

Investigating impulse buying behavior in live streaming commerce: The role of social presence

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Abstract

Live streaming is changing the paradigm of people's entertainment and consumption. It has been adopted by many small individual sellers to improve their market performance, leading to the emergence of live streaming commerce. Although existing literature has paid attention to consumer purchase behavior in live streaming commerce, little knowledge on impulse buying can be available. Drawing on social presence theory and cognitive-affective framework, this paper attempts to develop a theoretical model to investigate how social presence affects consumers' urge to buy impulsively through the mediating mechanism of cognitive state (i.e., product risk) and affective state (i.e., affective intensity). This paper is expected to advance knowledge on consumers' impulse buying in live streaming commerce.

1. Introduction

Along with the booming speed of digital technology, a new form of social media known as live streaming with high entertainment value has become increasingly popular in recent years. It was reported that Chinese live streaming users reached approximately 617 million in 2020 [1]. Live streaming platforms provide spaces in which users not only communicate with others but also generate interesting content. On live streaming platforms, the live streamer can broadcast various programs in real time, such as games and talent shows [2]. Viewers can interact with the live streamer and other viewers by posting *danmaku* comments scrolled across the screen in real time [3]. Live streaming plays an important role in establishing smart cities by injecting fresh vitality into smart governance at an urban level.

The rapid development of live streaming services has promoted the emergence of live streaming commerce. An increasing number of companies, especially small individual sellers, are diving into this new form of e-commerce to reap economic benefits. It was reported that the live streaming market in China reached 433.8 billion yuan in 2019 [4]. The rapid

growth of live streaming commerce leads to calls for academic studies about this phenomenon [5]. However, most studies still focus on consumers' behavior in traditional social commerce contexts [6] [7]. This study attempts to address this research gap by examining consumers' impulse buying behavior in live streaming commerce.

Live streaming commerce has great potential to drive impulse buying because of its high interactivity and visibility. Shopping through live streaming makes consumers perceive as if they are buying products in a physical store. The sense of "on the spot" can be termed as social presence that refers to the level of perceiving others' existence in a computer-mediated environment [8]. Live streamers usually show or try products on themselves, offering consumers a more realistic experience. These visual cues result in increased social presence. Many studies have documented that social presence positively influences product affect [9], perceived enjoyment [8], and trust [7] that are important predictors of impulse buying. For instance, Jiang et al. [10] found that increased social presence enhances consumers' trust and subsequent purchase intention. Fang et al. [11] found that social presence elicited by the *danmaku* system in online video-streaming has a positive effect on users' e-loyalty. Social presence plays an important role in influencing individuals' perception, intention, and behavior in the online environment. However, little is known about the underlining mechanism of how social presence influences impulse buying.

Considering the impulsive urge to buy is a strong indicator of actual impulse buying [12], our paper attempts to develop a research model connecting social presence with the impulsive urge to buy by the mediating mechanism of psychological states. Two key issues are examined in this paper. First, according to previous literature, we propose a multidimensional construct of social presence that is more suitable for live streaming commerce, namely social presence of live streamers, social presence of other consumers, and social presence of products. Second, drawing on the cognitive-affective framework, this study investigates how social presence influences the urge to buy impulsively through both affective (i.e., affect intensity)

and cognitive states (i.e., product risk). By addressing the above two issues, this study is expected to enrich existing literature on both social presence and impulse buying.

The rest of this paper is organized as follows. First, we present literature review on live streaming, smart city, impulse buying, and social presence theory. Next, we develop research hypotheses and establish our research model. Finally, we conclude with a summary of the current study and illustrate future research.

2. Literature review

2.1. Live streaming and smart city

Live streaming allows everyone to broadcast diverse content and to watch others' live content [13]. Live streaming is more social than ever because two-way synchronized communication has been achieved in the live streaming context. Thanks to its communication potential, live streaming can be used to perform and improve smart governance [14]. For one thing, the authorities can adopt live streaming as a tool to improve service provisions and mutual communication [14]. For another, online platforms such as live streaming platforms play an important role in developing smart cities, as they harvest and process a vast volume of real-time data from citizens [15]. These data can be used to analyze the behavior of citizens, so as to provide them with more and better services.

2.2. Impulse buying

Impulse buying refers to the sudden and unplanned purchase behavior with lack of deliberate consideration of consequence [16]. Impulse buying is highly driven by external events or stimuli. When subjected to strong external stimuli, consumers tend to feel a strong desire to buy items and have difficulty controlling their actions [17] [18].

