

Exploring Millennial Shoppers' Impulse Buying Tendency in Live Streaming Shopping

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ABSTRACT

In recent years, impulse buying in live streaming shopping has become increasingly prevalent, but a comprehensive understanding of this phenomenon is still lacking. Based on social exchange theory (SET), this paper examines the two-way exchanges between streamer-customer and customer-customer that trigger customers' impulse buying tendency. Given that the Millennial generation is the core consumption group in China's live streaming commerce market, we conducted an online survey with a sample size of 730 Millennials in China. After analyzing the data using partial least squares structural equation modeling (PLS-SEM), the results show that content quality, interaction quality, streamer credibility and review consistency can influence impulse buying tendency. These findings enhance our knowledge within the domain of live streaming commerce, shedding light on how effective marketing relationship strategies can transform the customer experience in live streaming shopping, ultimately leading to an increase in impulsive purchases.

Keywords: Live streaming shopping; Social exchange theory; Millennials; Impulse buying; PLS-SEM.

INTRODUCTION

Live streaming commerce has taken the e-commerce world by storm, creating a vibrant online community where products connect with customers through real-time interaction (Luo et al., 2024). This dynamic approach has proven to be an effective way for products to connect with customers, offering real-time interaction and a strong online presence (Fu & Hsu, 2023; Sun et al., 2019). The China Internet Network Information Center (2023) reported that by the end of December 2022, China had 751 million live streaming users, which accounted for 70.3% of the total Internet users. Of these users, 515 million engaged in live streaming commerce, which accounted for 48.2% of the total Internet users. In 2021, the market size of China's live streaming commerce was RMB 2.27 trillion. Estimates suggest that it could potentially grow to around RMB 4.9 trillion (equivalent to US\$704 billion) by the end of 2023 (Statista, 2022). Live streaming commerce has significant untapped potential for expansion. The explosive growth and immense popularity of Live streaming commerce underscore its transformative impact on the shopping experience, offering consumers a multifaceted engagement platform beyond traditional text and image-based interactions (Wongkitrungrueng & Assarut, 2020).

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Due to the widespread adoption of live streaming shopping, numerous online retailers have integrated live streaming into their marketing strategies to boost sales (Sun et al., 2019). The popularity of live streaming commerce can be attributed to its fusion of characteristics from both social commerce and social media (Cai & Wohn, 2019). These characteristics are evident in the real-time interaction between streamers and viewers (Ming et al., 2021). Utilizing real-time videos and bullet-screen features, live streaming shopping provides a more immersive shopping experience and personalized guidance from streamers (Zuo & Xiao, 2021). Consequently, viewers often find themselves making impromptu purchases when streamers introduce products (Lin et al., 2022). However, despite the conducive environment for impulsive purchases created by interactive live streaming commerce, not all streamers can effectively convert viewers into immediate sales. Many struggle to find efficient methods to enhance impulsive buying behavior. The relatively limited focus on impulsive buying in the context of live streaming commerce can be attributed to its recent emergence, which has spanned only a few years in the Chinese market (Li et al., 2022).

Previous studies live streaming studies have predominantly focused on customer engagement, viewership, adoption intention, or stickiness behaviors (e.g., Bao & Zhu, 2023; Chen & Lin, 2018; Hu et al., 2017; Wongkitrungrueng & Assarut, 2020). However, the exploration of impulsive buying in the context of live streaming commerce remains relatively underdeveloped (Fu & Hsu, 2023; Lin et al., 2022). When engaging in live streaming shopping, the social support from streamers' real-time product demonstration and co-viewers' bullet screen comments (i.e., scrolling comments in the real-time video) greatly influence customers' unplanned purchase decisions (Lu & Chen, 2020). However, few studies pay enough attention to the impacts of social exchange between streamer-customer and customer-customer on impulsive buying tendency.

To close these research gaps, we adopted the social exchange theory (SET) to examine how social exchanges between streamer-customer and customer-customer facilitate customers' impulsive buying tendency. Specifically, we postulate content quality, interaction quality, and streamer credibility as factors in facilitating social exchange between streamer and customer, while adopting review consistency and resonant contagion as factors in stimulating customer-customer reciprocal exchange in triggering unplanned purchases. This is because the exchanged resources encompass social resources such as information and social support (Cropanzano & Mitchell, 2005). In live streaming shopping, both streamers and co-viewers provide not only informational support but also social influences to influence customers' purchase decisions. As highlighted in a review of online impulsive buying research, social influence is an important driver of online impulsive buying tendency (Chan et al., 2017). Thereby, the SET is adopted, to provide theoretical support for exploring the social exchange between streamer-customer and customer-customer in triggering impulsive buying tendency. Using reciprocal relationship as an anchor point for understanding customer behavior, this study examines the connection between social exchanges and impulsive buying tendency. To reach the objective, the study attempts to address the following research questions:

Q1. How do social exchanges between streamer and customer (i.e., content quality, interaction quality, and streamer credibility) influence impulsive buying tendency in live streaming shopping?

