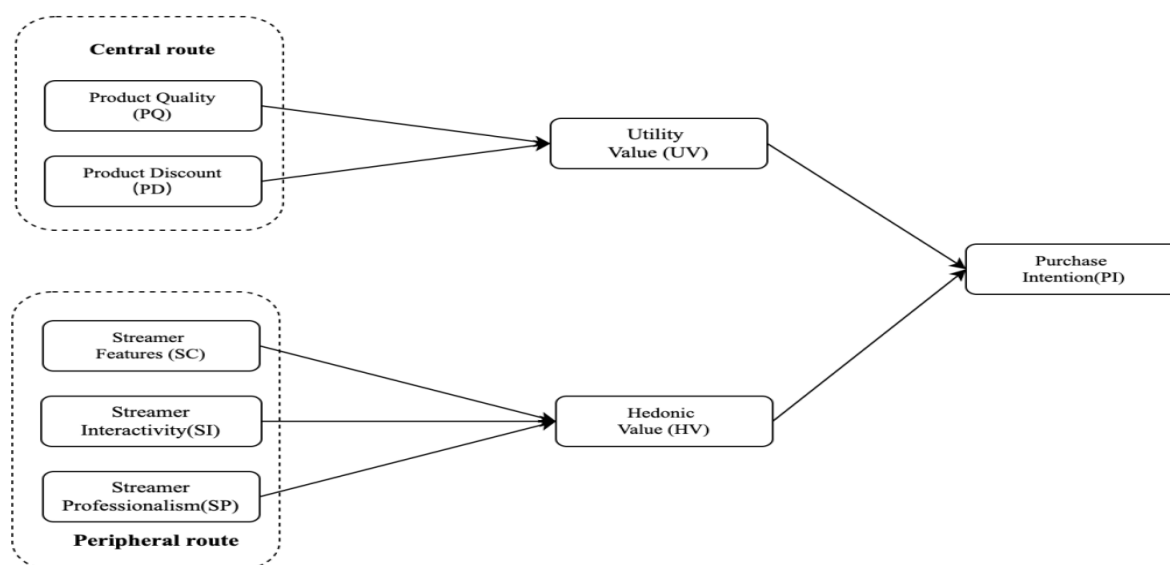


Figure 1. Conceptual Framework.

Table 1. Sample distribution

Variable	Measurement items	Frequency	Percent (%)
Gender	Male	247	51.7
	Female	231	48.3
Age	Under 20	63	13.2
	21-35	157	32.8
	36-45	143	29.9
	46-55	91	19
	56 or above	24	5
	College or below	193	40.4
Education level	Undergraduate	245	51.3
	Postgraduate and above	40	8.4
	Under 5000	244	51
Income	5001-10000	194	40.6
	10001-20000	33	6.9
	20000 or above	7	1.5

Table 2. Assessment of the reliability and convergent validity

Item	Loading	Cronach	rhoA	CR	AVE	VIF
AC1	0.818					2.008
AC2	0.795					1.924
AC3	0.820	0.882	0.887	0.914	0.679	2.103
AC4	0.810					1.966
AC5	0.876					2.569
AI1	0.838					2.16
AI2	0.791					1.924
AI3	0.775	0.844	0.845	0.889	0.616	1.662
AI4	0.746					1.532
AI5	0.772					1.677
AS1	0.841					2.396
AS2	0.802					2.112
AS3	0.757	0.851	0.859	0.893	0.626	1.756
AS4	0.741					1.616
AS5	0.812					1.771
HV1	0.753					1.576
HV2	0.776					1.66
HV3	0.790	0.792	0.797	0.857	0.546	1.753
HV4	0.666					1.402
HV5	0.704					1.404
PD1	0.798					1.887
PD2	0.784					1.787
PD3	0.763	0.824	0.827	0.877	0.59	1.71
PD4	0.817					1.882
PD5	0.668					1.292
PI1	0.710	0.782	0.787	0.852	0.535	1.725

PI2	0.806					1.983
PI3	0.702					1.422
PI4	0.716					1.527
PI5	0.719					1.552
PQ1	0.805					1.851
PQ2	0.815					1.901
PQ3	0.782	0.855	0.859	0.896	0.633	1.821
PQ4	0.761					1.73
PQ5	0.815					1.934
UV1	0.890					2.903
UV2	0.799					1.985
UV3	0.773	0.869	0.872	0.905	0.657	1.796
UV4	0.781					1.827
UV5	0.805					1.937

