



**JOURNAL OF INFORMATION
SYSTEM AND TECHNOLOGY
MANAGEMENT
(JISTM)**

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A PROPOSED THEORETICAL FRAMEWORK OF DIGITAL FATIGUE AND DISCONTINUANCE IN LIVE STREAMING COMMERCE (LSC)

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Article Info:

Article history:

Received date: 30.04.2026

Revised date: 17.05.2026

Accepted date: 25.06.2026

Published date: 30.06.2026

To cite this document:

Azmi, L. F., Ahmad, N., & Iahad, N. A. (2026). A Proposed Theoretical Framework of Digital Fatigue and Discontinuance in Live Streaming Commerce (LSC). *Journal of Information System and Technology Management*, 11 (43), 261-275.

Abstract:

This study proposes a theoretical framework to explain how digital fatigue leads to discontinuance in live streaming commerce (LSC). Although gamified features such as personalization, rewards, timers, competition, and badges enhance consumer engagement, they may also trigger behavioral addiction and digital fatigue. Integrating Cognitive Load Theory, Flow Theory, Social Cognitive Theory, and Social Media Engagement Theory, the framework highlights how compulsive participation driven by gamified elements results in cognitive overload and emotional exhaustion, reducing satisfaction and increasing the likelihood of discontinuance. The proposed theoretical framework shows pathway of gamified antecedents → behavioral addiction → digital fatigue → discontinuance that demonstrates how overstimulation undermines sustained engagement. The study emphasizes the need for balanced gamification strategies that encourage mindful participation. Developing effective strategies to minimize digital fatigue can ultimately help businesses sustain user engagement and ensure the long-term viability of live streaming commerce. By extending discontinuance research into the LSC context, this study contributes a holistic model linking gamification, behavioral addiction, and digital fatigue, providing both academic insights and practical guidance for sustainable social commerce strategies.

DOI: 10.35631/JISTM.1143015

Keyword:

Behavioral Addiction, Digital Fatigue, Discontinuance, Gamification, Live Streaming Commerce



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Introduction

Live streaming commerce (LSC) has rapidly emerged as a powerful digital retail strategy, combining real-time interaction with e-commerce to enhance consumer engagement and drive purchasing decisions. By leveraging interactive features such as live chat, influencer endorsements, and personalized recommendations, these platforms create an immersive shopping experience that fosters social presence and trust (Liu & Zhang, 2024). However, as consumers engage more frequently in LSC, they may experience digital fatigue, which refers to a state of mental exhaustion caused by excessive and prolonged online interactions (Gregersen et al., 2023). This phenomenon can significantly impact user behavior, leading to decreased engagement, dissatisfaction, and ultimately, discontinuance of LSC. Despite its growing relevance, the relationship between gamification features in the LSC platform and its influences to behavioral addiction can lead to digital fatigue, and discontinuance remains underexplored, necessitating a deeper theoretical investigation.

Digital fatigue in LSC arises from various factors, including cognitive overload, emotional exhaustion, and technology-induced stress (Korunovska & Spiekermann, 2019). The constant engagement driven by gamified features and interactive elements can lead to behavioral addiction, where users feel compelled to stay active on the platform (Cheng & Ebrahimi, 2023). This addiction increases exposure to promotional content, heightens the pressure to make quick purchasing decisions, and demands continuous participation, all of which contribute to digital fatigue (Sun & Bao, 2023). As users become mentally exhausted, their willingness to engage in future live shopping events decreases (Hao, 2025). While previous studies have extensively examined factors influencing LSC adoption and engagement, limited attention has been given to how addiction-driven fatigue leads to discontinuance. Understanding the link between constant engagement, which leads to addiction, digital fatigue, and discontinuance is crucial for platform developers, marketers, and researchers to create sustainable and user-friendly LSC experiences. This study aims to propose a theoretical framework that explains the mechanisms through which digital fatigue influences discontinuance behavior in LSC. By integrating perspectives from cognitive load theory, social media fatigue research, and IS discontinuance research, this framework will provide a holistic understanding of the phenomenon.

