The Impact of Customer Engagement on Perceived Value in the Context of E-commerce Livestreaming

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Abstract

Purpose: This comprehensive study delves into the intricate relationship between customer engagement, perceived risk, and perceived value within China's burgeoning e-commerce livestreaming sector. It focuses on how different customer engagement types in livestreaming influence their perception of value and risk. **Research Design, Data, and Methodology:** Adopting a convenience sampling approach, this research scrutinizes data collected from 852 consumers actively involved in e-commerce livestreaming shopping. Participants provided their insights through a meticulously designed questionnaire survey. Structural equation modeling helped examine the interplay between customer engagement, perceived risk, and value. **Results:** Significant impacts of customer engagement on perceived value and risk were found. Observation-based, conversation-based, and action-based engagements enhance perceived risk, while conversation-based and action-based engagement reduce perceived risk. Interestingly, observation-based engagement did not significantly affect perceived risk. The study also uncovered that perceived risk negatively impacts perceived value. **Conclusions:** The research offers insights into customer behavior and value creation in e-commerce livestreaming. It underscores how different engagement types affect perceived value and risk, aiding e-commerce platforms and businesses in strategy development to improve customer experience and minimize risks, enhancing perceived value in this dynamic sector. Enhances understanding of customer engagement dynamics in China's e-commerce livestreaming, guiding strategic development.

Keywords : E-commerce Livestreaming, Customer Engagement, Perceived Value, Perceived Risk, Distribution Science

JEL Classification Code: M31, L81, C30

1. Introduction

E-commerce live streaming refers to the commercial practice of showcasing and selling products or services through real-time video streaming on online platforms (Geng et al., 2020; Luo et al., 2021). Within the current e-commerce landscape, live streaming marketing has emerged as a burgeoning marketing model (Wang, 2021; Wongkitrungrueng et al., 2020). Previous studies have demonstrated its effectiveness in attracting a large audience (Wongsunopparat & Deng, 2021) and generating substantial sales in a short time (Liu et al., 2020), sparking industry-wide attention and stimulating in-depth reflections on consumers' perceived value during live streaming (Ren et al., 2021).

Prior research has mainly focused on consumer purchase intentions and behavior (Ariffin et al., 2018; Wu & Huang, 2023), paying scant attention to customer engagement. In

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the evolving landscape of the internet and live streaming platforms, consumer involvement in value creation has become pivotal (Ma et al., 2023; Wongkitrungrueng & Assarut, 2020), shaping the entire value chain of businesses (Jacobides et al., 2018). Particularly in live streaming marketing, customers are no longer passive viewers but active participants engaging in content interaction (Giertz et al., 2022). Exploring customers' different levels of engagement during live streaming can provide deeper insights into how consumer behavior influences perceived value (Singh et al., 2021).

E-commerce live streaming, as a recent emerging model in e-commerce, presents rare development opportunities for online sellers (Zhou et al., 2021). Understanding the factors affecting consumer behaviors in live streaming commerce is crucial (Zhang et al., 2022; Zhou et al., 2021). Perceived risk in live streaming commerce involves consumers' awareness of potential risks related to product quality, purchase security, or post-sale services (Lăzăroiu et al., 2020). User-perceived risk is a crucial factor inhibiting online decision-making and plays a critical role in the formation of consumer perceived value (Ventre & Kolbe, 2020). Compared to traditional e-commerce, the services provided in e-commerce live streaming possess unique advantages (Farivar et al., 2017; Wang et al., 2021). Whether customer engagement in e-commerce live streaming services effectively reduces user-perceived risk and enhances live streaming purchasing behavior is the focal point of our study.

