

Marketing Article

Driving Impulse Buying: The Role of Personalization, Responsiveness, and Perceived Usefulness in Social Commerce's Live Streaming Shopping

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Abstract: *The fast evolution of digital technology has greatly reshaped social commerce, especially that of live-streaming shopping. The influence of Responsiveness and Personalization on Impulse Buying in TikTok live-streaming shopping, mediated by Perceived Usefulness, is analyzed in this research. Structural Equation Modeling (SEM) with AMOS was employed in gathering data from 170 respondents who have ever participated in TikTok live shopping. The findings support that Responsiveness and Personalization have a positive impact on Perceived Usefulness, which, in turn, significantly contributes to Impulse Buying behavior. Further, Perceived Usefulness was discovered to mediate the relationship between Responsiveness and Personalization and Impulse Buying, making their impact stronger on consumer purchase decisions. These findings underscore the need to enhance interactive engagement, personalized suggestions, and the perceived value of live shopping platforms to achieve the maximum impulse buying from consumers. This research offers managerial implications for digital marketers and e-commerce platforms alike by highlighting the importance of real-time engagement and personalized experiences in sales increase. Future studies must investigate cross-platform differences, moderating variables, and long-term consumer behavior patterns to provide a more elaborate understanding of impulse purchases in live commerce settings.*

Keywords: *Impulse Buying, Responsiveness, Personalization, Perceived Usefulness, Live Streaming Shopping, Social Commerce, Consumer Behavior, TikTok Commerce.*

I. INTRODUCTION

The swift evolution of digital technology has transformed the terrain of social commerce into a vibrant and interactive site. The most important innovation in this field is live-streaming shopping, a mode of social commerce that marries real-time engagement with product showrooms to foster consumer interaction and stimulate buying habits. In nations such as China, live-streaming commerce has become very popular, with platforms such as Taobao Live and TikTok Shop recording exponential growth in consumer interaction and transaction value (Lee and Chen, 2021; Xue et al., 2020). The platforms showcase the power of live streaming as a mechanism to engage consumers and stimulate impulse buying (Lee and Chen, 2021; Xue et al., 2020). This strategy has a number of benefits, such as showing product use, offering varied product viewpoints, answering questions in real time, and having interactive live sessions that encourage instant purchases (Lu et al., 2018).

TikTok, being a top social commerce platform, combines entertainment with e-commerce, allowing real-time interaction between consumers and streamers. TikTok's live streaming capabilities, such as TikTok Shop and TikTok Live, have successfully transferred offline sales methods to the online space. These attributes enable sellers to disclose product information in real-time and create interpersonal interactions between buyers and sellers, greatly improving the shopping experience and diminishing buyer uncertainty (Hajli, 2015). This blend of real-time interaction and personalized interaction creates trust and a sense of urgency, stimulating impulsive buying behavior (Hajli, 2015; Lee and Chen, 2021). In spite of its increasing significance, the exact mechanisms by which personalization and responsiveness impact online impulse purchasing remain underresearched.

Impulse buying, or the unplanned, spontaneous purchase behavior that occurs as a result of emotional and environmental stimuli, applies most appropriately in the context of live-streaming shopping. Past research indicates that perceived usefulness, or the degree to which consumers believe the platform and content are useful, acts as a key mediator of interactive features and impulsivity (Lee and Chen, 2021; Xue et al., 2020). This is consistent with the Stimulus-Organism-Response (SOR) model, which suggests that external stimuli (e.g., responsiveness and personalization) influence a person's internal state (e.g., perceived usefulness), which in turn generates behavioral responses (e.g., online impulse purchases) (Sun et al., 2019; Xue et al., 2020).

Live streaming shopping is a new marketing phenomenon that has, to date, attracted little scholarly attention (Sun et al., 2019). Although research into its effect on impulsive buying is limited, studies indicate that live shopping's capacity to integrate



real-time interaction, product showcase, and consumer interaction is highly promising to drive purchasing behaviors (Yu et al., 2018). The present study targets TikTok as a prominent platform to examine such dynamics, capitalizing on its sophisticated algorithms for personal content selection and interactive interactions.