Literature Review of Digital Fatigue and Discontinuance in Live Streaming Commerce

LSC has gained significant attraction as an innovative digital retail model that integrates real-time interaction with e-commerce transactions. Research in this domain has largely focused on its effectiveness in enhancing consumer engagement, trust, and purchase intentions (Dwivedi

et al., 2021; Wang et al., 2022). Previous studies also highlight the role of social presence, influencer marketing, and interactive features in shaping user behavior and driving conversions (Chen et al., 2024). However, despite its rapid adoption, a growing body of research suggests that prolonged exposure to LSC can lead to cognitive overload and emotional exhaustion, contributing to digital fatigue (Zhang et al., 2022). While previous studies primarily examine factors that drive engagement, limited attention has been given to understand the mechanisms that lead to user disengagement and discontinuance in gamified LSC platforms.

Given the gaps in existing literature, this study proposes a theoretical framework that integrates cognitive load theory, flow theory, social cognitive theory, and social media engagement theory to explain the relationship between digital fatigue and discontinuance in live streaming commerce. Cognitive Load Theory explains how too much information can overwhelm the brain, making it harder to process and remember (Sweller, 1988). In LSC, too many visuals, fast-speaking hosts, and constant promotions can overload consumers, causing digital fatigue, reducing interest, and possibly stopping them from watching or buying (Zhang et al., 2022; Al-Youzbaky & Hanna, 2022; Appiah Kusi et al., 2022). Flow theory explains how people feel fully focused and enjoy an activity when there is a balance between challenge and skill (Csikszentmihalyi, 1990). Studies show that when interruptions disrupt the flow in live shopping, consumers feel overwhelmed and may stop engaging or purchasing (Kumar & Taneja, 2024). Additionally, Social Cognitive Theory (SCT) explains how people learn by watching others, influenced by personal, social, and environmental factors (Bandura, 1986). In LSC, consumers follow influencers and peers, but too much information and nonstop engagement can cause digital fatigue, making them less interested (Kim & Kim, 2022). Lastly, social media engagement theory explains how people interact with online content through likes, comments, and shares, driven by emotions, value, and social connections (Brodie et al., 2013). In LSC, features like live chats and influencer recommendations keep consumers engaged, but too many ads and constant interaction can cause digital fatigue, making them lose interest (Wang & Deng, 2022).

Methodology

This study adopts a conceptual research design aimed at developing a comprehensive theoretical framework that explains the relationship between gamification features in Live Streaming Commerce (LSC), behavioral addiction, digital fatigue, and discontinuance behavior. A content analysis approach was used, drawing on an extensive review of existing literature in the domains of gamification, cognitive load theory, flow theory, social cognitive theory, and social media engagement. Scholarly articles, empirical studies, and theoretical models related to LSC, digital fatigue, behavioral addiction, and discontinuance were systematically examined to identify key antecedents and behavioral mechanisms. Through thematic synthesis, five gamified antecedents (personalization, timers, rewards, competition, and badges) were extracted as core factors influencing compulsive gamified LSC use. The literature was further analyzed to map the sequential pathway linking these gamification elements to behavioral addiction, digital fatigue, and eventual discontinuance. The resulting framework was developed by integrating concepts from digital fatigue research and IS discontinuance theories, providing a holistic and theory-driven representation of how overstimulation in LSC leads to disengagement. This conceptual methodology ensures that the proposed framework is grounded in empirical evidence while contributing new insights into user well-being and sustainable engagement strategies in gamified LSC.

Theoretical Framework and Hypotheses Development

The selected antecedents, namely personalization (Wang, C., et al., 2025), timer (Ma et al., 2025), rewards (Che et al., 2023), competition (Chang & Yu, 2023), and badge (Zhang, G., et al., 2025), are game elements gathered from the literature on gamification implementation in live streaming commerce and social media, which have been empirically proven to significantly increase user engagement and influence compulsive usage or addiction. Therefore, the proposed framework aims to provide a comprehensive understanding of the antecedents and consequences of digital fatigue, as well as the behavioral mechanisms that lead to discontinuance. The findings from this research will not only contribute to theoretical advancements but also offer practical insights for live streaming commerce platforms seeking to enhance user experience and thus reduce customer retention. Developing effective strategies to minimize digital fatigue can ultimately help businesses sustain user engagement and ensure the long-term viability of live streaming commerce.