Research on customer engagement has often been applied to enterprise innovation (Feng et al., 2021), with limited literature studying marketing from a customer engagement perspective. Against this background, positioning customer engagement as a critical factor (Assiouras et al., 2019). The research problem centers on understanding the intricate dynamics of customer engagement in e-commerce live streaming and its impact on perceived value and risk. E-commerce live streaming is a rapidly evolving marketing model, increasingly significant for attracting large audiences and generating substantial sales. However, there's a gap in current research regarding customer engagement's role in this context. Most existing studies focus on consumer purchase intentions and behaviors, with little emphasis on the active role of customers in value creation during live streaming.

The importance of this research lies in its potential to provide a comprehensive understanding of the effects of different levels of customer engagement (observation-based, interaction-based, and action-based) on perceived value in e-commerce live streaming. Additionally, it aims to explore the role of perceived risk within these dynamics. This exploration is crucial as user-perceived risk is a key factor that inhibits online decision-making and influences consumer perceived value.

Understanding these dynamics is vital for businesses and online sellers. It can help them comprehend consumer behavior patterns more deeply, enabling the development of more effective live streaming marketing strategies. This research can also guide long-term development in the e-commerce live streaming industry by revealing how different forms of customer engagement impact perceived value, addressing a critical gap in current literature. This knowledge is essential for businesses to tailor their approaches in this unique and rapidly growing marketing environment.

2. Theoretical background and hypotheses development

2.1. SOR (Stimulus-Organism-Response) Model

The SOR stimulus-response theory is a psychological framework used to elucidate human responses to specific stimuli (Mehrabian & Russell, 1974). An individual's reaction is determined by the interplay of three factors: Stimuli, Organism, and Response (Ligaraba et al., 2023). Behavioral psychology suggests that both stimuli and responses can expound on human complex behaviors (Mehrabian & Russell, 1974).

An individual's response to stimuli isn't solely a direct reaction to the stimuli itself; it encompasses the individual's cognitive assessment and emotional experiences of the stimuli (Dashti et al., 2019). The SOR stimulus-response theory holds significant relevance in practical applications (Dashti et al., 2019; Ligaraba et al., 2023). In marketing, this theory can elucidate consumer responses to products or advertisements (Zhu et al., 2020). Hence, this study posits that customer behavior, as influenced by various forms of engagement, constitutes a series of actions resulting in changes in their psychological processes, with perceived risk acting as a mediating factor in the formation of perceived value.

2.2. Live Commerce

Live commerce has revolutionized the shopping landscape, enhancing consumers' shopping experiences (Zhou et al., 2021). Conceptually, there are two typical definitions of live commerce. First, it's a novel business model combining e-commerce platforms with live streaming to enable consumers to experience multimedia interactions while shopping online. This viewpoint stems from scenarios segmented for a minority, the long-tail community economic model (Luo et al., 2021). Second, it's considered a branch of e-commerce or social commerce (Luo et al., 2021). Live e-commerce achieves real-time

social interaction, enriching consumers' shopping experiences and driving sales. In practice, live commerce evolution involves two scenarios: direct live sales platforms like Taobao Live with complete original e-commerce platforms and supply chain advantages, and social media-based live streaming on platforms like Weibo, WeChat, TikTok, or Toutiao, leveraging a substantial fan base.

The essence of live e-commerce platforms fundamentally lies in being electronic interactive platforms (Zhang et al., 2022; Zhou et al., 2021), providing a co-creative value environment for businesses and customers (Geng et al., 2020). Consumers, as co-creators of value, generate practical, entertainment, and social value by watching live videos, interacting with hosts, contributing via gifts, comments, thereby enriching the information pool and expanding possibilities for customer engagement (Bao & Zhu, 2023). Compared to traditional e-commerce, live commerce offers deep, real-time, multimedia product displays, delivering an immediate, immersive shopping experience, with strengths in strong interactivity, professionalism, and high conversion rates.