Through this gap, the research enriches the literature on consumer behavior and digital marketing with practical recommendations for practitioners looking to maximize their live-streaming activities. The outcomes will also have practical implications for MSMEs that want to utilize live streaming as a productive sales channel.

This study is especially important since it investigates a relatively new social commerce phenomenon, both theoretically and practically contributing. Not only does it expand the existing knowledge of impulse buying behavior during the digital era, but also it points to the central function of interactivity in determining consumers' experiences. By focusing on the interplay of personalization, responsiveness, and perceived usefulness, the study seeks to unravel the psychological mechanisms underpinning online impulse buying, paving the way for more effective and consumer-centric live-streaming strategies.

II. LITERATURE REVIEW

A) *Stimulus-Organism-Response (SOR) Theory*

The Stimulus-Organism-Response (SOR) theory has been widely employed to explore the effect of environmental stimuli on consumer behavior in a range of digital environments (Xue et al., 2020). According to this theory, external environmental stimuli (S) affect the internal state of an individual (O), which in turn activates their behavioral responses (R). The SOR model provides a systematic method for examining the cause-and-effect associations among stimuli, psychological processes, and outcomes within online shopping environments (Zhang et al., 2014).

The SOR framework comes into play in the context of live-streaming shopping. Environmental stimuli like responsiveness and personalization of live stream engagement are important drivers of consumer behavior. Responsiveness is the capacity of live streamers to offer prompt and effective responses to consumers' questions, and personalization is about adapting product presentations to suit the specific preferences of consumers. These stimuli interact with consumers by providing an interactive and immersive shopping experience (Liu et al., 2016). The "Organism" element of the model captures consumers' internal states, such as cognitive and emotional processes. Perceived usefulness is the mediating variable in this study. It captures consumers' judgments of the value that live-streaming shopping brings to their decision-making process through the delivery of pertinent, transparent, and actionable information (Xue et al., 2020; Gao and Bai, 2014). The "Response" in this model refers to behavioral consequences. For this research, online impulse purchasing is the response variable. Impulse buying is distinguished by spontaneous, unplanned purchase decisions with emotional and situational cues as drivers (Parboteeah et al., 2009). The SOR model assists in determining the channels through which live-streaming shopping aspects affect impulse buying by foregrounding the mediating mechanism of perceived usefulness.

Xue et al. (2020) also underscore the significance of the SOR model in investigating the dynamics of social commerce. Their research points to the importance of live consumer-machine and interpersonal interactions as triggers, which impact internal states like perceived usefulness, perceived risk, and psychological distance. These internal states then shape social commerce engagement, such as liking, sharing, and buying. By embracing this systematic framework, the present study furnishes a holistic appreciation of how live-streaming shopping responsiveness and personalization fuel consumer impulse purchasing based on perceived usefulness. What is more, Zhang et al. (2014) highlight the role of technological environments and virtual experiences in the formation of consumer behavior, consistent with the tenets of the SOR model.

B) *Responsiveness*

Responsiveness describes the speed and efficiency with which live streamers or sellers respond to customer queries and issues. Live streaming shopping involves the capability of live streamers to respond to customer questions and demands in real time. Responsiveness is crucial in elevating the interactive aspect of social commerce since customers appreciate fast and customized responses in their shopping experience (Xue et al., 2020). Ahn et al. (2005) also used the term responsiveness to describe the ability of websites or platforms to foresee and immediately respond to user requests. This applies to live streaming as well, in which anchors not only respond to customer inquiries but also show product features such as product trials or highlighting product details and selling points. These behaviors give consumers rich and meaningful information, enabling them to make informed decisions and perceive the usefulness of the platform (Xue et al., 2020). Prompt and effective feedback in live streaming shopping not only helps address customer uncertainties but also helps in establishing trust and interaction. When customers feel that their requirements are being met immediately, they are likely to be assured about their buying choices, thus raising the chances of impulse purchasing (Liu et al., 2016; Ahn et al., 2005). Responsiveness, hence, becomes a vital stimulator of consumer satisfaction and behavioral responses in interactive, dynamic online shopping situations.

