Live Streaming E-Commerce

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Contributor: mingwei li , Lucinda Sawyer ,

The prevalence of live streaming has driven a boom in e-commerce activities, namely live streaming e-commerce. This new e-commerce mode uses live streaming to engage customers on e-commerce platforms, where broadcasters leverage the new medium as a direct source for online sales. In typical live streaming e-commerce, the broadcaster can create and deliver real-time video to the customers. The broadcaster can engage potential audiences to join the live stream to consume the content. For example, the broadcasters can talk about the last beauty trend, introduce the product, and try on different items for the viewers. During the content consumption process, the viewers can also ask questions about the products, chat with the broadcaster and other viewers via text, and even send a virtual gift to their appreciated broadcasters.

live streaming e-commerce   social presence   Online Impulse Buying

1. Live Streaming E-Commerce

Live streaming is a type of user-generated content [1]. It allows people to stream live content, such as singing, dancing, or playing video games [2]. In the beginning, the live streaming platforms are mainly focused on gaming and entertainment. With its development, it also boosts its fusion with market campaigns, thus the rise in live streaming e-commerce [3]. With the evolution of live streaming e-commerce, there are two main types: e-commerce sites with live streaming features, and social network platforms with e-commerce activities [4]. The former indicates that live streaming features as an alternative way to present products or services that are embedded into the e-commerce website [1][3]. Some examples include Amazon Live and Taobao Live, and Taobao live is one of the e-commerce giants in China, while the latter indicates that e-commerce activities are embedded into social network platforms or short video platforms [5], for example, Facebook Live or YouTube Live. Some Chinese short video platforms, such as Douyin, also incorporate e-commerce activities into their platform.

Live streaming e-commerce is more likely to induce customers' impulse buying behaviors than traditional website e-commerce for the following reasons. First, in the traditional e-commerce website, interactive activities mainly occur between the customer and the website features [6]. However, with the advantage of digital technologies, broadcasters can upload real-time video content and present the products from different perspectives in live streaming e-commerce. The traditional customer–website interaction has shifted to the interactive activities between broadcasters and customers or among different customers in live streaming e-commerce [6][7]. Second, live streaming e-commerce can foster a better sociable and more authentic experience for customers than a traditional e-commerce website [8][9]. Broadcasters in live streaming can present and provide detailed information of the products or try on the products (e.g., cosmetics and clothes). The customers can also receive real-time

feedback from broadcasters in live streaming e-commerce. Conversely, viewers in the live stream can also interact with each other to share shopping experiences by sending texts in the chatbox. Therefore, live streaming e-commerce can foster a more interactive, authentic, and visual shopping experience, which attracts more potential customers and improves the customer's impulse buying rate.

With the development of live streaming e-commerce, growing attention has been paid to this emerging topic. However, the current research efforts have mainly focused on customer engagement and purchase intention in live streaming e-commerce [3][8][9]; impulse buying as a large portion of sales in e-commerce gains relatively less attention compared with current studies.

2. Online Impulse Buying

Online impulse buying can be defined as "a purchase that is unplanned, the result of an exposure to a stimulus, and decided on the spot" [10]. Some recent studies have provided a more extensive conceptualization in that impulse buying is "a process–outcome mechanism within the domain of an individual–psychological approach that occurs when a consumer experiences a sudden, often persistent urge to buy something immediately" [11][12]. Such impulse buying occurs after experiencing an urge to buy and may stimulate emotional conflict [13][14]. Impulse buying can be further divided into four different types: pure impulse buying, reminder impulse buying, suggestion impulse buying, and planned impulse buying [15][16]. Most current studies adopted the pure impulse buying proposed by Beatty and Ferrell [13], which was usually measured using survey questionnaires.