3. Research Model and Hypothesis

3.1. Customer Engagement Behavior and Perceived Value in Live Commerce

Based on the service-dominant logic, customer engagement behavior embodies co-created value, placing customers at the core (Assiouras et al., 2019). Customer interaction with businesses leads to perceived value, meeting their needs. Active engagement—such as observation, interaction, expressing opinions, building trust, perceiving risks—affects their value perception (Jansom & Pongsakornrungsilp, 2021). Customer engagement enhances economic and relational value, positively impacting practical and hedonic value in the service industry. Online community interaction fosters functional, social, and emotional value (Liu et al., 2021). The more customers interact in live commerce, the greater their perceived value, with live comments notably influential (Wongkitrungrueng & Assarut, 2020). Engagement constitutes both practical and hedonic experiences, bolstering product awareness and shopping decisions (Ma et al., 2023). Aesthetic settings and rich content on live platforms make engagement enjoyable and novel. Social features enhance interaction and collaboration among customers, strengthening relationships with platforms, hosts, and brands, satisfying social needs (Chen, 2021). In summary, higher customer engagement contributes more personal resources and consequently generates greater value. Hence, the hypotheses are as follows:

H1a: Observation-based engagement positively influences customers' perceived value.
H1b: Interaction-based engagement positively influences customers' perceived value.
H1c: Action-based engagement positively influences customers' perceived value.

3.2. Customer Engagement and Perceived Risk in Live Commerce

High customer engagement implies more interaction, leading to a heightened focus on interaction and the product itself, thereby reducing potential risks (Ou et al., 2022). Social influence exists in the live environment, where the action-based engagement and product purchases of other customers influence the decisions of viewers (Meng et al., 2021). Increased engagement is affected by the behavior of others, reducing individual awareness of potential risks (Lim & Rasul, 2022). Additionally, customers may assess risks based on their trust in the e-commerce platform (Soleimani, 2022). Higher levels of trust lead to the belief that the platform's products and services are relatively secure, reducing perceived risks (Rosillo-Díaz et al., 2020). The authority and credibility of the live host during the broadcast also influence customer risk perception; possessing expertise and a good reputation decreases consumer risk perception (Shang et al., 2023). In summary, higher customer engagement yields more information, potentially reducing perceived risks. Therefore, the hypotheses are as follows:

H2a: Observation-based engagement negatively influences customers' perceived risk.
H2b: Interaction-based engagement negatively influences customers' perceived risk.
H2c: Action-based engagement negatively influences customers' perceived risk.

3.3. Perceived Risk and Perceived Value

Perceived risk is considered a primary determinant affecting user engagement in online transactions (Lăzăroiu et al., 2020). It is often described as consumers' perception of the negative consequences that might arise from potential risks (Wai et al., 2019). A substantial body of research has found that perceived risk negatively influences customers' willingness to purchase in online markets (Ventre & Kolbe, 2020). When individuals perceive risks, indicating they might incur potential losses to a certain extent, they tend to restrain and control related actions and risks (Farivar et al., 2017). Thus, perceived risk is often considered a significant factor that prevents individuals from taking actions that might increase their likelihood of loss (Ventre & Kolbe, 2020). Empirical studies by Karjaluoto et al. (2019) in the

context of mobile financial service applications found that perceived risk negatively influences perceived value. In conclusion, perceived risk heightens users' anticipation of adverse outcomes, negatively impacting their willingness. Therefore, the hypothesis presented here is:

H3: Perceived risk negatively influences perceived value.

3.4. Mediating Role of Perceived Risk

Perceived risk is defined as a customer's assessment of the potential negative outcomes associated with using a live streaming app for e-commerce (Ariffin et al., 2018). According to prior research, customer engagement in live-streaming e-commerce significantly enhances their perceived value (Jansom & Pongsakornrungsilp, 2021). Engagement behaviors, involving interactions with hosts, platforms, and other viewers during live streams, enhance the shopping experience, influencing perceived value formation (Liu et al., 2021; Ma et al., 2023). Additionally, customer engagement also affects their perception of risk (Ou et al., 2022). For instance, increased engagement during live streams might diminish the awareness of potential risks through influence from other participants. Users' perception of risk influences their assessment of products or services and their perception of value (Lăzăroiu et al., 2020; Karjaluoto et al., 2019). Once users perceive risk, it negatively impacts transactions or engagement, consequently affecting perceived value (Ventre & Kolbe, 2020).