Impulse buying is universal in both online and offline shopping environments, yet most of which occurs in the online environment [19]. About 40% of online expenditures come from impulse buying [20]. Considering impulse buying is often induced by external stimuli, many scholars have identified technical artifacts as drivers of impulse buying. For instance, previous empirical studies have investigated how website quality [17], website attributes [19], website atmospheric cues [21], and system design [22] influence online impulse buying. Table 1 shows a summary of existing literature on impulse buying in recent years. However, these studies mainly focused on technical characteristics of computer-mediated tools while ignored consumers' perception. Since online shopping can essentially be seen as a kind of human-computer interaction, it is necessary to consider both IT artifact manipulations and consumers' perception together [23]. Social presence indicates the ability of an online medium to make users perceive others' existence [24], which integrates the technical features of live streaming commerce and consumers' perception. This motivates us to explore the relationship between social presence and the impulsive urge to buy.

Table 1. Summary of impulse buying literature

Author(s)	Antecedents	Main findings
Parboteeah et al. [25]	Task-relevant cues; Mood-relevant cues; Perceived usefulness; Perceived enjoyment	Mood-relevant and task-relevant cues positively influence perceived enjoyment; Mood-relevant and task-relevant cues positively influence perceived usefulness; Perceived enjoyment positively influences the impulsive urge to buy.
Vonkemana et al. [9]	Interactivity; Vividness; Local presence; Product risk; Product affect	Interactivity and vividness of product presentation formats positively influence local presence; Local presence positively influences product affect; Product affect positively influences the impulsive urge to buy.
Wells et al. [17]	Personal impulsiveness; Website quality	Website quality and personal impulsiveness positively influence the impulsive urge to buy.
Wu et al. [26]	Limited-quantity scarcity; Limited-time scarcity; Perceived arousal; Personal impulsiveness	Limited-quantity scarcity and limited-time scarcity positively influence perceived arousal; Perceived arousal positively influences impulse purchase behavior.
Zhang et al. [27]	Utilitarian value; Hedonic value;	For those with high impulsiveness, hedonic value positively influences online review browsing;

	Online review browsing; Personal impulsiveness	For those with low impulsiveness, utilitarian value positively influences online review browsing; Online review browsing positively influences the impulsive urge to buy.
Liu et al. [19]	Product availability; Visual appeal; Website ease of use; Impulsiveness; Normative evaluation; Instant gratification	Visual appeal positively influences normative evaluation and instant gratification; Impulsiveness, normative evaluation, and instant gratification positively influence the urge to buy impulsively
Zheng et al. [28]	Interpersonal influence; Visual appeal; Portability; Hedonic browsing; Utilitarian browsing	Interpersonal influence positively influences hedonic browsing; Visual appeal positively influences hedonic browsing and utilitarian browsing; Portability positively influences utilitarian browsing; Hedonic browsing positively influences the urge to buy impulsively
Wu et al. [29]	Web skills; Challenges; Website design; Perceived usefulness; Flow experience; Trust	Web skills, challenges and perceived usefulness positively influence flow experience; Trust and low experience positively influence the urge to buy impulsively

2.3. Social presence theory

Social presence refers to the level of perceiving others' salience during the interaction [24]. Originally, Short et al. [24] emphasized that mechanical characteristics of a communication medium determine the extent to which an individual perceives the existence of others. This perspective assumes that the mechanical characteristic of online medium is inherent [30]. The online media that convey more communication cues are regarded as being warm, sociable, sensitive, and personal [30]. In this perspective, social presence is often viewed as a unidimensional construct that is measured by the ability of a computer-mediated medium (e.g., websites) to convey a feeling of human warmth, psychological closeness, and sociability [30] [31].

In addition to human-computer interaction, users also have to communicate with other members in an online community [7] [32]. Interpersonal interaction makes users feel they are psychologically present with others [33]. Therefore, recent findings provide prospective insights into the social presence theory by considering social presence as a multidimensional construct [7] [34]. For instance, Shen and Khalifa [35] assumed three elements of social presence, namely affective presence, awareness presence as well as cognitive presence. In the context of social commerce, Lu et al. [7] proposed three dimensions of social presence, i.e., perception of the web, social presence of

others, and social presence of interaction with seller. Nadeem et al. [34] conceptualized a construct of the social presence consisting of social presence of online brand community, social presence of interaction, and social presence of others. However, a key element is ignored, that is, the social presence of products. Traditional online marketplaces offer fewer opportunities to facilitate interaction with products. However, live streaming commerce with rich visual and verbal cues is conducive to careful observation and psychological interaction with products. Therefore, in live streaming commerce, consumers can interact with the live streamers, other potential consumers (viewers), and the recommended product. Based on previous literature and features of live streaming shopping, this study re-defines a three-dimension construct of social presence: social presence of live streamers, social presence of other consumers, and social presence of products.