Tabel 3 Heterotrait monotrait ratio

	AC	AI	AS	HV	PD	PI	PQ
AC							
AI	0.545						
AS	0.632	0.606					
HV	0.572	0.928	0.767				
PD	0.604	0.403	0.628	0.496			
PI	0.953	0.458	0.701	0.553	0.794		
PQ	0.643	0.331	0.534	0.441	0.623	0.718	
UV	0.622	0.427	0.639	0.63	0.572	0.696	0.548

The off-diagonal values(bold)in the above matrix are the square correlations between the latent constructs and the diagonals are AVEs.HTMT<0.9((Henseler et al., 2015; Kline, 2015; Kline & Martin, 2020).

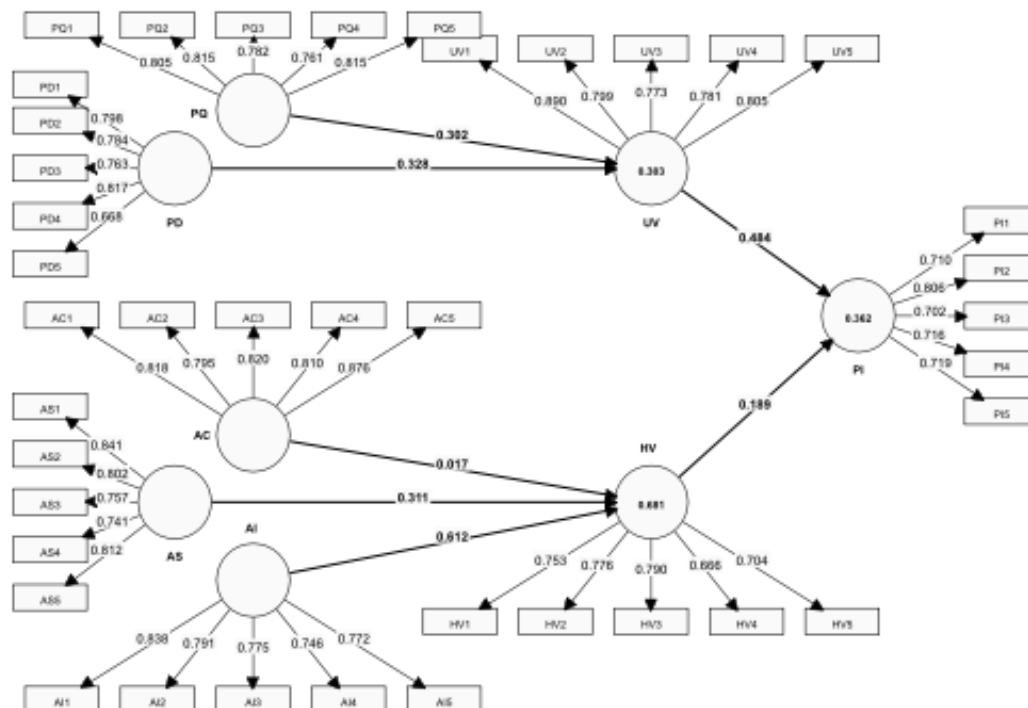


Figure 2 Measurement model.

Table 5 Hypothesis testing

	Beta	Sample mean	Std	T values	P values	Result
AC->HV	0.017	0.017	0.034	0.484	0.628	Not Supported
AI->HV	0.612	0.611	0.033	18.42	***	Supported
AS->HV	0.311	0.312	0.034	9.005	***	Supported
HV->PI	0.189	0.191	0.055	3.455	0.001	Supported
PD->UV	0.328	0.331	0.054	6.056	***	Supported
PQ->UV	0.302	0.302	0.062	4.853	***	Supported
UV->PI	0.484	0.486	0.054	8.994	***	Supported