Considering the above analysis, it can be inferred that perceived risk acts as a mediator between customer engagement and perceived value in live streaming. Customer engagement decreases the perception of risk but also enhances perceived value. The reduction in risk perception might alter evaluations of products or services, thus influencing the formation of perceived value (Karjaluoto et al., 2019). Perceived risk plays a mediating role in this process by indirectly affecting the formation of perceived value through altering customers' awareness of potential risks. Hence, the following hypotheses are proposed:

H4a: Perceived risk mediates the relationship between observation-based engagement and perceived value.
H4b: Perceived risk mediates the relationship between interaction-based engagement and perceived value.
H4c: Perceived risk mediates the relationship between action-based engagement and perceived value.

3.5. Research Model

The paper examines the impact of various forms of customer perceived value in the context of live-streaming e-

commerce, as well as constructing the mediating role of perceived risk. Previous literature has predominantly investigated consumer behavior in e-commerce live streaming from three perspectives: the host (Li et al., 2024), live-streaming scenarios (Shang et al., 2023), and products (Huang & Suo, 2021). Based on a review of the literature, this study posits that customer engagement in live-streaming e-commerce represents a value co-creation behavior wherein customers engage in interactions during these activities. Customers engagement on the platform represents a variant of traditional customer involvement, encompassing not only engagement throughout the product value chain but also deep involvement in platform interactions (Jacobides et al., 2018).

In summary, this study integrates customer engagement, perceived risk, and perceived value, based on the SOR (Stimulus-Organism-Response) model theory. The proposed research framework is illustrated in Figure 1.
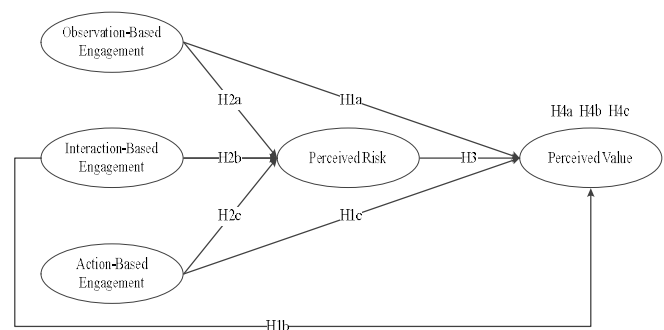

Figure 1: Research model

4. Methodology

4.1. Paradigm and Research Method

This study employs a structural equation model to explore the relationship among customer engagement, perceived risk, and perceived value in the context of live-streaming e-commerce. Focusing on customer engagement, the research unveils the impact of customer behavior on the perception of value and risk through survey analysis and statistical methods. Integrating prior research, this paper constructs a comprehensive theoretical framework in the context of live-streaming e-commerce, delving deeply into the multifaceted influences of customer engagement, spanning from service-dominant logic and social characteristics to perceived value and risk. This method not only dissects the correlation between customer behavior and perceived value but also offers practical feasibility and guidance, presenting a new paradigm for a deeper understanding of behaviors and value construction in live-streaming e-commerce.

4.2. Research Design

To ensure the scientific validity of the survey research, this study primarily targeted individuals who had watched live broadcasts within the past six months as the surveyed subjects. Upon completing the questionnaire modifications, the questionnaire design was primarily conducted using the professional survey platform, Questionnaire Star. Using a convenience sampling method. In distributing the survey, QR code links for questionnaire completion were disseminated via media platforms such as WeChat, Weibo, and Tiktok. Additionally, suitable participants were recruited for paid completion through the Questionnaire Star platform. Private messages containing the questionnaire link were also sent to followers of certain livestream hosts, requesting their engagement to gather data.