3. Research model and hypotheses

3.1. Effect of social presence of live streamers on product risk and affective intensity

Live streaming can make consumers perceive as if they are interacting with the live streamer face to face by disclosing lots of sensory cues (e.g., the live streamer's face, body gesture, and sound) [36]. Since it is difficult

for online sellers to hide information or identity within a high social presence environment [37], untrustworthy behavior is expected to decrease [7]. As a result, individuals tend to develop trust in one another when they perceive the interaction between two parties as a real conversation [37]. Subsequently, they are more likely to build trust towards the products they recommend, and thus the perceived product risk reduces [36] [38]. Accordingly, we hypothesize:

H1a: Social presence of live streamers will negatively influence perceived product risk.

Live streamers often answer consumers' questions quickly. This synchronous communication is conducive to enjoyable experiences and positive affects [10]. In addition, aesthetic stimuli (e.g., psychical feature and facial expression) are beneficial for increased social presence of live streamers [8] [39], which can increase the live streamer's appeal to consumers. Consumers are easy to develop a positive stereotype of an attractive live streamer [40], which drives consumers to form a positive attitude towards the products they endorse [41] [42]. Accordingly, we hypothesize:

H1b: Social presence of live streamers will positively influence perceived affective intensity.

3.2. Effect of social presence of other consumers on product risk and affective intensity

Generally, consumers know little about the true quality of products. The *danmaku* system on live streaming platforms allows consumers to read, post, and review comments [11]. In this way, consumers can exchange product information with each other, which can help make purchase decisions. Therefore, this co-shopping experience can reduce consumers' perception of product risk and increase their confidence in decision-making [43]. Accordingly, we hypothesize:

H2a: Social presence of other consumers will negatively influence perceived product risk.

Shopping is regarded as a social activity performed with companions, such as friends or family members [7]. Shoppers generate a hedonic experience when interacting with their shopping companions [44]. Live streaming commerce can satisfy consumers' social needs since the *danmaku* system elicits the perceived presence of other shopping partners. High-level perceived presence of others is beneficial to enhance warmer and more friendly communication; and thus,

consumers are more likely to have a positive shopping experience [45]. Accordingly, we hypothesize:

H2b: Social presence of other consumers will positively influence perceived affective intensity.

3.3. Effect of social presence of products on product risk and affective intensity

Since consumers are unable to touch, try or feel products in the online shopping environment, they have difficulty judging product quality [9]. Live streaming commerce provides a sensory-rich and highly interactive product presentation format, which makes consumers perceive the product right in front of them. High-level product presence provides opportunities to examine all aspects of the product [46] and helps consumers gain more knowledge about the recommended product [47]. As a result, consumers may perceive less product risk. Accordingly, we hypothesize:

H3a: Social presence of products will negatively influence perceived product risk.

Physical product trial makes consumers feel enjoyable. However, on online platforms, consumers cannot physically interact with the product due to the separation of time and space [9]. High-level product presence may be a solution to this concern [9] by narrowing the psychological distance between consumers and products [47]. Live streaming commerce has the potential to offer consumers a shopping experience that resembles a physical product experience. Live streamers often try products themselves for a detailed demonstration, which usually is accompanied by a vivid expression of product experiences. This may drive consumers to imagine what will be like to use the product and subsequently generate affective responses [48]. Accordingly, we hypothesize:

H3b: Social presence of products will positively influence perceived affective intensity.