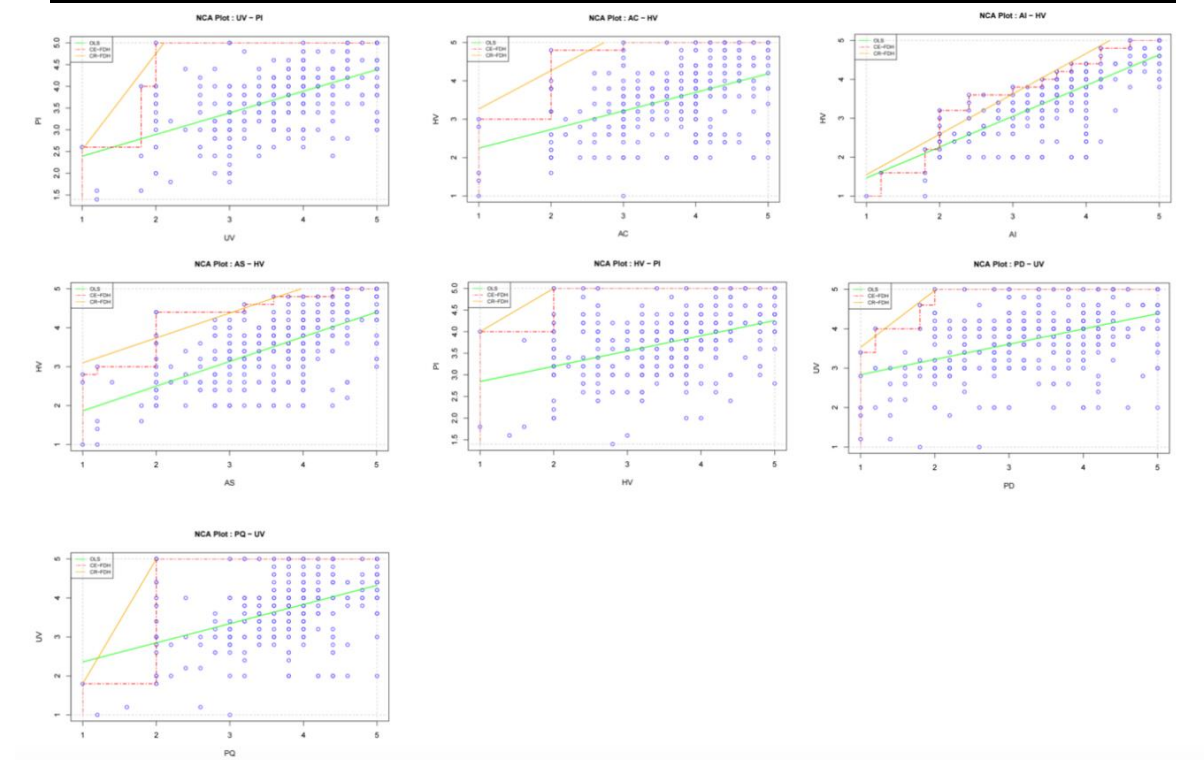


Figure 3 Scatter plots of necessary condition analysis.

References

- [1] Ahmadi, F., & Hudrasyah, H. (2022). Factors influencing product purchase intention in TikTok live streaming shopping. *International Journal of Accounting, Finance and Business (IJAFB)*, 7(43), 571-586.
- [2] Apasrawirote, D., & Yawised, K. (2022). Factors influencing the behavioral and purchase intention on live-streaming shopping. *Asian Journal of Business Research*, 12(1), 39.
- [3] Babić Rosario, A., De Valck, K., & Sotgiu, F. (2020). Conceptualizing the electronic word-of-mouth process: What we know and need to know about eWOM creation, exposure, and evaluation. *Journal of the Academy of Marketing Science*, 48(3), 422-448.
- [4] Bingham, C. (2017). An ethnography of Twitch streamers: Negotiating professionalism in new media content creation.
- [5] Bridges, E., & Florsheim, R. (2008). Hedonic and utilitarian shopping goals: The online experience. *Journal of Business Research*, 61(4), 309-314.