An analysis of the questionnaire provided sample characteristic statistics. Concerning gender distribution, 617 females (72.42%) comprised the majority, while males accounted for 235 (27.58%). We speculate that possible reasons for this disproportion could be: (1) a higher inclination of females toward online shopping, leading to increased interest in the topic and consequently more engagement, and (2) social media platforms pushing relevant information to individuals already interested in such topics, resulting in a significant gender imbalance. Since the study's questions and hypotheses did not involve gender as a factor, hypothesis testing was separately performed for male and female questionnaires, revealing no significant differences in the obtained results. Therefore, male and female responses were aggregated for analysis.

In terms of age and education, the survey predominantly targeted college students, with the majority falling within the 18-25 age group (39.67%), and those with a bachelor's degree or higher comprising 69.01%. Given the study's academic nature, college students exhibit a higher acceptance level and purchasing power concerning live-streaming e-commerce, thereby enhancing the credibility of the completed questionnaires. According to the CNNIC's 'The 50th China Internet Development Statistics Report,' individuals aged 20-50 accounted for 74.2% of internet users, and the audience for live broadcasts tends to be younger, likely comprising the primary demographic for engaging in online survey participation. Furthermore, a significant majority (79.4%) primarily watched internet celebrity livestreams, indicating that these streams are more favored by the younger demographic, attracting a larger audience.

4.3. Measurement

This study involves five variables: Observation-Based Engagement, Interaction-Based Engagement, Action-Based Engagement, Perceived Risk, and Perceived Value. To ensure the validity of the scales, this paper adapted and modified questionnaire items based on previous research and tailored them to the context of e-commerce live streaming. Specific designs of the scale items are presented in Table 1.

For the customer engagement dimension, we referenced Bettencourt's (1997) design and adapted it to the current landscape of e-commerce live streaming, resulting in three dimensions: Observation-Based Engagement, Interaction-Based Engagement, and Action-Based Engagement, comprising a total of 17 measurement items. Upon data analysis, it was found that customer engagement suited a first-order model, hence leading to separate discussions regarding Observation-Based Engagement, Interaction-Based Engagement, and Action-Based Engagement. Regarding perceived risk, we referenced the design by Ariffin et al. (2018), incorporating a total of 6 measurement items. For the measurement of perceived value, we referred to Wu and Huang's (2023) design, segmented into three dimensions, encompassing a total of 15 measurement items. Through data analysis, it was observed that perceived risk suited a second-order model.

5. Results

5.1. Common-Method Bias

This study employed Harman's single-factor test to conduct a principal component analysis on the measurement data of five variables: Observation-Based Engagement, Interaction-Based Engagement, Action-Based Engagement, Perceived Risk, and Perceived Value. The results indicated that there were 5 factors with eigenvalues greater than 1, contributing to a cumulative variance of 67.493%. Among these factors, the first factor had a variance explanation rate of 20.736%, signifying the absence of common method bias in the data (Podsakoff et al., 2003).

Simultaneously, the study utilized the Unmeasured Latent Method Constructs (ULMC) method as shown in Table 1, demonstrating that after incorporating potential latent method bias factors, the model's fit indices did not improve significantly, indicating the absence of substantial common method bias (Belschak et al., 2006).

5.2. Analysis of the Measurement Model

To validate the reliability and validity of the scale, this study employed AMOS for confirmatory factor analysis and SPSS for Cronbach's α test. All observed variables' standardized factor loadings exceeded the threshold of 0.7,

indicating high correlations between each manifest variable and its corresponding latent variable.

Furthermore, Construct Reliability (CR) and Average Variance Extracted (AVE) were used to assess the reliability and validity of the variables. As shown in Table 2, the CR values for the variables exceeded 0.7, meeting acceptable standards. AVE values were utilized to assess the extent to which variables explained the variance of manifest variables, all exceeding 0.5. Additionally, the variables' Cronbach's α values surpassed 0.7, indicating good reliability in the measurement model (Fornell & Larcker, 1981; Hair et al., 2019).