Q2. How do the social exchanges between customer and customer (i.e., review consistency, and resonant contagion) influence impulsive buying tendency in live streaming shopping?

The subsequent sections of this study will be organized as follows. Firstly, we will conduct an in-depth analysis of relevant theories and constructs in the existing literature. This will be followed by the introduction of the research framework and the presentation of our proposed hypotheses. Next, we will outline the methodology used, providing detailed insights into the data analysis procedures and presenting the resulting findings. Subsequently, we will embark on a thorough discussion of the implications derived from both theoretical and managerial standpoints. Additionally, we will explore the limitations of the study and offer suggestions for future research endeavours to further enhance understanding in this field.

LITERATURE REVIEW

Social Exchange Theory (SET)

Social Exchange Theory (SET) suggests that interpersonal connections are established when one party offers something valuable to the other. This exchange can encompass either financial assets or social assets, including rewards, information, support, and influence (Cropanzano & Mitchell, 2005). In essence, customers may enter into a relationship with a seller either to gain financial advantages or simply for the enjoyment of interacting with them (Boateng et al., 2019; Zhang et al., 2021). Expanding on this concept, SET is a well-established and widely applied theoretical framework in various fields such as marketing (Hayes et al., 2016; Tóth et al., 2022), tourism and hospitality (Boateng et al., 2019; Jiang & Kim, 2015), and social psychology (Stafford & Kuiper, 2021; Zhao & Detlor, 2023). Through the framework of SET, numerous studies have explored the reciprocal advantages of both financial and social exchanges in forecasting customers' attitudes and behavioral intentions. Concerning financial exchanges, prior research has delved into the influence of economic incentives (e.g., coupons) on attitudes (Boateng et al., 2019), crowdfunding intention (Zhao et al., 2017), and usage intentions (Huang et al., 2018). In the realm of social exchange, scholars have investigated the impact of information, support, or influence derived from social interactions on aspects such as brand engagement (Hollebeek, 2011), perceived value (Jiang & Kim, 2015), customer trust (Luo, 2002), and purchase decision (Leong & Meng, 2022; Shiao & Luo, 2012). Corresponding to the interactive nature of live streaming shopping, SET is an ideal theory for explaining the reciprocating relationship mechanism between streamers and customers in facilitating positive behavioral outcomes (Leong & Meng, 2022; Rather & Sharma, 2019). In association with the literature, the present study adopted SET to explain the social exchange between streamer-customer and customer-customer (i.e., information quality, interaction quality, streamer credibility, review consistency, and resonant contagion) in triggering impulsive buying tendency.

RESEARCH MODEL AND HYPOTHESES

Streamer-Customer Exchange

Information quality is an important product cue in the live streaming shopping context. It encompasses multiple dimensions, including usefulness, vividness, and believability of the product-related information presented within the broadcast room. Useful information provides value to customers by addressing their needs, questions, and preferences for products. Vividness represents the richness of a mediated environment. Believability reflects the reliability of information perceived by customers (Zhang et al., 2021).

Prior studies identify information quality as an important information support that influences customers' cognitive process in purchase decision-making (Kimiagari & Malafe, 2021). In the context of online shopping, when customers perceive that they are receiving high-quality information about a product, they may feel a sense of reciprocity (Cropanzano & Mitchell, 2005). This can trigger impulsive buying tendencies as customers are more likely to make a purchase as a way of reciprocating the value they've received through the detailed and helpful information provided by streamers (Chen et al., 2019). Moreover, credible information plays a significant role in building trust between customers and sellers. According to SET, trust is a fundamental component of social exchange. When customers trust the information they receive, they are more confident in purchasing the products being showcased in the broadcasting room (Zhang et al., 2022). Therefore, this research proposes the following hypothesis:

H1: *Information quality positively influences impulsive buying tendency.*

Interaction quality is a vital signal conveyed by the streamers within the context of live streaming shopping. It signifies how customers perceive the quality of services from the streamers during real-time interaction. Customers' perception of interaction quality includes three dimensions: real-time interaction, responsiveness, and empathy. Real-time interaction is the real-time communication between the streamer and customers. Responsiveness refers to the extent to which streamers answer customers' questions and inquiries in a timely and accurate manner. And empathy relates to streamers' individualized attention to customers (Li et al., 2022; Zhang et al., 2021).