C) Personalization

Personalization is the ability of streamers to modify content and information in real time to meet the unique needs and interests of individual consumers, making the shopping experience more relevant and engaging (Kang et al., 2021; Khoi et al., 2023). Personalization in social commerce improves user experiences by offering relevant, personalized recommendations that closely match consumer interests. This strategy not only minimizes information overload but also enhances decision-making efficiency and quality while shopping (Tam and Ho, 2006). Live streaming e-commerce sites use personalization to facilitate streamers in providing elaborate and precise product information in real time. Such customized communication evokes trust and provides a feeling of responsibility and honesty on the part of the vendor (Xiao and Benbasat, 2007). For example, streamers can showcase products that precisely fit a viewer's self-proclaimed needs, explain them in detail, or recommend personal preferences from live engagement. These activities minimize perceived risks, like fear of buying inappropriate products, and increase customers' confidence in their choices (Xue et al., 2020). Additionally, personalization actually affects perceived usefulness by making shopping more relevant and convenient. If customers perceive the platform to know their individual tastes and provide useful information, they are likely to consider the platform useful and credible. Such enhances their interaction and impulse buying potential (Khoi et al., 2023; Tam and Ho, 2006). Personalization, therefore, becomes a key driver of consumer satisfaction and behavioral response in dynamic, interactive online shopping platforms.

D) Perceived Usefulness

Perceived usefulness refers to the extent to which consumers feel a shopping platform, such as live streaming, provides useful and pertinent information that facilitates their decision-making process (Xue et al., 2020). The idea highlights the functional value that consumers gain from the platform, including easing product comparisons, providing in-depth insights, and expediting decision-making processes (Vijayarathy, 2004). Under the live-streaming shopping scenario, perceived usefulness is an important factor contributing to consumer participation. When the streamers provide transparent, custom, and usable product information, consumers view the platform as effective and trustworthy when it comes to shopping (Natarajan et al., 2017). This perception, in turn, not only builds their trust towards the platform but also makes them more likely to make impromptu purchase decisions (Lu, 2014). Past research has repeatedly shown that perceived usefulness plays a strong role in consumer adoption of mobile and online shopping technology.

For instance, a study by Zhang et al. (2012) emphasizes that usefulness perception has a direct effect on consumer intention to interact with digital platforms. Moreover, customized interactions in live-streaming contexts amplify this perception by fulfilling consumers' individual needs and minimizing uncertainty, leading to impulse buying behavior (Liébana-Cabanillas et al., 2014). Perceived usefulness, thus, acts as a key mediator between interactive stimuli, including responsiveness and personalization, and consumer behavioral consequences. Through the provision of value in the form of rich and personalized information, live-streaming sites can position themselves as essential tools in the online shopping experience, ultimately leading to consumer satisfaction and loyalty.

E) Impulse Buying

Impulse buying is an unplanned and spontaneous purchasing behavior that is guided mainly by emotional reactions instead of rational thinking. In the online environment, website design and interface play a central role in enhancing consumers' impulsiveness by fostering an interactive and immersive experience (Pereira et al., 2022). This purchasing behavior is even enhanced by state-of-the-art technological features that simplify the purchasing process, promoting impulsive choice-making more so than conventional means of shopping (Aragoncillo and Orus, 2018).

In live shopping, personalized suggestions and instantaneous interactions prompt consumers to make impulsive buying decisions. Streamers are central to all this by highlighting products in a dynamic manner, providing extensive descriptions, and addressing consumer questions directly. All this not only minimizes uncertainty but also creates instant purchasing impulses (Zhang et al., 2024). In addition, functionalities such as one-click buying make it easy for customers to make a transaction, saving time on decision-making and encouraging impulse purchases (Verhagen and Van Dolen, 2011).

The interactive nature of live-streaming websites provides emotional enticement, which makes customers vulnerable to impulse buys. Customized product recommendations and visual presentations enhance consumer beliefs about product quality, promoting satisfaction and higher probabilities of purchase (Ngo et al., 2024). Through the use of these aspects, live-streaming sites subtly capture consumers' spontaneous actions, triggering increased sales conversions.