Gamified Live Streaming Commerce (LSC) Antecedents

Gamification in LSC is defined as the application of game-design elements (such as personalization, timer, rewards, badges, and competition) into the non-game context of real-time video shopping to enhance consumer experience (Chang & Yu, 2023). This strategy aims to leverage users' intrinsic motivations like achievement, competition, and enjoyment to drive higher engagement, sustain continuous watching behavior, and ultimately increase purchase intentions (Yuliawan et al., 2025). Gamified LSC features make shopping more engaging with interactive platforms. Key elements include personalization, which tailors content to users, and timers, which create urgency with limited-time deals. Rewards offer discounts or points, while badges recognize achievements and loyalty. Competition adds excitement through leaderboards and challenges. These elements work together to create a fun and dynamic shopping experience.

Personalization

Personalization in gamified live streaming commerce plays a crucial role in enhancing user engagement by tailoring content, rewards, and promotions based on individual preferences and behaviors. Advanced algorithms analyse user data, such as browsing history, purchase patterns, and engagement levels, to deliver customized incentives, including personalized discount offers, exclusive loyalty rewards, and targeted product recommendations (Chandra et al., 2022). While personalization enhances the shopping experience by making it more relevant and appealing, it can also contribute to behavioral addiction and digital fatigue. Research on personalized gamification suggests that hyper-personalized incentives exploit psychological triggers such as FOMO (fear of missing out), leading users to engage compulsively with live shopping platforms (Lopes et al., 2023). Moreover, the continuous exposure to algorithm-driven personalized content can create a sense of cognitive overload, where users struggle to process excessive, highly relevant stimuli, resulting in digital fatigue (Li, K., et al., 2023). This combination of personalized gamified engagement and overstimulation may lead to increased emotional exhaustion, compulsive purchasing behaviors, and platform discontinuance as users seek relief from the overwhelming digital environment.

H1a: Personalization positively influences behavioral addiction.

H1b: Personalization positively influences digital fatigue.

Timer

Timers are a prevalent gamification element in live streaming commerce, often used in flash sales, limited-time discounts, and countdown deals to create urgency and drive impulsive purchasing behavior. The psychological mechanism behind timers is rooted in scarcity and time pressure, which heighten consumers' fear of missing out (FOMO) and push them to make rapid decisions (Dhir et al., 2018). While this strategy effectively increases conversion rates, it can also contribute to behavioral addiction by reinforcing compulsive shopping habits, as users continuously return to the platform to catch the next exclusive deal (Huo et al., 2023). Additionally, the persistent exposure to countdowns and time-limited offers can lead to digital fatigue, as consumers feel pressured to stay engaged and constantly monitor upcoming sales to avoid missing potential bargains (Marjerison et al., 2022). Over time, this can result in cognitive overload and emotional exhaustion, ultimately diminishing the enjoyment of the shopping experience and increasing the likelihood of disengagement or discontinuance.

H2a: Timer positively influences behavioral addiction.

H2b: Timer positively influences digital fatigue.

Reward

Rewards are a fundamental gamification element in live streaming commerce, designed to enhance user engagement by offering incentives such as loyalty points, cashback, exclusive discounts, and surprise gifts. These rewards create a sense of excitement and anticipation, reinforcing engagement and potentially leading to addictive shopping behavior (Chang & Yu, 2023). While such mechanisms effectively increase consumer participation and purchasing behavior, they can also contribute to behavioral addiction by fostering compulsive shopping tendencies, as users continuously seek the next reward (Huo et al., 2023). Additionally, the unpredictability of rewards can heighten excitement but also lead to digital fatigue, as consumers feel compelled to stay engaged for extended periods to maximize benefits (Dhir et al., 2018). The pressure to accumulate rewards, combined with frequent promotional notifications, can contribute to cognitive overload and emotional exhaustion, reducing overall shopping satisfaction and increasing the likelihood of discontinuance.

H3a: Reward positively influences behavioral addiction.

H3b: Reward positively influences digital fatigue.