According to SET, prior research in the online shopping context has identified interaction quality as an essential emotional support from service providers (Mukherjee & Bhal, 2017; Sierra & McQuitty, 2005), which greatly influence customers' purchase decision (Kim et al., 2020). As suggested by Kang et al. (2021), interaction quality serves as a positive stimulus by creating an engaging and dynamic environment for customers. With timely and effective responses from the streamers, customers' queries, comments, and feedback can be addressed properly. Consequently, customers will reciprocate with positive emotion and feedback to streamers (Li et al., 2022; Xu et al., 2020). When they feel valued and heard, they are willing to pay more effort and time to engage in meaningful conversation with the streamer (Hollebeek et al., 2019). Furthermore, when streamers genuinely demonstrate care and individual attention to customers, it strengthens the reciprocal relationship bond between streamer and customer and facilitates the purchase decision process (Leong & Meng, 2022; Lin & Nuangjamnong, 2022). Therefore, this study puts forward the following hypothesis:

H2: *Interaction quality positively influences impulsive buying tendency.*

Streamer credibility is an important heuristic cue conveyed by streamers in the social environment. This concept, as defined by Ohanian (1990), refers to how message recipients perceive the credibility of a streamer, regardless of the actual content of the message. It reflects the extent to which individuals consider the source of information to be attractive, expert, and trustworthy. These three attributes of the information endorser are associated with both impulsive buying tendency and the perception of product quality (Zhu et al., 2022).

Existing research has proven the positive social influences of streamer credibility on customers' purchase decisions. For example, streamers who are perceived as attractive, whether physically or in terms of their personality and product presentation, tend to catch customers' attention

more effectively (He et al., 2022; Yue et al., 2023). This initial attention can lead to further information exchange between the streamer and the customer, as customers are drawn to the streamer's appeal and are more likely to stay engaged in the broadcasting room (Qiu et al., 2021, Xu et al., 2020). Besides, streamers' credibility is more critical for subjective communications like recommendations (Lin & Nuangjamnong, 2022). A higher level of perceived credibility encourages customers to immerse themselves in live content, thus increasing the effectiveness of communication (Jiang et al., 2022), enhancing customers' understanding of promoted products and increasing the likelihood of impulsive purchase (Mabkhot et al., 2022; Zhu et al., 2022). Thus, we propose the following hypothesis:

H3: *Streamer credibility positively influence impulsive buying tendency.*

Customer-Customer Exchange

Review consistency is a typical social cue from peers (i.e., co-viewers) in the live streaming shopping context. It is defined as the degree to which the content is consistent across other online reviews that discuss the same target (Luo et al., 2015). In the broadcasting room, the peer-generated product evaluation was posted on the bullet screen. Viewers can express their emotions, thoughts, and reactions using text-based messages, emojis, and stickers, enhancing the overall viewing experience (Hu et al., 2017).

Previous research indicates that bullet-screen reviews demonstrating consistency can enhance trust in the reviewed product or service (Hewei, 2022). This is attributed to the fact that the repetition of similar information minimizes cognitive effort, leading to greater confidence in the content (Gao et al., 2021). Besides, consistent reviews diminish the uncertainty and hesitation customers might feel regarding a product or service, ultimately leading to impulsive buying tendencies. This increased comfort level encourages customers to further explore and interact with co-viewers (Guo & Sun, 2022; Liang et al., 2021). Moreover, consistent positive reviews can validate the product information (Gao et al., 2021). When they see similar feedback from co-viewers on the bullet screen, it reinforces their belief in the accuracy of the information and encourages them to purchase the product or service (Hewei, 2022; Shankar et al., 2020). Therefore, we propose the following hypothesis:

H4: *Review consistency positively influences impulsive buying tendency.*

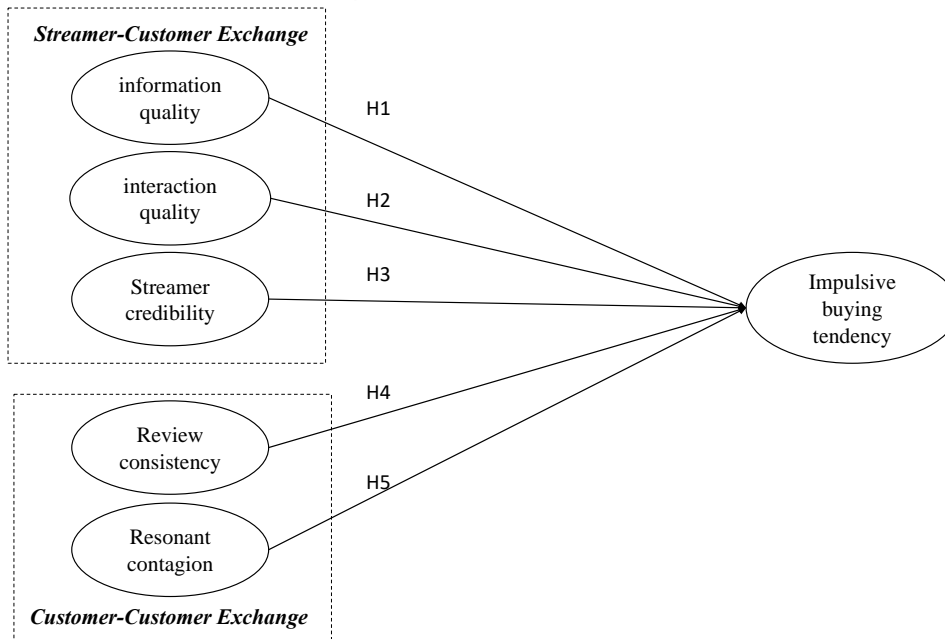
Resonant contagion is a social cue from co-viewers in creating an enthusiastic online atmosphere. It is a phenomenon where a customer's thoughts and actions are shaped by the influence of others (Lim et al., 2012), and becomes especially pronounced when there is a strong alignment of values among individuals (Hu et al., 2017). This positive social influence encourages viewers to engage more actively, as they feel they are part of a like-minded community.

