Understanding Continuance Intention toward AI Virtual Streamers in E-Commerce: An Expectation Confirmation Perspective*

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Abstract

With the rapid growth of AI virtual streamers in E-commerce, understanding what drives viewers' continuance intention has become increasingly important. Although AI virtual streamers are increasingly adopted by platforms and brands, existing research has not sufficiently explained how viewers form expectations toward these AI agents, how these expectations are confirmed through actual viewing experiences, and why viewers choose to continue watching them. Addressing this gap, this study draws on expectation confirmation theory to examine how three key characteristics of AI virtual streamers, anthropomorphism, emotional richness, and interactivity influence viewers' satisfaction and, in turn, their continuance intention. To deepen the analysis, the study introduces AI literacy as a moderating factor, proposing that viewers with different levels of AI understanding may evaluate AI streamer features differently and therefore experience varying levels of satisfaction. By integrating evaluation processes with AI-specific user differences, this study provides a more comprehensive explanation of continuance intention in AI-mediated live streaming commerce. The findings aim to advance theoretical discussions on AI influencers, user expectations, and technology acceptance, while offering practical insights for platforms and brands seeking to design AI virtual streamers that foster sustained viewer engagement and create long-term competitive advantages in the live-streaming commerce market.

Keywords: AI virtual streamers, live streaming commerce, expectation confirmation theory, AI literacy

Introduction

Artificial intelligence technology is changing the future, affecting both business models and social development. Among various AI technologies, people are increasingly interested in AI virtual streamers. AI virtual streamer refers to a digital entity powered by AI algorithms that can interact with viewers (Miao et al., 2022), which combines technologies of artificial intelligence and virtual reality to provide consumers with a new type of shopping experience. According to reports, the virtual YouTuber market is expected to reach around USD 22,410 million by 2030 (Xiao et al., 2025). Current research indicates that compared to human streamers, consumers have not yet fully accepted this innovative technology of AI virtual streamers (Gao et al., 2024). Viewers' understanding of AI technology, conceptualized as AI literacy, may significantly shape expectation formation and technology acceptance (Ng et al., 2021). Emerging evidence suggests viewers do not respond uniformly to AI technologies, viewers with technophobia may develop negative attitudes toward AI streamers (Xiao et al., 2025).

This difference implies uniform design approaches will underperform strategies customizing AI applications for different literacy levels.

Despite the increasing prevalence of AI virtual streamers, academic research on the factors influencing continuance watching intentions toward virtual streamers remains limited. Therefore, to address this research gap, this study proposes three research questions:

RQ1: What factors influence viewers' continuance watching intention for AI virtual streamers?

RQ2: How do these factors affect viewers' continuance watching intention for AI virtual streamers?

RQ3: How does AI literacy moderate the effect of AI virtual streamers' characteristics on continuance watching intention?

Literature Review

Existing research has thoroughly explored and compared AI virtual streamers and human streamers. Liu et al. (2025) contrasted AI virtual streamers with internet influencers, analyzing them from the perspective of emotion theory, and found that human streamers, such as celebrities, still have greater appeal compared to AI virtual streamers. Specifically, AI virtual streamers are not popular except among extremely hedonistic consumers. However, AI virtual streamers also have unique advantages in certain contexts; for example, brands using AI virtual streamers during crisis management receive more tolerance from consumers (Xie et al., 2024). Various characteristics of virtual streamers significantly influence consumer behavior. Gong and Sun (2025) found that the linguistic style of virtual streamers leads to different consumer experiences, with hedonic consumers reporting higher perceived experience when virtual streamers employ emotional language.

The expectation confirmation theory (ECT) states that when the streamer meets the viewer's expectations, it can increase the viewer's purchase intention and continued watching intention (Oliver, 1980). ECT provides a framework for understanding how AI virtual streamers enhance viewer satisfaction by meeting or exceeding initial expectations (Huang & Yu, 2023). Research indicates that virtual streamers enhance viewer satisfaction through effective high-quality information delivery, appropriate streaming duration, and by eliciting positive emotional responses (Gao et al., 2023).

Although previous studies have investigated the relevant behavioral intention of AI virtual streamers, understanding the mechanisms that drive continuance intention of AI virtual streamers remains unexplored. This research is necessary because the substantial investment in AI streaming technology can only be justified through sustained viewer engagement that leads to valuable business outcomes.

Hypotheses Development

Anthropomorphism refers to human-like characteristics such as appearance, voice, and behavior (Salles et al., 2020). Previous research has demonstrated that the degree of anthropomorphism increases public acceptance in AI technologies (Chen et al., 2024). Compared to AI virtual streamers with cartoon-like appearances, consumers respond more positively to those with human-like appearances (Ma et al., 2024). When the technology behind AI virtual streamers lacks authenticity and becomes intrusive, viewer retention rates tend to decrease. Therefore, we hypothesize:

H1: The anthropomorphism of AI virtual streamers has a positive impact on online viewers' extent of expectation.