- [6] Cai, J., Wohn, D. Y., Mittal, A., & Sureshbabu, D. (2018). Utilitarian and hedonic motivations for live streaming shopping. *Proceedings of the 2018 ACM international conference on interactive experiences for TV and online video*,
- [7] Cenfetelli, R., & Benbasat, I. (2019). The influence of e-commerce live streaming on lifestyle fit uncertainty and online purchase intention of experience products.
- [8] Chandruangphen, E., Assarut, N., & Sinthupinyo, S. (2021). Shopping motivation in live streaming: A means-end chain approach. *Proceedings of the 2nd International Conference on Research in Management*,
- [9] Chen, C.-C., & Lin, Y.-C. (2018). What drives live-stream usage intention? The perspectives of flow, entertainment, social interaction, and endorsement. *Telematics and Informatics*, 35(1), 293-303.
- [10] Chen, C.-D., Zhao, Q., & Wang, J.-L. (2022). How livestreaming increases product sales: role of trust transfer and elaboration likelihood model. *Behaviour & Information Technology*, 41(3), 558-573.
- [11] Chen, H., Dou, Y., & Xiao, Y. (2023). Understanding the role of live streamers in live-streaming e-commerce. *Electronic commerce research and applications*, 59, 101266.
- [12] Chen, Q. (2021). Live streaming—the new era of online shopping. 2021 3rd International Conference on Economic Management and Cultural Industry (ICEMCI 2021),
- [13] Chen, X., Shen, J., & Wei, S. (2023). What reduces product uncertainty in live streaming e-commerce? From a signal consistency perspective. *Journal of Retailing and Consumer Services*, 74, 103441.
- [14] Chen, Y., Lu, F., & Zheng, S. (2020). A study on the influence of e-commerce live streaming on consumer repurchase intentions. *International Journal of Marketing Studies*, 12(4), 48.
- [15] Chen, Y.-H., Chen, M.-C., & Keng, C.-J. (2020). Measuring online live streaming of perceived servicescape: Scale development and validation on behavior outcome. *Internet Research*, 30(3), 737-762.
- [16] Choi, H. S., Sim, J., Cho, C., & Cho, D. (2022). Beyond Viewership: How Streamer-Viewer Interactivity Shapes Gendered Economy of Live-Streamed Media. Available at SSRN 4092684.
- [17] Cormode, G., Mitzenmacher, M., & Thaler, J. (2012). Practical verified computation with streaming interactive proofs. *Proceedings of the 3rd Innovations in Theoretical Computer Science Conference*,
- [18] Dodd, S. L., Herb, R. A., & Powers, S. K. (1993). Caffeine and exercise performance: an update. *Sports medicine*, 15, 14-23.
- [19] Dong, X., Zhao, H., & Li, T. (2022). The role of live-streaming e-commerce on consumers' purchasing intention regarding green agricultural products. *Sustainability*, 14(7), 4374.
- [20] Dul, J. (2016). Identifying single necessary conditions with NCA and fsQCA. *Journal of Business Research*, 69(4), 1516-1523.
- [21] Fecheyr-Lippens, A. (2010). A review of http live streaming. *Internet Citation*, 1-37.
- [22] Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. In: Sage publications Sage CA: Los Angeles, CA.
- [23] Frissell, C. A., Liss, W. J., Warren, C. E., & Hurley, M. D. (1986). A hierarchical framework for stream habitat classification: viewing streams in a watershed context. *Environmental management*, 10, 199-214.
- [24] Gao, X., Xu, X.-Y., Tayyab, S. M. U., & Li, Q. (2021). How the live streaming commerce viewers process the persuasive message: An ELM perspective and the moderating effect of mindfulness. *Electronic commerce research and applications*, 49, 101087.
- [25] Ginting, A. K., & Harahap, K. (2022). Pengaruh Direct Marketing dan Product Quality Terhadap Repurchase Intention pada Live Streaming Marketing Shopee Live (Studi pada Pengguna Aplikasi Shopee di Kota Medan). *Journal of Social Research*, 1(8), 851-863.
- [26] Goertz, L., Dorn, F., Kraus, B., Borggrefe, J., Forbrig, R., Schlamann, M., Liebig, T., Turowski, B., & Kabbasch, C. (2019). Improved occlusion rate of intracranial aneurysms treated with the Derivo embolization device: one-year clinical and angiographic follow-up in a multicenter study. *World Neurosurgery*, 126, e1503-e1509.
- [27] Gong, H., Zhao, M., Ren, J., & Hao, Z. (2022). Live streaming strategy under multi-channel sales of the online retailer. *Electronic commerce research and applications*, 55, 101184.
- [28] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135.