Existing research shows that resonant contagion plays a significant role in live streaming shopping by fostering a sense of connection and shared values among viewers. In live streaming studies, Hu et al. (2017) mentioned that resonant contagion fosters a sense of belonging and group identification among viewers who share similar values and motivations. This identification encourages viewers to actively participate in discussions, exchange ideas, and support each other (Liu-Thompkins et al., 2022). Moreover, as highlighted by Guo et al. (2021), shared values and motivations create an emotional bond among viewers. As customers observe co-viewers engaging in impulsive buying or showing enthusiastic reactions to products

on bullet-screen, they might experience a feeling of belonging and susceptibility to social influence. This sense of community and belonging can serve as a driving force for impulsive buying behavior, as individuals are motivated to conform to the preferences and recommendations of the group (Chen, 2023; Hu & Chaudhry, 2020). Therefore, we propose:

H5: *Resonant contagion positively influences impulsive buying tendency.*

Figure 1: Research Framework



METHODOLOGY

Data Collection Procedures

Throughout the data collection process, the online questionnaires were disseminated using a purposive sampling approach via a reputable online survey platform (accessible at <https://www.wjx.cn/>) from February to April 2023. Participation in the survey was extended exclusively to individuals who had experience in live streaming shopping within the past one month and were born between 1981 and 2000. Respondents failing to meet these initial screening criteria were not included in the study. We received a total of 880 responses, but after excluding incomplete and straight-line responses, we confirmed 730 valid responses. Table 1 presents the demographic details of the participants. Among all respondents, the majority were female (54.52%), held bachelor (41.11%), and reported a monthly income in the range of RMB4,001 to RMB7,000 (39.72%). Furthermore, most participants made purchases 2-3 times within a month (33.01%).

Table 1: Demographic profile

Variable	Characteristics	N=730	%
Gender	Male	332	45.48
	Female	398	54.52
Marital status	Single	31	4.25
	Married	633	86.71
	Divorced	66	9.04
Highest Level of Education	Below secondary	58	7.94
	Secondary	122	16.71
	Diploma	125	17.12
	Bachelor	300	41.11
	Master	105	14.38
Monthly Income	PhD or higher	20	2.74
	Less than RMB4,000	156	21.37
	RMB4,001-RMB7,000	290	39.72
	RMB7,001-RMB10,000	121	16.68
	RMB10,001-RMB13,000	116	15.89
Occupation	RMB13,001 and above	47	6.44
	Student	19	2.60
	Enterprise employees	331	45.34
	Government officers	203	27.81
	Self-employed	153	20.96
Purchase Frequency	Freelance	24	3.29
	Less than once a month	132	18.08
	Monthly	210	28.77
	2-3 times a month	241	33.01
	Weekly or higher frequency	147	20.14

Measures

The measurement items for all constructs were derived from existing literature, with minor adjustments to fit the context of live streaming commerce. Given that the survey was conducted in China and the original survey items were in English, we employed the forward-back translation technique to ensure accurate translation (Brislin, 1970). The items for content quality and interaction quality were adopted from Zhang et al. (2021). Streamer credibility was assessed using the scale introduced by Ohanian (1990). Review consistency was sourced from Luo et al. (2015) and resonant contagion was adopted from Lim et al. (2012). Lastly, the measurement items for impulsive buying tendency were based on the scale established by Beatty & Ferrell (1998).

RESULTS

Data Estimation Technique

Initially, we analysed respondents' demographic data and assessed common method variance using SPSS (version 29). Subsequently, we conducted a PLS-SEM analysis using SmartPLS version 4. As recommended by Chin et al. (2020), our selection of PLS-SEM aligns with its exploratory-predictive nature. While our research hypotheses and resulting path model are causally grounded, we anticipate that our model will demonstrate a high level of predictiveness and provide valuable practical insights (Becker et al., 2023; Cheah et al., 2018).