Competition

Competition is a key gamification element in live streaming commerce, often implemented through leaderboards, bidding wars, limited-quantity giveaways, and exclusive VIP tiers that encourage users to outperform others in securing deals or rewards. This competitive dynamic taps into consumers' intrinsic motivation for achievement and social comparison, driving them to engage more frequently and intensely with the platform (Chang & Yu, 2023). Research on digital engagement suggests that competitive gamification can foster behavioral addiction by reinforcing compulsive participation, as users feel pressured to continuously monitor and engage in live shopping events to maintain their ranking or win exclusive perks (Liu, J., & Song, 2025). However, while competition enhances excitement and urgency, it can also lead to digital fatigue, as users experience stress and cognitive overload from the constant need to stay ahead of others (Li, C., et al., 2024). The emotional exhaustion caused by prolonged competition may reduce shopping satisfaction and lead to disengagement, ultimately increasing the likelihood of discontinuance.

H4a: Competition positively influences behavioral addiction.

H4b: Competition positively influences digital fatigue.

Badges

Badges are a widely used gamification element in live streaming commerce, serving as visual indicators of user achievements, loyalty status, or participation milestones. These digital rewards create a sense of accomplishment and recognition, reinforcing continued engagement by leveraging social comparison and status-driven motivation (Chang & Yu, 2023). Studies suggest that earning badges can trigger a psychological reward system, encouraging users to return frequently to unlock higher-tier achievements or exclusive privileges (Wang, F., et al., 2024). However, while badges enhance engagement and customer loyalty, they can also contribute to behavioral addiction by fostering compulsive shopping habits, as users strive to maintain or improve their status (Ramadhan et al., 2024). Additionally, the continuous pursuit of new badges may lead to digital fatigue, as users experience pressure to participate in repeated live shopping events to avoid losing their ranking or missing out on limited-time rewards (Al-Youzbaky & Hanna, 2022). Over time, this can result in cognitive overload and emotional exhaustion, potentially diminishing user satisfaction and increasing the likelihood of disengagement.

H5a: Badges positively influences behavioral addiction.

H5b: Badges positively influences digital fatigue.

Behavioral Effects of Gamified Live Streaming Commerce (LSC)

The behavioral effects of Gamified Live-Streaming Commerce (LSC) stem from its engaging and interactive design, which influences consumer actions and decision-making. Gamification elements such as personalization, rewards, timers, badges, and competition can drive higher engagement, encourage impulsive purchases, and increase user retention. However, these features may also lead to unintended consequences, such as behavioral addiction, where users develop compulsive shopping habits due to continuous incentives and real-time interactions. At the same time, excessive exposure to gamified elements can result in digital fatigue, causing mental exhaustion, reduced attention, and eventual disengagement. While gamification enhances the shopping experience, understanding its behavioral impact is crucial to balancing user engagement and well-being.

Behavioral Addiction

Live streaming commerce platforms increasingly incorporate gamified features, such as limited-time discounts, interactive rewards, virtual badges, and personalization preference, to enhance user engagement and drive purchasing behavior. While these elements create excitement and motivation for consumers, they can also contribute to behavioural addiction by reinforcing compulsive shopping tendencies (Huang & Guo, 2023). Gamification leverages psychological mechanisms such as instant gratification, social comparison, and intermittent rewards to sustain user engagement (Hamari, 2019). Studies on digital consumer behaviour suggest that such mechanisms can lead to excessive and impulsive participation, as users seek to maximize rewards and avoid the fear of missing out (FOMO) (Qin et al., 2024). As a result, consumers may develop habitual or addictive behaviours, frequently returning to live streaming commerce platforms even when purchases are unnecessary, which can contribute to long-term financial and psychological consequences.

Behavioural addiction in live streaming commerce is further escalated by social and psychological drivers embedded within gamified features. Features such as interactive bidding, influencer-hosted giveaways, and ranking systems encourage users to continuously engage with the platform to maintain their status or increase their chances of winning (Ramadhan et al., 2024). These mechanisms exploit reinforcement learning principles, where unpredictable rewards such as winning a limited-time deal or receiving exclusive perks would create dopamine-driven engagement cycles (Sun et al., 2019). Research in digital addiction highlights that such reinforcement structures can lead to compulsive behaviours, making it difficult for consumers to disengage from the platform even when they recognize its negative effects (Huang & Guo, 2023). In the context of live streaming commerce, this compulsive engagement may result in increased digital fatigue, financial overextension, and eventual dissatisfaction, potentially leading to discontinuance.