- [29] Hilvert-Bruce, Z., Neill, J. T., Sjöblom, M., & Hamari, J. (2018). Social motivations of live-streaming viewer engagement on Twitch. *Computers in Human Behavior*, 84, 58-67.
- [30] Ho, R. C., & Rajadurai, K. G. (2020). Live streaming meets online shopping in the connected world: interactive social video in online marketplace. In *Strategies and tools for managing connected consumers* (pp. 130-142). IGI Global.
- [31] Huang, Y., & Suo, L. (2021). Factors affecting Chinese consumers' impulse buying decision of live streaming E-commerce. *Asian Social Science*, 17(5), 16-32.
- [32] Hussain, S., Song, X., & Niu, B. (2020). Consumers' motivational involvement in eWOM for information adoption: The mediating role of organizational motives. *Frontiers in Psychology*, 10, 496992.
- [33] Ji, G., Fu, T., Choi, T.-M., Kumar, A., & Tan, K. H. (2022). Price and quality strategy in live streaming e-commerce with consumers' social interaction and celebrity sales agents. *IEEE Transactions on Engineering Management*.
- [34] Joo, E., & Yang, J. (2023). How perceived interactivity affects consumers' shopping intentions in live stream commerce: roles of immersion, user gratification and product involvement. *Journal of Research in Interactive Marketing*(ahead-of-print).
- [35] Jun, M., Han, J., Zhou, Z., & Eisingerich, A. B. (2023). When is celebrity endorsement effective? Exploring the role of celebrity endorsers in enhancing key brand associations. *Journal of Business Research*, 164, 113951.
- [36] Kang, K., Lu, J., Guo, L., & Li, W. (2021). The dynamic effect of interactivity on customer engagement behavior through tie strength: Evidence from live streaming commerce platforms. *International Journal of Information Management*, 56, 102251.
- [37] Karwowski, M., Dul, J., Gralewski, J., Jauk, E., Jankowska, D. M., Gajda, A., Chruszczewski, M. H., & Benedek, M. (2016). Is creativity without intelligence possible? A necessary condition analysis. *Intelligence*, 57, 105-117.
- [38] Kline, P. (2015). *A handbook of test construction (psychology revivals): introduction to psychometric design*. Routledge.
- [39] Kline, R., & Martin, B. (2020). Discrimination by appointment: how black and minority ethnic applicants are disadvantaged in NHS staff recruitment.
- [40] Knoll, J., & Matthes, J. (2017). The effectiveness of celebrity endorsements: a meta-analysis. *Journal of the Academy of Marketing Science*, 45, 55-75.
- [41] Ko, H.-C., & Chen, Z.-Y. (2020). Exploring the factors driving live streaming shopping intention: A perspective of parasocial interaction. *Proceedings of the 7th International Conference on Management of e-Commerce and e-Government*,
- [42] Kumar, A., & Kashyap, A. K. (2018). Leveraging utilitarian perspective of online shopping to motivate online shoppers. *International Journal of Retail & Distribution Management*, 46(3), 247-263.
- [43] Kumar, S., Prakash, G., Gupta, B., & Cappiello, G. (2023). How e-WOM influences consumers' purchase intention towards private label brands on e-commerce platforms: Investigation through IAM (Information Adoption Model) and ELM (Elaboration Likelihood Model) Models. *Technological Forecasting and Social Change*, 187, 122199.
- [44] Lee, C.-H., & Wu, J. J. (2017). Consumer online flow experience: The relationship between utilitarian and hedonic value, satisfaction and unplanned purchase. *Industrial Management & Data Systems*, 117(10), 2452-2467.
- [45] Lee, J. A., Sudarshan, S., Sussman, K. L., Bright, L. F., & Eastin, M. S. (2022). Why are consumers following social media influencers on Instagram? Exploration of consumers' motives for following influencers and the role of materialism. *International Journal of Advertising*, 41(1), 78-100.
- [46] Li, L., Kang, K., Feng, Y., & Zhao, A. (2022). Factors affecting online consumers' cultural presence and cultural immersion experiences in live streaming shopping. *Journal of Marketing Analytics*, 1-14.
- [47] Li, X., Huang, D., Dong, G., & Wang, B. (2024). Why consumers have impulsive purchase behavior in live streaming: the role of the streamer. *BMC psychology*, 12(1), 129.