Common Method Variance

We conducted two statistical remedies to address potential Common Method Variance (CMV). Firstly, using Harman's single-factor test, we found that the variance explained by the first factor was 26.673% (which is less than the threshold of 50%) as recommended by Podsakoff et al. (2012). This indicates that CMV is not a significant issue in this study. Secondly, we conducted a full collinearity test (see Table 2), and the results showed that the Variance Inflation Factor (VIF) values ranged from 1.063 to 1.382 (< 3.33), thus CMV was not a concern in our data (Kock, 2015).

Measurement Model

Our examination affirmed the reliability and validity of the measurement model. All internal consistency measures (Cronbach's Alpha, rho A, and Composite Reliability) presented in Table 2 surpassed the conventional threshold of 0.70, signifying high reliability (Hair et al., 2019). Moreover, the construct loadings were all above 0.708 with a significance level of $p < 0.01$, indicating strong reliability of the measurement items. Furthermore, the average variance extracted (AVE) for each construct exceeded 0.5, demonstrating robust convergent validity (Hair et al., 2019). This suggests that a significant portion of the variance in the constructs is captured by their respective measurement items, thus confirming the reliability of the measurement model. In terms of discriminant validity, the heterotrait-monotrait (HTMT) values in Table 3 were all below the threshold of 0.85, indicating that each construct is sufficiently distinct from others in the model (Henseler et al., 2015). This provides evidence that the constructs measure distinct latent constructs and do not overlap excessively, supporting the discriminant validity of the measurement model.

Table 2: Assessment of Measurement Model on Reliability, Convergent Validity, and Full Collinearity

Construct	Item	Loadings	T-value	FC	α	CR	AVE	
Content quality (HOC)	<i>Believability (LOC)</i>	BEL1	0.885	18.875**	1.320	0.894	0.926	0.758
		BEL2	0.853	15.762**				
		BEL3	0.866	18.116**				
		BEL4	0.878	21.959**				
	<i>Usefulness (LOC)</i>	USE1	0.861	15.703**	1.267	0.888	0.922	0.748
		USE2	0.864	14.723**				
		USE3	0.856	14.751**				
		USE4	0.880	18.484**				
	<i>Vividness (LOC)</i>	VIV1	0.871	15.442**	1.310	0.911	0.934	0.738
		VIV2	0.874	15.391**				
		VIV3	0.849	16.066**				
		VIV4	0.849	12.475**				
VIV5		0.851	12.916**					
<i>Empathy (LOC)</i>	EMP1	0.869	13.081**	1.290	0.891	0.924	0.753	
	EMP2	0.875	15.457**					

		EMP3	0.851	12.998**					
		EMP4	0.878	16.386**					
Interaction Quality (HOC)	<i>Responsiveness (LOC)</i>	RES1	0.858	15.807**	1.291	0.879	0.917	0.734	
		RES2	0.877	16.569**					
		RES3	0.840	13.368**					
		RES4	0.852	15.203**					
Streamer credibility (HOC)	<i>Real time interaction (LOC)</i>	RTI1	0.883	14.638**	1.328	0.855	0.912	0.775	
		RTI2	0.880	13.609**					
		RTI3	0.878	12.862**					
Streamer credibility (HOC)	<i>Attractiveness (LOC)</i>	ATT1	0.875	13.972**	1.097	0.898	0.929	0.765	
		ATT2	0.896	18.385**					
		ATT3	0.859	14.165**					
		ATT4	0.870	16.116**					
Streamer credibility (HOC)	<i>Expertise (LOC)</i>	EXP1	0.837	15.820**	1.063	0.906	0.930	0.728	
		EXP2	0.895	19.764**					
		EXP3	0.849	18.559**					
		EXP4	0.840	14.009**					
		EXP5	0.844	15.888**					
Resonant contagion	<i>Trustworthiness (LOC)</i>	TRU1	0.850	10.325**	1.382	0.905	0.929	0.724	
		TRU2	0.861	10.975**					
		TRU3	0.836	11.087**					
		TRU4	0.855	12.141**					
		TRU5	0.854	13.180**					
Review consistency		RC1	0.908	27.257**	1.312	0.872	0.921	0.795	
		RC2	0.885	19.687**					
		RC3	0.883	21.957**					
Impulsive buying tendency		RCN1	0.875	11.646**	1.227	0.847	0.907	0.765	
		RCN2	0.901	13.332**					
		RCN3	0.848	13.209**					
Impulsive buying tendency		IBT1	0.870	29.977**	1.253	0.837	0.902	0.754	
		IBT2	0.859	29.051**					
		IBT3	0.876	33.416**					

Note(s): CI= 95% confidence interval bias corrected; **p < 0.01; FC=Full Collinearity; AVE=Average variance extracted; CR=Composite reliability; α =Cronbach's alpha; HOC=higher-order construct; LOC=lower-order construct.