Despite the short-term benefits of gamified engagement, prolonged exposure to these addictive mechanisms may have adverse effects on user well-being and platform sustainability. Studies indicate that excessive gamification can create cognitive overload, emotional exhaustion, and financial distress, prompting users to disengage once they become aware of the manipulative nature of these strategies (Xu et al., 2023). Additionally, when users perceive that they are being excessively influenced or manipulated by gamified incentives, their trust in the platform may decline, leading to higher rates of discontinuance (Li, C., et al., 2024). Addressing the risks of behavioural addiction requires a balanced approach to gamification that prioritizes user well-being while maintaining engagement. Future research should explore strategies for ethical gamification in live streaming commerce to mitigate compulsive behaviours while fostering long-term, sustainable consumer relationships.

H6: Behavioral addiction positively influences digital fatigue.

Digital Fatigue

Digital fatigue is a psychological state characterized by cognitive overload, emotional exhaustion, and reduced motivation due to prolonged digital engagement (Qin et al., 2024). In the context of live streaming commerce, digital fatigue arises from continuous exposure to real-time interactions, high-intensity promotional content, and an overwhelming flow of information (Kumar & Taneja, 2024). Unlike traditional e-commerce, where consumers can browse at their own pace, live streaming commerce creates a sense of urgency, often pressuring users to make quick purchasing decisions. This constant stimulation can lead to mental fatigue, decreased attention span, and ultimately, reduced willingness to engage in future live shopping sessions. Research on digital media consumption suggests that excessive exposure to interactive online environments contributes to user exhaustion and disengagement (Al-Youzbaky & Hanna, 2022), yet its specific effects on live streaming commerce remain underexplored.

One of the key contributors to digital fatigue in live streaming commerce is information overload. Consumers are bombarded with continuous streams of product recommendations, influencer promotions, and user-generated comments, all competing for their attention in real time (Zhang, X., et al., 2022). Studies indicate that when users are presented with too much information in a short period, their cognitive processing capacity becomes overwhelmed, leading to decision fatigue and frustration (Qin et al., 2024). In live shopping scenarios, this overload can diminish the perceived enjoyment of the experience and increase the likelihood of disengagement. Moreover, live streaming commerce often incorporates gamification

elements, such as time-limited discounts and interactive giveaways, which, while intended to enhance engagement, may also contribute to digital fatigue by creating continuous pressure to participate (Chang & Yu, 2023).

Beyond cognitive overload, emotional exhaustion plays a significant role in digital fatigue within live streaming commerce. The highly interactive nature of these platforms requires consumers to maintain constant engagement through chat interactions, influencer discussions, and product evaluations, leading to increased emotional strain (Li, C., et al., 2024). Additionally, the pressure to keep up with social trends, influencer recommendations, and limited-time deals can generate stress and anxiety, reducing overall satisfaction with the shopping experience. Prior research on digital fatigue in social media suggests that when users experience persistent emotional exhaustion, they are more likely to disengage from the platform entirely (Zhang, X., et al., 2022). In live streaming commerce, this suggests that digital fatigue may serve as a precursor to discontinuance, highlighting the need for businesses to design user-centric strategies that balance engagement with digital well-being.

H7: Digital fatigue positively influences discontinuance behaviour.

Consequence: Discontinuance Behavior in LSC

Discontinuance in digital environments refers to the process by which users reduce or completely cease their engagement with a platform due to dissatisfaction, fatigue, or evolving preferences (Soliman & Rinta-Kahila, 2020). In the context of live streaming commerce, discontinuance can be influenced by multiple factors, including digital fatigue, perceived value decline, and negative shopping experiences. Unlike traditional e-commerce, live streaming commerce relies on real-time engagement, social interaction, and promotional urgency, which can create an overwhelming experience for consumers (Wang, S., et al., 2022). When users feel mentally exhausted from continuous exposure to interactive shopping content, they may gradually reduce their participation or completely abandon live shopping platforms. Existing studies on digital platform discontinuance suggest that users often weigh the cognitive and emotional costs of engagement against perceived benefits, and when fatigue outweighs satisfaction, discontinuance becomes a likely outcome (Fu et al., 2020).