With the progress of live streaming e-commerce and its application, online impulse buying is common among customers [11][17][18]. First, previous live streaming studies have mainly focused on factors that influence customer impulse buying, such as social presence, customer trust, flow state, and IT affordance. For example, Ming et al. [19] investigated how presence influences customer impulse buying in the context of live streaming commerce. They found that social presence influences customer flow state and trust, thus causing impulse buying. Sun et al. [8] investigated how live streaming influences customers' purchase intention in social commerce. They found that visibility affordance, meta-voicing affordance, and guidance shopping affordance can positively influence customer purchase intention through live streaming engagement. Second, interactive activities in live streaming induce consumers to make a purchase [6]. For example, Wongkitrungrueng et al. [20] indicated that the interactive activities among live broadcasters and audiences and the authentic presentation of products can easily induce customer buying behavior. Third, the current studies also investigated the attractiveness of the live streamer, the expertise of the live streamer, and the live streaming purchase convenience on impulse buying responses [21][22].

3. Social Presence

Social presence refers to the "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships" [23]. The concept of social presence originates from the field of social psychology and describes the degree to which individuals perceive the presence of participation from the use of

telecommunications [24]. It was first used in the settings of mediated communication and then extended to information and communication technology (ICT) research to explain the social aspect of technology [25]. With the internet becoming a critical retailing channel, the concept of social presence, as a virtual experience, has been widely used to study customer behavior in an ICT-enabled virtual environment, such as ICT-mediated communication, online e-commerce, social media e-commerce, and live streaming e-commerce [26][27][28].

Social presence plays an important role in the online shopping context. Currently, social presence has often measured the warmth of media or human feeling of sociability from ICT [28]. However, this one-dimensional conceptualization of social presence might not be suitable in live streaming e-commerce, because customers not only use live streaming features to interact with the broadcaster but also to interact with other viewers in the virtual room. Thus, a multi-dimensional conceptualization may be more suitable in the context of live streaming e-commerce. This multi-dimension conceptualization aligns well with the one dimension for considering social presence as the subjective quality of the medium, which makes the interactions more social and salient. Therefore, the social presence in live streaming e-commerce from three dimensions was conceptualized: the social presence of the broadcaster, the social presence of viewers, and the social presence of live streaming e-commerce.

The social presence of the broadcaster refers to the extent to which customers perceive the direct interaction with the broadcaster in live streaming [19][28]. The live streaming room is a virtual world, the interaction between broadcasters and viewers transcends time and space. The live broadcasters can display products in detail, interact with the audiences, and offer them personalized service in this virtual space in real time [20]. Therefore, live streaming commerce has a better sense of social presence. For example, Guo et al. [29] used the concept of the broadcasters' screen presence to investigate the factors that influence customer participation behavior in the context of mobile live streaming. They found that the customer commerce behaviors are determined by broadcasters' screen presence, especially the facial and hand appearances.

The social presence of viewers refers to the extent to which customers perceive the presence of other customers in the live streaming [19]. The chatbox feature in live streaming e-commerce can also increase the social presence through interaction with other viewers in the virtual room because the interactions among viewers can make online shopping more social. Conversely, consumers can share information about products in the live stream, and word-of-mouth valence from other viewers can play an informative role for customers to better know the products and experience others' consumption.

The social presence of live streaming refers to the live streaming's capability to convey a feeling of human contact, sociability, warmness, and sensitivity [3]. In traditional online shopping, consumers can only see some pictures of the products or text descriptions of the products from sellers [30]. While live streaming e-commerce allows audiences to watch video streams in real time, this shopping experience can enhance the sense of sociality, sensitivity, and human contact through communication using voice. For example, Shen and Khalifa [31] indicated that when the customer experiences a sense of social presence in computer-mediated interaction, the experience will reduce the distance between products and customers, thus fueling impulse buying on the internet.

4. Pleasure and Arousal

Mehrabian and Russell [32] indicated that dimensional emotional states can be divided into two dimensions: pleasure/displeasure and arousal/sleepiness. Pleasure refers to the degree to which individuals feel happy, joyful, or satisfied. Arousal refers to the degree to which individuals feel stimulated, excited, or alert [32]. Prior empirical evidence shows that the emotional state is the main driver of impulse behavior [31]. Therefore, the dimensional emotional state has also been widely applied in the online and offline shopping contexts to investigate how environmental and atmospheric cues influence the consumer's online behaviors. For example, Hsieh et al. [33] investigated the effect of pleasure and arousal in customer-brand relationship building. Liao et al. [34] also indicated that the presentation mode and product type can increase consumers' pleasure and arousal, inducing impulse buying in the traditional online shopping industry.

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