Hypothesis

H1: Responsiveness positively impacts perceived usefulness

H2: Personalization positively impacts perceived usefulness

H3: Perceived usefulness positively impacts impulse buying

H4: Perceived usefulness mediates the effect of responsiveness on impulse buying

H5: Perceived usefulness mediates the effect of personalization on impulse buying

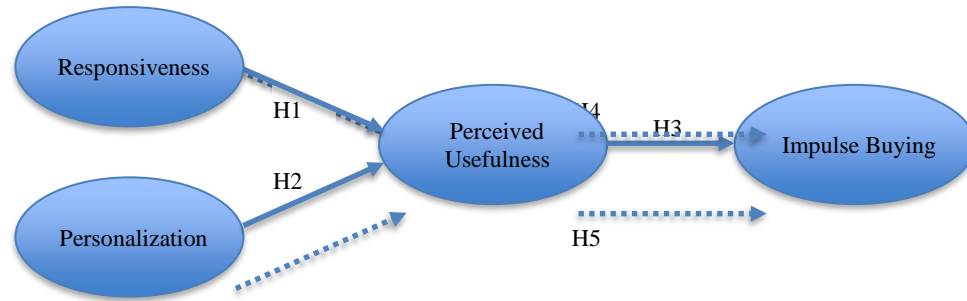


Fig. 1 Research Framework

III. METHODOLOGY, RESULTS, AND DISCUSSION

A) Methodology

This study utilizes a quantitative research approach, incorporating 15 indicators to address the research objectives. A sample of approximately 170 respondents was selected from the population using a non-probability sampling method. Data analysis was performed using the AMOS-SEM technique. To ensure relevance, the researchers defined specific criteria for the population, including:

- Have watched and interacted with streamers during live-streaming shopping.
- Have made impulsive purchases during live streaming shopping.

B) Operational Definition of Variables

- Impulse Buying.
 - IB1: I usually buy products on TikTok's live-streaming shopping
 - IB2: The products I bought on TikTok's live-streaming shopping are mostly unplanned
 - IB3: I bought a product on TikTok's live-streaming shopping that I did not initially want to buy
 - IB4: I sometimes cannot suppress the feeling of wanting to buy something at live-streaming shopping
- Perceived Usefulness
 - PU1: Using live streaming shopping can save shopping time in searching and buying products
 - PU2: Live streaming shopping helps me buy what I want online
 - PU3: Using live streaming shopping can enable me to have a better search and purchase of products than using other online ways.
 - PU4: Using live streaming shopping can increase my shopping effectiveness.
- Personalization
 - PE1: Streamer will offer professional suggestions that suit me according to my shopping situation
 - PE2: Streamer can focus on my needs for products or services
 - PE3: Streamer provide personalized products or information for my personal needs
- Responsiveness
 - RE1: The streamers are very happy to communicate with me
 - RE2: The streamers can answer my question and request in time
 - RE3: The response of the streamers is closely related to my problems and requests
 - RE4: The streamers can provide relevant information for my inquiry in time.

C) Analysis and Discussion

a. Evaluation of Indicator Validity

Standardized Regression Weights (SRW) are used to measure how well each indicator explains its construct. Indicators with $SRW < 0.50$ are considered to have low validity and should be considered for removal. Indicators RE1 (0.364), IB2 (0.375), and PU1(0.404) have low validity because their SRW values are below 0.50, indicating that they are not strong enough to explain their constructs. These three indicators were removed in the modified model to improve its stability and accuracy.

b. Model Fit Evaluation (Goodness of Fit)

To determine whether the modified model fits the data well, we compare several fit indices with commonly accepted thresholds. From Table 1, the goodness of fit modified model demonstrates excellent fit, as all indicators meet or exceed recommended thresholds. The removal of low-validity indicators (RE1, IB2, PU1) improved the model fit.

Table 1: Goodness of Fit

Fit Index	Model Result	Recommended Threshold	Interpretation
CMIN/DF	1.324	< 3	Good fit
GFI (Goodness of Fit Index)	0.941	≥ 0.90	Good fit
AGFI (Adjusted GFI)	0.909	≥ 0.90	Good fit
CFI (Comparative Fit Index)	0.990	≥ 0.90	Excellent fit
TLI (Tucker-Lewis Index)	0.986	≥ 0.90	Excellent fit
RMSEA	0.043	≤ 0.08	Excellent fit

c. Regression Weights Analysis

Regression weights represent the strength and direction of relationships between variables in the modified structural model. These relationships are evaluated based on Estimate values, Critical Ratio (C.R.), and P-values to determine statistical significance. The table below presents the Standardized Estimates, Critical Ratio (C.R.), and P-Values for each direct effect in the modified model:

Hypothesis	Path (Relationship)	Estimate	C.R.	P-Value	Decision	Interpretation
H1	RE \rightarrow PU	0.320	4.786	*** (<0.001)	Accepted	Responsiveness has a significant positive effect on Perceived Usefulness. The more responsive the streamer is in answering questions and providing information, the higher the perceived usefulness of the live shopping platform. This means that real-time engagement and quick responses from streamers enhance consumer trust and the perceived value of shopping via live streaming.
H2	PE \rightarrow PU	0.397	4.897	*** (<0.001)	Accepted	Personalization directly affects Perceived Usefulness. The more personal the shopping process (e.g., tailored product suggestions, focusing on the individual needs of the consumers), the more useful the website appears to users.
H3	PU \rightarrow IB	0.928	11.637	*** (<0.001)	Accepted	Perceived Usefulness significantly influences Impulse Buying. If consumers believe that live streaming simplifies their shopping process and makes it more convenient, they are likely to make impulse, spontaneous purchases. This emphasizes the need to enhance the perceived utility of live shopping to promote more impulse buying.

d. Mediation Analysis (Indirect Effects & Sobel Test Results)

The mediation effect of Perceived Usefulness (PU) was tested for Responsiveness (RE) \rightarrow Impulse Buying (IB) and Personalization (PE) \rightarrow Impulse Buying (IB).

Hypothesis	Indirect Path	Standardized Indirect Effect	P-Value	Conclusion
H4	RE \rightarrow PU \rightarrow IB	0.340	0.002	Accepted
H5	PE \rightarrow PU \rightarrow IB	0.345	0.005	Accepted

The mediation analysis in the current study validated that Perceived Usefulness (PU) has an important function in mediating between Responsiveness (RE) and Impulse Buying (IB) and between Personalization (PE) and Impulse Buying (IB). The results indicated that both H4 (RE \rightarrow PU \rightarrow IB) and H5 (PE \rightarrow PU \rightarrow IB) were supported, with standardized indirect effects equal to 0.340 ($p = 0.002$) and 0.345 ($p = 0.005$), respectively. These results suggest that PU is an important mechanism which boosts the effect of Responsiveness and Personalization on Impulse Buying behavior.

Specifically, the findings imply that even when a live streamer is extremely reactive or tailors recommendations to individuals, the incidence of impulse purchases will escalate dramatically only when consumers find the shopping process valuable and convenient. This is to say that PU enhances the effect of RE and PE by making shoppers value the process of shopping more, find it more convenient, and be more informed. Spontaneous buying by consumers is more likely when they

feel that live shopping successfully aids them in acquiring the right products, offers enhanced search and comparison, and streamlines shopping efficiency.

e. R-squared analysis (Variance Explained by the Model)

The Squared Multiple Correlations (R^2) show the percentage of variance explained by the independent variables.

Dependent Variable	R^2 (Variance Explained)	Interpretation
PU (Perceived Usefulness)	0.529	52.9% of PU is explained by RE and PE
IB (Impulse Buying)	0.713	71.3% of IB is explained by PU

The findings of this study suggest that the model offers a robust explanation of Impulse Buying, with Perceived Usefulness (PU) emerging as a key predictor. The findings reveal that PU explains 71.3% of the variance in Impulse Buying (IB), indicating that consumers are considerably more likely to make impulse purchases when they think live-streaming shopping is useful and convenient. This reinforces the importance of PU in its role in fueling impulsive purchasing behavior and the notion that a site's capacity to offer product discovery, effective shopping, and consumer trust will directly correlate with their purchase of unplanned products.

Moreover, the results indicate that Responsiveness (RE) and Personalization (PE) combined account for 52.9% of the variance in PU, which means that how streamers engage with consumers largely determines consumers' perception of a platform's usefulness. When streamers respond promptly, give relevant information, and provide personalized suggestions, consumers find the shopping experience more valuable and efficient. This verifies that interactivity and personalization are core factors in bolstering PU, which subsequently energizes Impulse Buying behavior. By enhancing Responsiveness and Personalization, live streaming websites have the potential to enhance customer evaluations of usefulness and ultimately achieve more engagement and elevated sales through impulse buying.