Research on technology discontinuance identifies two primary types: replacement discontinuance and abandonment discontinuance (Chen & Li, 2024). Replacement discontinuance occurs when users shift to alternative shopping platforms, such as traditional e-commerce websites or social media-based shopping, due to dissatisfaction with live streaming commerce. Abandonment discontinuance, on the other hand, refers to users permanently withdrawing from live shopping experiences without seeking alternatives. In live streaming commerce, digital fatigue plays a crucial role in both forms of discontinuance, as consumers may seek less cognitively demanding shopping methods or withdraw entirely from interactive digital retail. Furthermore, studies on technology exhaustion indicate that frequent exposure to high-intensity digital engagement can lead to long-term avoidance behaviors, making it difficult for platforms to retain fatigued users (Korunovska & Spiekermann, 2019).

Another critical factor contributing to discontinuance in live streaming commerce is the erosion of trust and perceived value. Research suggests that excessive commercialization, aggressive sales tactics, and misleading promotions in live streaming can lead to consumer scepticism and eventual disengagement (Tandon et al., 2021). When users feel that live shopping platforms prioritize sales over user experience, they may perceive lower value in continued participation,

prompting discontinuance. Additionally, repeated exposure to time-limited discounts and high-pressure sales strategies can create consumer fatigue, diminishing the novelty and excitement of live shopping experiences over time (Chen & Li, 2024). To mitigate discontinuance, live streaming commerce platforms must adopt balanced engagement strategies that minimize fatigue while maintaining consumer trust and satisfaction. Understanding the relationship between digital fatigue and discontinuance is essential for ensuring long-term user retention in this rapidly evolving digital retail landscape. In LSC, digital fatigue may contribute to discontinuance by diminishing users' perceived value of the platform, reducing engagement frequency, and leading to eventual disengagement. Existing models, such as the Technology Continuance Theory (Liao et al., 2009), suggest that users weigh the cognitive and emotional costs of continued use against perceived benefits, which may lead them to discontinue participation when fatigue outweighs engagement rewards. However, there is a lack of theoretical frameworks specifically addressing how digital fatigue influences discontinuance in LSC. Through a literature review, this study attempts to identify the antecedents that influence addiction behavioral then lead to social media fatigue, also its possible consequences, thus, a proposed theoretical framework developed (see Figure 1).