In livestream, emotional richness plays a significant role, as AI virtual streamers capable of expressing diverse emotions prove to be more effective and appealing (Gong & Sun, 2025). According to emotional contagion theory, viewers are influenced by emotionally positive AI virtual streamers who establish emotional connections with them, causing viewers to experience similar positive emotions (Barsade et al., 2018). This emotional resonance increases viewers' possibility to purchase products and develop relationships with the AI virtual streamers. Based on this discussion, we proposed:

H2: The emotional richness of AI virtual streamers has a positive impact on online viewers' extent of expectation.

Interactivity refers to the ability to provide timely and effective service to (Zheng et al., 2023). The interactivity of AI virtual streamers has a positive impact on viewers, promoting consumer purchase intentions. Highly interactivity AI streamers create a sense of personalization, significantly enhancing viewer satisfaction across livestream platforms. When successfully engaging in interactive communication with viewers and actively providing relevant product information, AI virtual streamers establish long-term relationships with their viewers (Qin & Liu, 2024). Therefore, we hypothesize:

H3: The interactivity of AI virtual streamers has a positive impact on online viewers' extent of expectation.

Online viewers with different levels of AI literacy differ in their abilities to extract, identify, and cognitively process information while watching livestreams, leading to different attitudes toward AI virtual streamers. Viewers with higher AI literacy can more effectively identify information (Liu et al., 2024), enabling them to more comprehensively evaluate various aspects of AI virtual streamers' performance. When AI virtual streamers present high-quality professional content, viewers with high AI literacy may develop continued viewing behaviors based on rational judgment rather than merely novelty. Therefore, we hypothesize:

H4a: AI literacy positively moderates the relationship between anthropomorphism and expectation.

H4b: AI literacy positively moderates the relationship between emotional richness and expectation.

H4c: AI literacy positively moderates the relationship between interactivity and expectation.

According to ECT (Oliver, 2014), viewers develop initial expectations about AI virtual streamers before interaction, and their satisfaction depends on whether these expectations are met or exceeded. When viewers feel satisfied, they tend to continue watching AI virtual streamers. Therefore, we hypothesize:

H5: Online viewers' extent of expectation has a positive impact on satisfaction.

H6: Online viewers' satisfaction has a positive impact on continuance watching intention of AI virtual streamers.

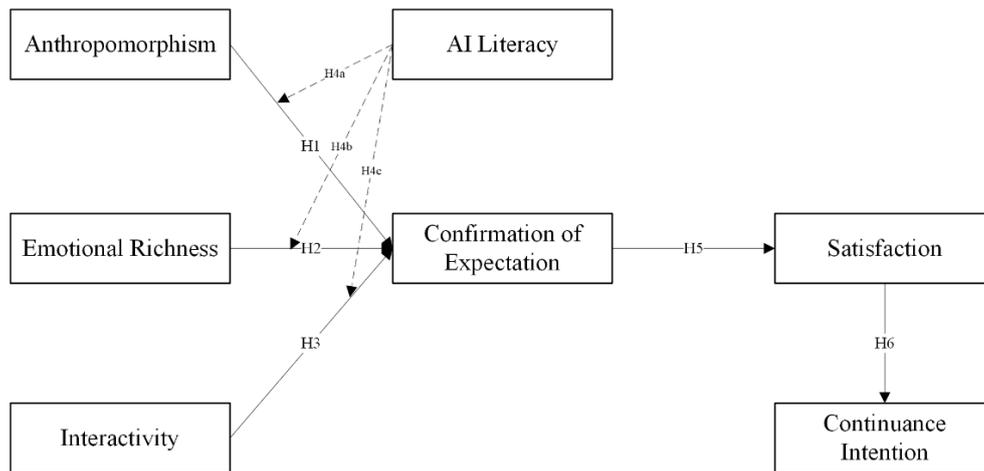The research framework is shown in Figure 1.

Fig 1. Research Framework

Method

This study proposes to employ quantitative survey methodology to empirically test the research framework and hypotheses. Data collection will target active users who possess direct AI virtual streamer experience on major platforms including YouTube, and Taobao Live. All measurement items will employ seven-point Likert scales (Norman, 2010). This study plans to conduct pilot testing with approximately 50 respondents to verify instrument

clarity and assess preliminary reliability before proceeding to full-scale data collection targeting 400 or more valid responses. This study will use Smart PLS 4.0 to construct a Structural Equation Model (SEM) for data analysis, with the objective of examining the complex interrelationships among variables (Hair et al., 2017), enabling us to have insights into both the direct and indirect factors that contribute to online viewers' continuance watching intention with AI virtual streamers.

Expected Contributions

This proposed research aims to deliver three critical contributions. First, by identifying which specific AI characteristics drive continuance intention, the study will enable E-commerce platforms to strategically develop resources. Second, by establishing satisfaction as the critical mediating mechanism, the research will reveal actionable intervention points for platforms having continuance failures. Third, and most critically for competitive advantage, the research aims to demonstrate how viewers' AI literacy enables effective user segmentation with distinct optimization strategies.

Conclusion

As artificial intelligence technology advances, AI virtual streamers are likely to become more prevalent in digital commerce and entertainment. This study lays the foundation for understanding how to effectively implement this technology to meet viewer expectations. The findings not only enhance academic understanding but also provide practical guidance for brands and platforms using AI virtual streamers in their marketing strategies, with implications extending to AI implementation across diverse organizational and consumer environments.

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