IV. CONCLUSION

This research set out to explore the inter-relations between Responsiveness, Personalization, Perceived Usefulness, and Impulse Buying for the purpose of TikTok Live Streaming Shopping. Using AMOS-SEM for analysis, it was validated that Responsiveness and Personalization strongly enhance Perceived Usefulness, which robustly affects Impulse Buying behavior. The revised model, upon the elimination of three low-validity measures (RE1, IB2, PU1), produced a superior model fit, with all the important hypotheses being confirmed.

The results support that Responsiveness (RE) has a strong positive influence on Perceived Usefulness (PU).

Customers see live shopping as more useful when streamers respond to their questions immediately (RE2), offer appropriate responses (RE3), and provide useful information instantly (RE4). Likewise, Personalization (PE) immensely improves Perceived Usefulness to the effect that when streams make customized suggestions (PE1), emphasize specific demands (PE2), and display product details specifically (PE3), shoppers consider the buying experience as easier and more useful. In addition, Perceived Usefulness has a strong force over Impulse Buying (IB) such that when customers perceive that live streaming shopping enables them to discover products they want (PU2), compare products better (PU3), and improve shopping efficiency (PU4), they are more inclined towards unplanned, on-the-spot purchases (IB1, IB3, IB4). Furthermore, Perceived Usefulness was also a significant mediator in relationships between Responsiveness and Impulse Buying (H4) and Personalization and Impulse Buying (H5).

This suggests that even when Responsiveness and Personalization are high, their impacts on Impulse Buying are significantly magnified when consumers find live shopping useful. Therefore, streamers and online marketplaces need not only to pay attention to interactive engagement but also make sure consumers perceive genuine value from their shopping process in order to maximize impromptu buys.

A) Practical Implications

From a business standpoint, these results emphasize the need to enhance Responsiveness and Personalization in order to increase Perceived Usefulness, which can lead to an increase in Impulse Buying behavior. Optimizing live shopping experiences can allow businesses to develop a more interactive and effective selling approach that can drive purchases among consumers.

Improving Responsiveness is essential in establishing consumer trust and participation. Streamers need to be educated to respond immediately and correctly to consumer questions, providing real-time interaction that keeps prospective buyers interested. Moreover, the use of AI-powered chatbots can assist in offering immediate responses, while live product demonstrations can further enhance consumer confidence and minimize hesitation prior to purchase.

Enhancing Personalization can render live shopping experiences more relevant and convincing. Platforms ought to leverage AI algorithms to make product suggestions depending on consumer interest and history so that recommendations are specific to individual shopping requirements. Streamers ought to be incentivized to provide personalized product suggestions,

improving the personal relationship between buyers and sellers and hence boosting purchase propensity.

By adopting these tactics, companies can enhance consumer interaction, enhance convenience in shopping, and achieve higher sales through impulse purchasing habits. An organized and engaging live shopping experience can translate into greater customer retention and profitability in the long run.

B) Future Research Directions

Though this research offers significant insights into Impulse Buying in Live Streaming Shopping, there are various avenues for future research to further extend the knowledge on consumer behavior in this area. Moderating Variables need to be investigated in future work to determine other external variables that can affect the relationships within this model. Such variables as consumer trust, frequency of shopping, and expenditures may influence how Responsiveness and Personalization influence Perceived Usefulness. Second, psychological elements such as excitement and urgency need to be studied in order to recognize their influence on impulse buying behaviors. Cross-platform analysis is another key focus of future study.

The above research considered TikTok Live Shopping, but engagement mechanisms on other social commerce sites like Instagram Live, Shopee Live, and YouTube Shopping could be diverse. A comparison study may bring out distinct platform-specific characteristics driving impulse purchase behavior differently across social commerce platforms. Demographic and Cultural Differences need to be included in subsequent studies. A multi-group analysis can ascertain whether aspects such as age, gender, or cultural context affect the impact of Responsiveness, Personalization, and Perceived Usefulness on Impulse Buying. In addition, a comparison of Gen Z and Millennial consumers—the main users of live shopping platforms—may yield more insights into how various generations react to live shopping stimuli.

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