This paper compares the square root of Average Variance Extracted (AVE) with the correlation coefficients to assess discriminant validity. As shown in Table 3, the square roots of AVE for each variable exceed the correlation coefficients, further substantiating the discriminant validity of this study (Fornell & Larcker, 1981).

Table 1: The model fit table for common method variance test

Model	χ^2/df	GFI	AGFI	CFI	PCFI	RMSEA	SRMR
Model without common method bias	1.430	0.949	0.943	0.991	0.928	0.020	0.026
Model with common method bias	1.405	0.950	0.944	0.992	0.927	0.019	0.026

Table 2: Confirm factor analysis

Factor	Standard loading	CR	AVE	α
Observation-based Engagement		0.881	0.712	0.880
1. I follow some live streamers.	0.895			
2. I follow some live streaming rooms.	0.834			
3. I pay attention to the comments and bullet chats from other customers.	0.799			
Conversation-based Engagement		0.919	0.588	0.917
1. I ask the live streamers to showcase products.	0.763			
2. I inquire about product details from the live streamers.	0.796			
3. I actively provide feedback on shortcomings in the live streaming or the streamer, helping them improve.	0.759			
4. I evaluate products during the live stream in the chat room.	0.727			
5. I engage in discussions with other customers about the products being live-streamed.	0.853			
6. If I know the answers to questions other customers ask via bullet chats, I respond.	0.738			
7. I post about e-commerce live streaming on WeChat Moments and Weibo.	0.722			
8. I talk about live streaming or the products featured in them with friends and classmates.	0.765			
Action-based Engagement		0.926	0.677	0.920
1. I participate in flash sale events.	0.780			
2. If interested in a product in the live stream, I save it for later.	0.846			
3. I try to get coupons or red envelopes offered in the live streaming room.	0.879			
4. I like (give thumbs up) in the live streaming room.	0.737			
5. I participate in the live stream's lottery or giveaway events.	0.840			
6. I invite friends to watch live streams that interest me.	0.846			
Perceived Risk		0.914	0.641	0.912
1. I believe providing personal information to this live streaming app could lead to significant losses.	0.873			
2. I think shopping on this live streaming app is very risky.	0.859			
3. I believe the physical product will be the same as shown in the live stream. (R)	0.734			
4. I trust that the products bought during the live stream will meet my expectations. (R)	0.782			
5. I think this e-commerce streamer will not break their promises. (R)	0.825			
6. I believe the e-commerce streamer will not deceive consumers. (R)	0.718			

Factor	Standard loading	CR	AVE	α
Perceived Value		0.795	0.565	0.781
Utilitarian value (UV)	0.741			
Hedonic value (HV)	0.816			
Social value (SV)	0.692			
Utilitarian value (UV)		0.886	0.611	0.885
UV1: Sellers who sell goods through LS look like genuine merchants.	0.835			
UV2: Products sold via LS appear to be authentic.	0.760			
UV3: I think that the live product is good value for money.	0.701			
UV4: I think the promotion for that live shopping is great.	0.893			
UV5: Compared to other ways, I think shopping through that live room is a better value and better deal.	0.702			
Hedonic value (HV)		0.894	0.629	0.889
HV1: The process of shopping on the LS made me feel relaxed.	0.742			
HV2: I enjoy live shopping.	0.894			
HV3: I thought it was fun to shop through that live room.	0.739			
HV4: I feel like time flies when shopping in that live room.	0.790			
HV5: When shopping in that live room, sometimes I forget my worries.	0.789			
Social value (SV)		0.888	0.614	0.884
SV1: By shopping live, I feel very fashionable.	0.751			
SV2: Interacting on air gives me a sense of identity.	0.820			
SV3: Shopping via LS can make a good	0.761			
SV4: When shopping via LS, I can find products that match my style.	0.745			
SV5: I would love to tell my friends/acquaintances about this live shopping.	0.838			