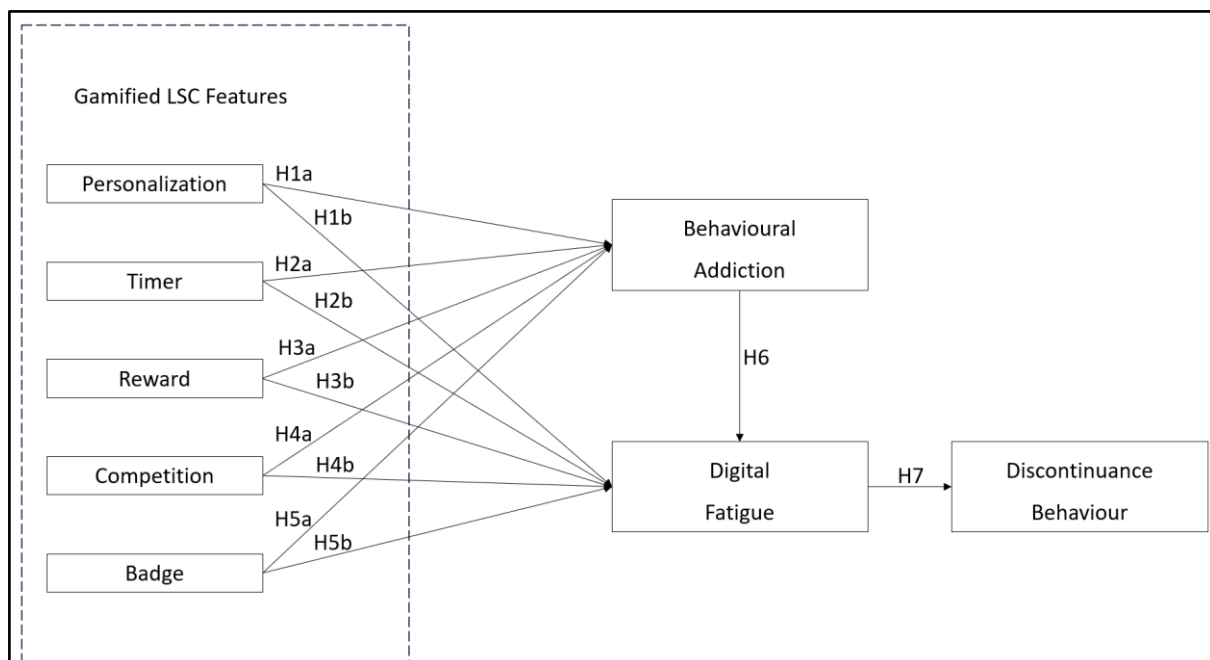


Figure 1: Proposed Theoretical Framework

Source: Self-Adaptation

Conclusion and Recommendation

The proposed theoretical framework in this research illustrates the impact of gamified live streaming commerce (LSC) features on consumer behavior, particularly in fostering behavioral addiction, leading to digital fatigue, and ultimately resulting in discontinuance behavior. The framework identifies five key gamification elements such as personalization, timers, rewards, competition, and badges that enhance user engagement by making the shopping experience more interactive and immersive. While these features are designed to increase participation and stimulate consumer interest, they also contribute to unintended consequences. As users repeatedly engage with gamified elements, they may develop behavioral addiction,

characterized by compulsive shopping tendencies and an inability to disengage from the platform. However, sustained engagement under such conditions often leads to digital fatigue, where consumers experience cognitive overload, mental exhaustion, and a diminished sense of enjoyment due to the excessive stimuli present in LSC. The theoretical framework further highlights that behavioral addiction influences digital fatigue, as users struggle to regulate their engagement and become overwhelmed by the constant interaction demands of the platform. As digital fatigue accumulates, consumers are more likely to withdraw from live streaming commerce, resulting in discontinuance behavior, where they either reduce or entirely cease their engagement.

This research highlights the importance of designing balanced gamification strategies in LSC to maximize user engagement while minimizing negative psychological effects. Businesses and platform developers should consider implementing mechanisms that prevent excessive engagement, such as controlled notifications, periodic breaks, or adaptive gamification elements that adjust based on user behavior. By refining gamification techniques within the framework, platforms can create a more sustainable and enjoyable shopping environment, ensuring long-term consumer retention without leading to addiction-driven fatigue and discontinuance. Future research should empirically validate the proposed theoretical framework by examining the causal relationships between gamified antecedents, behavioral addiction, digital fatigue, and discontinuance in live streaming commerce. While this study offers a theory-driven conceptual model, quantitative methods such as structural equation modelling (SEM) or experimental designs could be employed to test the mediating effects of behavioral addiction and digital fatigue across diverse user groups and platform environments. Future studies may also explore moderating variables such as self-control, digital literacy, personality traits, or platform design features to understand how individual differences shape users' susceptibility to fatigue and discontinuance.

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- Acknowledgements:** The authors would like to express their sincere gratitude to Universiti Teknologi Malaysia for providing the necessary resources and support throughout the course of this research. Special appreciation is extended to co-authors who contributed valuable insights and constructive feedback, which greatly enhanced the quality of this paper.
- Funding Statement:** No Funding
- Conflict of Interest Statement:** The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the International Journal of Information System and Technology Management (JISTM).
- Ethics Statement:** This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.
- Author Contribution Statement:** All authors contributed significantly to the development of this manuscript. Lina Fatini Azmi was responsible for the conceptualization, methodology, and overall supervision of the study. Norasnita Ahmad handled literature review, drafting, and critical revision of the manuscript. Noorminshah A.Iahad contributed to the development of theoretical framework & hypotheses. All authors read and approved the final version of the manuscript prior to submission.
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