Table 3: Assessment of the Discriminant Validity using HTMT

Construct	1	2	3	4	5	6	7	8	9	10	11	12
1) Attractiveness												
2) Believability	0.323											
3) Empathy	0.434	0.338										
4) Expertise	0.440	0.326	0.359									
5) Impulsive buying tendency	0.367	0.419	0.343	0.426								
6) Responsiveness	0.272	0.333	0.291	0.347	0.380							
7) Real-Time Interaction	0.336	0.406	0.268	0.272	0.332	0.376						
8) Resonant contagion	0.338	0.259	0.420	0.393	0.308	0.295	0.325					
9) Review consistency	0.383	0.334	0.341	0.262	0.460	0.334	0.419	0.259				
10) Trustworthiness	0.271	0.397	0.343	0.268	0.320	0.392	0.322	0.342	0.395			
11) Usefulness	0.417	0.298	0.303	0.316	0.408	0.281	0.328	0.275	0.270	0.335		
12) Vividness	0.383	0.276	0.393	0.414	0.362	0.336	0.271	0.309	0.371	0.263	0.421	

To assess the three higher-order constructs (HOCs), we employed a two-stage approach as recommended in previous literature (Becker et al., 2023; Sarstedt et al., 2019). Firstly, using redundancy analysis as outlined by Cheah et al. (2018), the single-item global measure for each HOC exhibited robust path coefficients, all surpassing 0.70 (refer to Table 4). These coefficients indicated that the lower-order constructs (LOCs) comprising those HOCs explained more than 50% of the variance in the criterion construct (see Table 4).

Moreover, the variance inflation factor (VIF) values for the lower-order constructs (LOCs) ranged from 1.062 to 1.222, all falling below the established threshold of 3.33 (Becker et al., 2015). This suggests that collinearity was not a significant concern in the dataset. Additionally, the LOCs demonstrated statistical significance, with weight values ranging from 0.351 to 0.693. These findings indicate that each LOC contributes meaningfully to its respective higher-order construct, further bolstering the validity of the measurement model.

Table 4: Assessment of Higher-Order Construct

Higher-order constructs (HOCs)	Lower-order constructs (LOCs)	VIF	CI	Weights	T-values	Convergent validity
Content quality	Believability	1.109	[0.386; 0.604]	0.499	9.103**	0.710
	Usefulness	1.217	[0.258; 0.482]	0.371	6.301**	
	Vividness	1.199	[0.412; 0.629]	0.519	9.202**	
Interaction quality	Empathy	1.103	[0.243; 0.440]	0.348	6.878**	0.789
	Real time interaction	1.149	[0.211; 0.453]	0.334	6.219**	
	Responsiveness	1.167	[0.533; 0.738]	0.598	11.447**	
Streamer credibility	Expertise	1.065	[0.456; 0.663]	0.581	11.009**	0.756
	Trustworthiness	1.062	[0.591; 0.781]	0.694	14.291**	
	Attractiveness	1.222	[0.291; 0.543]	0.418	6.549**	

Note(s): * $p < 0.05$, ** $p < 0.001$; VIF (Variance Inflation Factor); CI means 95% confidence interval bias corrected.

Structural Model

To evaluate the structural model, our analysis confirmed the absence of collinearity among predictors, with VIF values below the recommended threshold of 3.3 (Table 5, Hair et al., 2019). Furthermore, bootstrapping (n=5000) revealed significant positive relationships between content quality, interaction quality, streamer credibility, and impulsive buying tendency ($\beta > 0.10$, $p < 0.05$), supporting hypotheses H1, H2, and H3 (Table 5). Review consistency from customer-customer exchange also positively impacted impulsive buying ($\beta = 0.185$, $p < 0.01$), supporting H4. However, no significant relationship was found between resonant contagion and impulsive buying ($\beta = 0.026$, $p = 0.241$), not supporting H5 (Table 5). The model explained approximately 49.8% of the variance in impulsive buying tendency.

To assess the significance of each path, we evaluated the effect sizes (f^2) (Table 5). From the results, it was evident that only the paths postulated in H1 ($f^2 = 0.052$) and H4 ($f^2 = 0.038$) revealed small but meaningful effects (Hair et al., 2019). Additionally, we confirmed the model's predictive power, with $Q^2_{predict}$ values exceeding zero (Tables 5, Chin et al., 2020). Next, we estimated individual items for impulsive buying tendency using the model. As shown in Table 6, this process achieved a high prediction accuracy, further demonstrating the model's relevance (Shmueli et al., 2019). This suggests the model can reliably predict future impulsive buying behavior within the target population.

Table 5: Assessment of Structural Model

Hypothesis and relationship	Std beta	Std error	t-value	95% BCa CI	VIF	f^2	R ²	Q ² _predict
H1: IFQ → IBT	0.244	0.046	5.266**	[0.169; 0.322]	1.752	0.052		
H2: ITQ → IBT	0.101	0.045	2.221*	[0.032; 0.184]	1.847	0.008		
H3: SC → IBT	0.161	0.047	3.407**	[0.084; 0.241]	1.297	0.020		
H4: RCN → IBT	0.185	0.040	4.649**	[0.118; 0.248]	1.312	0.038	0.498	0.225
H5: RCT → IBT	0.026	0.037	0.705	[-0.035; 0.085]	1.896	0.001		

Note(s): * $p < 0.05$; ** $p < 0.01$; VIF=Variance Inflation Factor; CQ=Content quality; ITQ=Interaction Quality; SC=Streamer Credibility; RCN=Review Consistency; RCT=Resonant Contagion; IBT=Impulse Buying Tendency.