Table 3: Correlations between constructs

Variable	$\bar{X}$	SD	OBE	IBE	ABE	PR	PV
OBE	3.810	0.937	**.844**				
IBE	3.706	0.844	.639**	**.767**			
ABE	3.753	0.771	.380**	.598**	**.823**		
PR	3.507	0.706	.461**	.403**	.655**	**.801**	
PV	3.671	0.895	.456**	.507**	.544**	.524**	**.752**

Note:$**p<0.01;$ Observation-Based Engagement (OBE); Interaction-Based Engagement (IBE); Action-Based Engagement (ABE); Perceived Risk (PR); Perceived Value (PV)
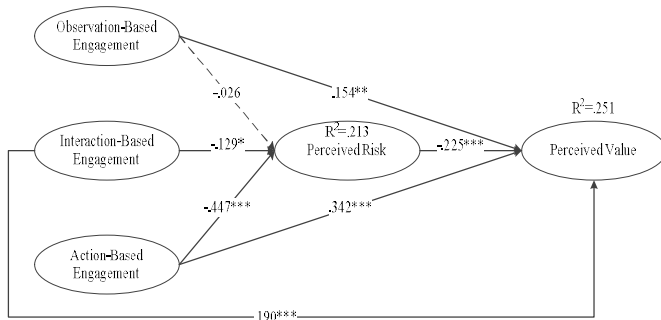
5.3. Structural Model

Using AMOS 26.0 software and employing maximum likelihood estimation, a structural equation modeling analysis was conducted for the main effects model. The model's fit indices were as follows: (χ^2/df = 1.598 < 3, GFI = 0.934 > 0.9, AGFI = 0.915 > 0.9, NFI = 0.939 > 0.9, CFI = 0.976 > 0.9, RMSEA = 0.026 < 0.08), indicating a good fit (Hair et al., 2019).

The hypothesis testing results, as depicted in Figure 2, indicate the following: Firstly, customer engagement behaviors in e-commerce live streaming (observation-based, interaction-based, and action-based) all exhibit significant positive effects on perceived value (β = 0.154, p < 0.01; β = 0.190, p < 0.001; β = 0.342, p < 0.001), supporting hypotheses H1a, H1b, and H1c. Secondly, customer engagement behaviors in e-commerce live streaming (interaction-based and action-based) demonstrate significant negative effects on perceived risk (β = -0.129, p < 0.05; β = -0.447, p < 0.001), supporting hypotheses H2b and H2c. However, observation-based engagement does not significantly affect perceived risk (β = -0.026, p > 0.05), thus hypothesis H2a is not supported. Finally, perceived risk

significantly negatively impacts perceived value ($\beta = -0.225$, $p < 0.001$), supporting hypothesis H3.

Note: *p<0.05, **p<0.01, ***p<0.001

Figure 2: Results of structural model

Based on Fritz and MacKinnon's (2007) recommendation, the sample size required for testing mediation using the Percentile Bootstrap method is 558, while the Bias-corrected Bootstrap method requires a sample size of 462. With an effective questionnaire count of 1107 in this study, the Bootstrap method can be used to test the mediation effect. According to the Bootstrap results, the indirect impact of observation-based engagement on perceived value through perceived risk is not significant ($\beta = 0.006$, $p > 0.05$, CI = [-0.037, 0.025]), indicating that H4a is not supported. In contrast, the indirect effect of interaction-based engagement on perceived value through perceived risk is significant ($\beta = 0.029$, $p < 0.05$, CI = [0.003, 0.015]), supporting H4b. Similarly, the indirect effect of action-based engagement on perceived value through perceived risk is significant ($\beta = 0.101$, $p < 0.05$, CI = [0.008, 0.036]), supporting H4c.