3.4 Effects of product risk and affective intensity on the urge to buy impulsively

If the product quality cannot be evaluated, perceived product risk will increase. Many studies have shown that consumers are reluctant to purchase products with high risk [38]. However, little knowledge is available concerning the impact of product risk on consumers' desire for impulsive buying [9]. Although many scholars argue that impulse buying is mostly

dominated by affects [49], some studies confirmed that several cognitive factors do affect the urge to purchase impulsively, such as utilitarian value [50], website

usefulness [29], and website quality [17] [25]. A recent study has proved that increased perceived risk leads to

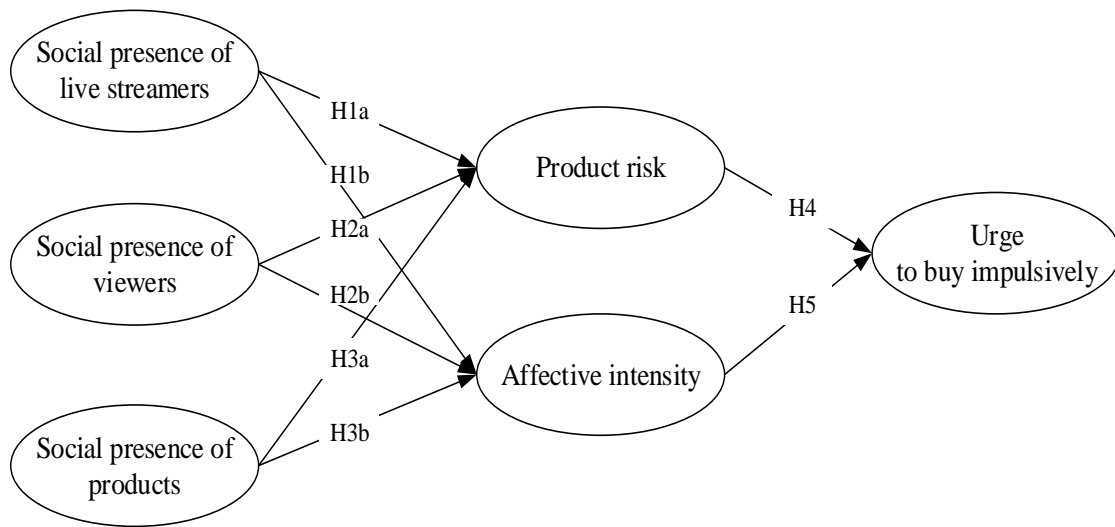


Figure 1. Research model

less impulsive desire for a travel destination [47]. Accordingly, we hypothesize:

H4: Perceived product risk will negatively influence the urge to buy impulsively.

Impulse buying is motivated by hedonic value [28] [48], and therefore often couples with positive affective statuses including excitement, gratification [19], and enjoyment [25]. Many research has confirmed that consumers have a high tendency to buy impulsively when they are experiencing strong positive affect or moods [29] [48]. Accordingly, we hypothesize:

H5: Perceived affective intensity will positively influence the urge to buy impulsively.

Figure 1 shows our research model.

4. Conclusion and future research

4.1 Conclusion

Although existing studies on live streaming have investigated various users' behavior, including engagement [51], gifting [3], and loyalty [11], the exploration of live streaming commerce is limited. Inspired by studies on live streaming and social commerce, we notice the research gap and necessity in the relationship between social presence and impulse buying in live streaming commerce. The *danmaku*

system on live streaming platforms enables interaction between the live streamer and consumers, interaction among consumers, and interaction between consumers and products. Considering both the technical features of live streaming and consumers' perception, this study proposes a multidimensional model of social presence, including social presence of live streamers, social presence of other consumers, and social presence of products. Individuals' behaviors are influenced by both cognitive and affective systems [52]. Therefore, we conclude that social presence may influence consumers' urge to buy impulsively through the mediating mechanism of product risk (cognition) and affective intensity (affect). Overall, we build a theoretical model to link three social presence dimensions to consumers' urge to buy impulsively and investigate the mediating effect of perceived product risk as well as affective intensity in these relationships.

4.2 Limitation and future research

This research is still in progress. Currently, we have not yet considered the influence of COVID-19 pandemic. Due to the pandemic, including locking down or not suggesting going out, more people may tend to stay at home and using internet for live streaming commerce. The COVID-19 may also influence the buyer's emotion and buying behavior, and may also influence the live streaming commerce mode in some other way. Future research will be encouraged to explore more special features in the new

normal of COVID-19. Additionally, we will conduct a survey to test the validity of our theoretical model empirically. Firstly, according to the existing measurements and scales, an online questionnaire will be designed. Secondly, we will distribute the questionnaire to individuals who have experiences on purchasing products in live streaming platforms. Finally, this study will follow the two-step analytical procedure to test our research model using tools such as Smart PLS3.0, in which measurement model and structural model will be tested sequentially. Research results will provide empirical evidence for our research model. This research will also provide theoretical contribution on behavior study in live streaming commerce, as well as providing practical implications for the live streaming platform operators to build smart cities and system developers.

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