Table 6: Assessment of PLS_predict

Item	Q ² predict	PLS-SEM_RMSE	LM_RMSE	PLS-SEM_RMSE - LM_RMSE	Decision
IBT1	0.213	1.335	1.337	-0.002	Strong
IBT2	0.226	1.327	1.332	-0.005	Predictive
IBT3	0.223	1.315	1.317	-0.002	Power

Note(s): IBT (Impulse Buying Tendency).

IMPLICATIONS, LIMITATIONS AND CONCLUSION

Discussions of Findings

Our findings offer empirical validation for four out of five of our hypotheses, delivering noteworthy theoretical insights for the field of live streaming commerce research. Specifically, this study identified three streamer-customer exchange factors (i.e., information quality, interaction quality and streamer credibility), and two customer-customer exchange factors (i.e., review consistency and resonant contagion) that are key in influencing customers' impulsive buying tendency. Specifically, except resonant contagion (H5), the other four factors were found positive impacts on impulsive buying tendency (H1-H4).

Of the modelled antecedents, information quality was found to have the strongest effect on impulsive buying tendency in the live streaming context (H1). This result aligns with current research demonstrating the important role of cognitive processing in impulsive buying (Chan et al., 2017). Information quality is an important argument quality presented by streamers in the product demonstration (Chen et al., 2019; Kimiagari & Malafe, 2021). Higher information quality provides customers with visual, valued, and reliable details about products or services, which may reduce product uncertainty and empower customers to make informed decisions (Zhang et al., 2022). Besides, interaction quality also positively influences impulsive buying tendency (H2). During the interaction with customers, streamers' real-time, responsive, and empathetic interaction with customers can create a sense of social connection and encourage customers to actively participate in discussions of products (Li et al., 2022). Meanwhile, customers are more likely to trust streamers who provide individual attention and timely responses to their questions. Higher interaction quality can drive impulsive buying tendencies when customers feel a personal connection with the streamer and are influenced by their recommendations or enthusiasm (Kang et al., 2021). Similarly, streamers' reputation (credibility) can also enhance the reciprocating relationship with customers and facilitate impulsive purchase intention (H3). This finding is consistent with previous studies indicating that credible streamers who provide reliable information will evoke positive emotional responses and enhance trust and impulsive buying tendency (Mabkhot et al., 2022; Zhu et al., 2022). Furthermore, we found that the customer-customer exchange factor (i.e., review consistency) positively influences impulsive buying tendency (H4). This result aligns with previous research showing that consistent bullet-screen reviews can reduce customer cognitive efforts and reinforce the perceived value and desirability of the product (Gao et al., 2021; Hewei, 2022). Thus, higher review consistency plays a distinct role in stimulating impulsive buying tendency.

Theoretical Implications

Utilizing SET as our theoretical framework, our study contributes significantly to the understanding of impulse buying behavior in the context of live streaming commerce. By investigating the reciprocal relationships between streamer-customer and customer-customer interactions, we elucidate how these social dynamics influence impulse buying tendencies from an SET perspective. This extends beyond traditional explanations of impulse buying, which often concentrate solely on individual characteristics or emotional responses (Li et al., 2022; Sun, 2020), by highlighting the critical role of social exchange in shaping purchasing behavior. Our findings underscore the unique social dynamics inherent in live streaming environments, where real-time information and interaction directly impact trust formation and spur unplanned purchases. This theoretical insight offers valuable guidance for live streaming platforms and