- [48] Liao, J., Chen, K., Qi, J., Li, J., & Yu, I. Y. (2023). Creating immersive and parasocial live shopping experience for viewers: the role of streamers' interactional communication style. *Journal of Research in Interactive Marketing*, 17(1), 140-155.
- [49] Liu, H., & Liu, S. (2021). Optimal decisions and coordination of live streaming selling under revenue-sharing contracts. *Managerial and Decision Economics*, 42(4), 1022-1036.
- [50] Lu, B., & Chen, Z. (2021). Live streaming commerce and consumers' purchase intention: An uncertainty reduction perspective. *Information & Management*, 58(7), 103509.
- [51] Lu, Y., & Siegfried, P. (2021). E-commerce Live streaming—An Emerging Industry in China and A Potential Future Trend in the World.
- [52] Ma, Y. (2021). To shop or not: Understanding Chinese consumers' live-stream shopping intentions from the perspectives of uses and gratifications, perceived network size, perceptions of digital celebrities, and shopping orientations. *Telematics and Informatics*, 59, 101562.
- [53] MacInnis, D. J., Moorman, C., & Jaworski, B. J. (1991). Enhancing and measuring consumers' motivation, opportunity, and ability to process brand information from ads. *Journal of marketing*, 55(4), 32-53.
- [54] Meng, L. M., Duan, S., Zhao, Y., Lü, K., & Chen, S. (2021). The impact of online celebrity in livestreaming E-commerce on purchase intention from the perspective of emotional contagion. *Journal of Retailing and Consumer Services*, 63, 102733.
- [55] Mishra, A., Bansal, M., & Sharma, A. (2023). Video watermarking of live streamed MPEG-4 frames using ELM-Fuzzy-PSO hybrid scheme. *Multimedia Tools and Applications*, 1-39.
- [56] Muda, M., Musa, R., Mohamed, R. N., & Borhan, H. (2014). Celebrity entrepreneur endorsement and advertising effectiveness. *Procedia-Social and Behavioral Sciences*, 130, 11-20.
- [57] Ng, M., Law, M., Lam, L., & Cui, C. (2022). Cognitive Assimilation and Satisfaction with Live Streaming Commerce Broadcast in Hong Kong. *Digital Marketing & eCommerce Conference*,
- [58] Ng, M., Law, M., Lam, L., & Cui, C. (2023). A study of the factors influencing the viewers' satisfaction and cognitive assimilation with livestreaming commerce broadcast in Hong Kong. *Electronic Commerce Research*, 23(3), 1565-1590.
- [59] O'Brien, H. L. (2010). The influence of hedonic and utilitarian motivations on user engagement: The case of online shopping experiences. *Interacting with computers*, 22(5), 344-352.
- [60] Overby, J. W., & Lee, E.-J. (2006). The effects of utilitarian and hedonic online shopping value on consumer preference and intentions. *Journal of Business Research*, 59(10-11), 1160-1166.
- [61] Ozen, H., & Kodaz, N. (2012). Utilitarian or hedonic? A cross cultural study in online shopping. *Organizations and markets in emerging economies*, 3(2), 80-90.
- [62] Peng, X., Ren, J., & Guo, Y. (2024). Enhance consumer experience and product attitude in E-commerce live streaming: based on the environmental perspective. *Industrial Management & Data Systems*, 124(1), 319-343.
- [63] Pop, R.-A., Săplăcan, Z., & Alt, M.-A. (2020). Social media goes green—The impact of social media on green cosmetics purchase motivation and intention. *Information*, 11(9), 447.
- [64] Rahmi, A., Pangaribuan, C. H., & Luhur, C. (2024). The Cart Whisperers: Analyzing How Live Stream Hosts Influence Shopping Carts. 2024 18th International Conference on Ubiquitous Information Management and Communication (IMCOM),
- [65] Recktenwald, D. (2017). Toward a transcription and analysis of live streaming on Twitch. *Journal of Pragmatics*, 115, 68-81.
- [66] Sarkar, A. (2011). Impact of utilitarian and hedonic shopping values on individual's perceived benefits and risks in online shopping. *International management review*, 7(1), 58.
- [67] Shahab, M. H., Ghazali, E., & Mohtar, M. (2021). The role of elaboration likelihood model in consumer behaviour research and its extension to new technologies: A review and future research agenda. *International Journal of Consumer Studies*, 45(4), 664-689.
- [68] Silvera, D. H., & Austad, B. (2004). Factors predicting the effectiveness of celebrity endorsement advertisements. *European Journal of Marketing*, 38(11/12), 1509-1526.