6. Discussion

The research findings indicate significant impacts of customer engagement in e-commerce livestreaming on perceived risk and perceived value. While passive observation engagement does not directly affect perceived value or exert an indirect effect through perceived risk, it does have a direct impact (Jansom & Pongsakornrungsilp, 2021). Interaction-based and action-based engagement, on the other hand, significantly influence both perceived value and perceived risk through dual pathways, directly and via perceived risk (Meng et al., 2021; Wongkitrungrueng & Assarut, 2020). This highlights how different forms of customer engagement during livestreaming affect value and risk differentially (Liu et al., 2021). The results suggest that enhancing interaction-based and action-based engagement can heighten consumer perceived value (Chen, 2021) while

simultaneously reducing perceived risk (Liu et al., 2021; Ma et al., 2023). These findings offer guidance for e-commerce livestreaming platforms and brands, emphasizing the encouragement of interaction and substantial participation to enhance consumer experiences, mitigate risk perceptions, and thereby foster stronger relationships between consumers and brands.

6.1. Theoretical Contribution

This study makes significant theoretical contributions to the field of e-commerce livestreaming. By exploring the impact of different customer engagement modes on perceived value and perceived risk, it enriches the understanding of consumer behavior in e-commerce livestreaming (Ma et al., 2023). Furthermore, it identifies the substantial influence of interaction-based and action-based engagement on perceived value and perceived risk, expanding the theoretical understanding of how engagement modes influence consumer decision-making. Most importantly, it unveils the mediating role of perceived risk between customer engagement and perceived value, emphasizing the association between consumer engagement levels and risk perceptions (Lim & Rasul, 2022). These theoretical findings offer targeted recommendations for e-commerce livestreaming platforms, encouraging active consumer engagement to enhance perceived value, thereby fostering relationships with brands and propelling the development of the e-commerce livestreaming industry.

6.2. Managerial Implications

This study provides significant managerial insights for e-commerce livestreaming platform management. Understanding the impact of different modes of engagement on customers allows platforms to design targeted incentive mechanisms that encourage interaction-based and action-based engagement (Jansom & Pongsakornrungsilp, 2021), thereby enhancing customers' perceived value and bolstering platform attractiveness. Furthermore, based on the findings regarding perceived risk, platforms can reduce customer purchase hesitancy by mitigating perceived risks. This can be achieved through initiatives such as enhancing platform transparency, providing more reliable products and services, thus fostering customer trust (Ventre & Kolbe, 2020). Most importantly, gaining a deeper understanding of the mediating role of perceived risk between engagement modes and perceived value enables platform managers to focus on risk mitigation measures. This optimization of the engagement experience creates a more appealing environment. These recommendations assist e-commerce livestreaming platforms in enhancing user loyalty,

expanding user bases, and increasing the platform's commercial value.

6.3. Limitations and Future Research

This study has several limitations. Firstly, the sample primarily consisted of young university students, which might be more representative of specific age and educational groups but may have limited generalizability to users of different age groups and educational backgrounds. Secondly, the study did not consider regional, cultural differences, among other factors, that might influence customer engagement behavior and perceived value. Future research could broaden its scope to encompass various influencing factors across diverse backgrounds. Additionally, the mediation effects were only validated in specific pathways, and other potential mediating mechanisms were not thoroughly explored. Future studies could expand on investigating mediation effects to understand more potential pathways and influencing mechanisms. Lastly, this study focused on e-commerce livestreaming platforms, neglecting other possible forms of online shopping and participation. Future research could compare participation behaviors and value perceptions in different shopping environments to comprehensively understand customer behavior and experiences.

7. Conclusion

This study explored the relationship between customer engagement behavior, perceived risk, and perceived value within the e-commerce livestreaming environment. The results indicate that customer engagement behavior significantly and positively influences perceived value while exhibiting varying degrees of negative influence on perceived risk. Perceived risk significantly negatively impacts perceived value. Mediation analysis revealed that verbal and action-based engagement pathways indirectly affect perceived value through perceived risk. This study provides a deeper understanding of customer behavior and value perception within the context of e-commerce livestreaming, offering valuable insights for businesses to optimize their strategies and enhance customer experiences.

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