sellers, empowering them to optimize their content and interactions to foster trust and stimulate impulse buying behavior among viewers. Second, our study aligns with SET's emphasis on positive social interactions and relationships (Cropanzano & Mitchell, 2005), as evidenced by the significant influence of positive, engaging interactions with streamers or the online community on impulse buying tendencies. This underscores the importance of cultivating a supportive and engaging online environment that promotes reciprocity and mutual benefit in the context of live streaming commerce. Additionally, our research illuminates the interconnected nature of streamer-customer and customer-customer interactions in driving impulse buying behavior, further enriching the theoretical understanding of social exchange dynamics in live streaming commerce. By emphasizing the role of reciprocity and mutual benefit in shaping purchasing decisions (Leong & Meng, 2022; Rather & Sharma, 2019), our study contributes to the ongoing discourse on the social aspects of consumer behavior in digital environments. This theoretical framework provides a valuable foundation for future research endeavors exploring the nuanced interplay between social interactions, trust formation, and purchasing behavior in live streaming commerce contexts. Ultimately, by advancing our theoretical understanding of impulse buying behavior within the realm of live streaming commerce, our study lays the groundwork for the development of more targeted and effective strategies for engaging consumers and driving sales in this rapidly evolving digital landscape. Finally, our discovery that resonant contagion does not directly prompt impulsive buying tendencies offers novel theoretical insights into the dynamics of social influence within live streaming commerce. It suggests that conventional theories centered on social contagion, which emphasize the propagation of emotions or behaviors within social circles, may not fully encapsulate the intricacies of consumer behavior within this domain. While resonant contagion may not directly instigate impulsive purchasing behavior, other factors such as social proof, authority influence, or perceived scarcity could wield greater influence in shaping consumer choices (Hu et al., 2017). This underscores the necessity of examining a broader array of social influence mechanisms and their interplay in shaping purchasing behavior within dynamic digital environments.

Practical Implications

This research underscores the importance of reciprocal relationships in cultivating impulsive buying inclinations. Our findings offer valuable insights for e-retailers and streamers operating within live streaming commerce platforms. Firstly, live streaming commerce platforms present a unique opportunity for retailers to showcase products in real-time. To heighten impulsive buying tendencies, streamers should deliver credible, practical information in a compelling manner that meets customer needs (Zhang et al., 2022). Retailers can leverage this trend by investing in high-quality production, engaging storytelling, and interactive presentations to captivate audiences and stimulate sales. The quality of information shared during product demonstrations significantly influences customers' inclination for impulsive purchases. Streamers are advised to conduct thorough product research, understand customer preferences, and effectively present information. Secondly, streamers should actively engage with viewer comments, questions, and feedback in real-time to foster trust. Live streaming commerce facilitates direct interaction between streamers and viewers, allowing retailers to offer personalized recommendations, address queries, and resolve concerns promptly. Establishing authentic connections with viewers is crucial for building trust. Streamers can tailor content to audience preferences, enhancing the sense of connection and promoting impulsive buying tendencies (Lin & Nuangjamnong, 2022). Encouraging viewers to participate by asking questions, sharing thoughts, and providing feedback in bullet comments can foster a sense of community and engagement. Besides, e-retailers should consider featuring visually appealing

and charismatic streamers to attract and retain viewers, thereby enhancing social exchange potential. Streamers' profiles can be showcased, highlighting qualifications and expertise to help customers assess credibility and expertise, thus encouraging greater viewer investment in live streaming shopping (Zhu et al., 2022). Moreover, maintaining consistent engagement in the bullet screen is vital for fostering a cohesive social environment. Streamers should actively encourage viewer participation in product discussions, sharing experiences, and leaving reviews to foster community and consistency (Hu et al., 2017). Cultivating a sense of community, gamification, and offering rewards can further stimulate impulsive buying tendencies. Lastly, our findings emphasize the significance of streamer-viewer and viewer-viewer interactions in influencing impulsive buying tendencies. Prioritizing positive relationships and fostering interactions with viewers is paramount, as these factors profoundly impact impulse buying behavior (Chen, 2023). Additionally, streamers should focus on delivering relevant product information, personalized recommendations, and interactive experiences tailored to viewer preferences and needs. Understanding the intricacies of social influence dynamics in live streaming commerce enables businesses to tailor strategies effectively, engaging consumers and driving sales in this dynamic digital environment.

Limitations and Conclusion

We utilized the SET to construct and assess a model of impulse buying behavior among Millennial live streaming shoppers. In particular, we pinpointed streamer-customer exchange factors (information quality, interaction quality, and streamer credibility) and customer-customer exchange factors (review consistency and resonant contagion) that we hypothesized affect customers' unplanned purchase tendency. Among the proposed hypotheses, only resonant contagion did not emerge as a predictor of impulsive buying tendency (H5). The results also underscored the pivotal role of reciprocal relationships in facilitating a positive impact on customers' impulsive buying tendencies.

Although this study brings valuable insights, it is important to acknowledge its limitations. First, the empirical data collection was confined to China, limiting its applicability and potential for broader generalization, particularly in cross-cultural contexts. Future research may consider implementing the proposed model in diverse cultural settings (Qiu et al., 2021). Second, this study mainly examined several influencing factors that may influence social exchange between streamer-customer and customer-customer in the live streaming commerce context, future studies may explore more potential factors such as limited-time coupons (Sun, 2020). Moreover, different streamer types may affect purchasing decisions (Guo et al., 2021), future research may also compare different streamer types and their respective influence on customer behavior. Lastly, future study may delve into the nuances of live streaming commerce in areas such as fashion, cosmetics, or farming (Luo et al., 2023). Examining the unique challenges, opportunities, and customer behaviours in these specific areas could provide valuable insights into the diverse applications and impacts of live streaming in different industries.

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