-
- [69] Song, S., Yao, X., & Wen, N. (2021). What motivates Chinese consumers to avoid information about the COVID-19 pandemic?: The perspective of the stimulus-organism-response model. *Information Processing & Management*, 58(1), 102407.
 - [70] Su, X. (2019). An empirical study on the influencing factors of e-commerce live streaming. 2019 International Conference on Economic Management and Model Engineering (ICEMME),
 - [71] Suri, R., Long, M., & Monroe, K. B. (2003). The impact of the Internet and consumer motivation on evaluation of prices. *Journal of Business Research*, 56(5), 379-390.
 - [72] To, P.-L., Liao, C., & Lin, T.-H. (2007). Shopping motivations on Internet: A study based on utilitarian and hedonic value. *Technovation*, 27(12), 774-787.
 - [73] Tormala, Z. L., Briñol, P., & Petty, R. E. (2006). When credibility attacks: The reverse impact of source credibility on persuasion. *Journal of experimental social psychology*, 42(5), 684-691.
 - [74] Tormala, Z. L., & Petty, R. E. (2004). Source credibility and attitude certainty: A metacognitive analysis of resistance to persuasion. *Journal of Consumer Psychology*, 14(4), 427-442.
 - [75] Tyrväinen, O., Karjaluo, H., & Saarijärvi, H. (2020). Personalization and hedonic motivation in creating customer experiences and loyalty in omnichannel retail. *Journal of Retailing and Consumer Services*, 57, 102233.
 - [76] Wang, Y., Lu, Z., Cao, P., Chu, J., Wang, H., & Wattenhofer, R. (2022). How live streaming changes shopping decisions in E-commerce: A study of live streaming commerce. *Computer Supported Cooperative Work (CSCW)*, 31(4), 701-729.
 - [77] Wang, Z., Lee, S.-J., & Lee, K.-R. (2018). Factors influencing product purchase intention in Taobao live streaming shopping. *Journal of Digital Contents Society*, 19(4), 649-659.
 - [78] Wenting, F., Shuyun, X., Ying, Y., & Hai, H. (2022). The influence of androgynous streamers on consumers' product preferences. *Frontiers in Psychology*, 13, 1029503.
 - [79] Won, J., & Kim, B.-Y. (2020). The effect of consumer motivations on purchase intention of online fashion-sharing platform. *The Journal of Asian Finance, Economics and Business*, 7(6), 197-207.
 - [80] Wongkitrungrueng, A., Dehouche, N., & Assarut, N. (2020). Live streaming commerce from the sellers' perspective: implications for online relationship marketing. *Journal of Marketing Management*, 36(5-6), 488-518.
 - [81] Wu, D., Wang, X., & Ye, H. J. (2023). Transparentizing the "Black Box" of live streaming: impacts of live interactivity on viewers' experience and purchase. *IEEE Transactions on Engineering Management*.
 - [82] Wu, M., & Gao, Q. (2020). Using live video streaming in online tutoring: Exploring factors affecting social interaction. *International Journal of Human-Computer Interaction*, 36(10), 964-977.
 - [83] Wu, W.-Y., Ke, C.-C., & Nguyen, P.-T. (2018). Online shopping behavior in electronic commerce: An integrative model from utilitarian and hedonic perspectives. *International Journal of Entrepreneurship*, 22(3), 1-16.
 - [84] Wu, X., Ai, H., Yi, B., Wang, X., Chen, N., & Gao, M. (2023). A Study on the Influence of Tiktok Live Broadcast on College Students' Purchase Intention. *SHS Web of Conferences*,
 - [85] Xiao, L., Lin, X., Mi, C., & Akter, S. (2023). The effect of dynamic information cues on sales performance in live streaming e-commerce: an IFT and ELM perspective. *Electronic Commerce Research*, 1-30.
 - [86] Xie, C., Yu, J., Huang, S. S., & Zhang, J. (2022). Tourism e-commerce live streaming: Identifying and testing a value-based marketing framework from the live streamer perspective. *Tourism Management*, 91, 104513.
 - [87] Xin, B., Hao, Y., & Xie, L. (2023). Strategic product showcasing mode of E-commerce live streaming. *Journal of Retailing and Consumer Services*, 73, 103360.
 - [88] Xu, P., & Lyu, B. (2022). Influence of streamer's social capital on purchase intention in live streaming E-commerce. *Frontiers in Psychology*, 12, 748172.
 - [89] Xu, X., Wu, J.-H., & Li, Q. (2020). What drives consumer shopping behavior in live streaming commerce? *Journal of electronic commerce research*, 21(3), 144-167.