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Discovering online Chinese consumers' impulse buying in live streaming by the theory of planned behavior

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ABSTRACT

The study explores online consumers' impulse buying intentions and behaviors on live streaming platforms. Unlike traditional shopping modes, the development of real-time video streaming provides online consumers with a distinct approach to interacting with live streamers and browsing online products in real-time, potentially causing their impulse buying intentions. To understand online consumers' impulse buying intentions and behaviors, the paper establishes the research model based on the theory of planned behavior (TPB) model and analyses influencing factors from attitude, subject norm and perceived control aspects. Through the data analysis based on the partial least squares path modelling and variance-based structural equation modelling (PLS-SEM), the research results show that, three factors positively affect online consumers' impulse buying intentions and lead to their final behaviors. Meanwhile, control variables, including gender, age, and income level, demonstrate insignificant effects across the model. Unlike existing literature, the current study displays the distinct features of live streaming platforms and discovers online consumers' impulse buying intention based on the TPB model. The results are helpful for related scholars and departments to pay more attention to the live shopping environment and understand online consumers' impulse buying issues.

KEYWORDS

Live streaming platform; online Chinese consumers; impulse buying intention; TPB model; live shopping environment

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1. Introduction

Live streaming platforms act as distinct social media platforms to establish a user-generated content community and realize synchronous interaction between community members (Zhang, Cheng, and Huang 2022). In the essential functions of traditional social media, live streaming platforms develop the real-time interactive function and enhance users' social presence experiences (Li and Kang 2022b). The emergent social media service injects fresh vitality into the digital economy and drives the formation of live streaming commerce (Xiong 2022). Live streaming commerce brings new shopping experiences for online consumers and establishes a convenient shopping environment. Attracted by the improvement of platform technical support, increasingly more online consumers accept the live streaming commerce model and actively engage in live shopping activities (Li, Kang, Zhao, et al. 2022, Li, Feng, and Zhao 2023). Specifically, the economic value of live streaming commerce will increase to 60 billion dollars in 2024, with a significant annual growth rate of 7.7% from 2020 to 2024 (Zhong et al. 2022). Various interactive functions attract consumers' purchasing interest, and by January 2021, 32.9% of Chinese online users, around 309 million people, have participated in live streaming shopping activities (CINIC 2020). This trend has dramatically changed the status of e-commerce, which needs more attention.

Although live streaming shopping creates convenience for online consumers, it would reduce their rational consumption and cause their impulse buying behavior. Impulse buying is defined as any purchasing behavior that consumers make but do not follow their shopping plan (Xiang et al. 2016). Most previous research about impulse buying is grounded in traditional e-commerce contexts and discusses its negative impacts (Zafar et al. 2021, Nuseir 2020, baker Qureshi, Murtaza, and Kazi 2019). However, few scholars distinguish the differences between social media platforms and live streaming platforms and analyze the unique characteristics of the live streaming shopping model (Li and Kang, 2022). The traditional social media platform is a computer-based platform that allows users to contact others through texts, pictures and videos (Saravanakumar and SuganthaLakshmi 2012). Different from the traditional social media platforms, users on live streaming platforms can interact with others in real-time through video-streaming technology, gift-sending system, and comment functions (Li, Kang, and Sohaib 2023b, Li and Kang 2022a). The technical advantages potentially increase online consumers' impulse buying risks. Specifically, 44.1% of online consumers make impulse buying while engaging in live streaming shopping activities, and the rate is much higher than the traditional impulse buying issues (Chan, Cheung, and Lee 2017, Zhang, Cheng, and Huang 2022). Considering the limited research discussing online consumers' impulse buying behaviors on the live streaming platform, the study applies the Theory of Planned Behavior (TPB) to design the theoretical model and explores influencing factors. The TPB has become a widely accepted model for discovering consumers' online shopping intentions and discussing their behaviors (Cheng and Huang 2013, Yang, Li, and Zhang 2018). According to Ajzen (1991), the TPB can be used to explain individuals' intention patterns from attitude, subjective norms and perceived control aspects (Ajzen 1991). In view of its theoretical basis and value, it is suitable for the current study to apply the TPB model to analyze online consumers' impulse buying intention on live streaming platforms, which is helpful to narrow the existing research gap. Thus, the study objective is designed as follows: *Analyze online consumers' impulse buying intention and behavior based on the TPB model.*

Both theoretical and practical implications can be presented in the current study. Regarding the theoretical contribution, this paper is different from existing literature that discusses online consumers' shopping intentions on traditional social media platforms. The study displays the distinct features of live streaming platforms, such as real-time video interaction, virtual gift-sending system, and online fan group functions, and it discovers online consumers' impulse buying intention based on the TPB model. Considering the theoretical background of the TPB model, the theoretical framework established in the current study can present influencing factors comprehensively and systematically analyze online consumers' impulse buying intention. Meanwhile, regarding the practical implication, online consumers' impulse buying intention, as a harmful shopping habit, should be a concern by

related scholars. The study results can clearly guide online consumers to avoid impulse buying behaviors and build a healthy shopping environment on live streaming platforms, contributing to specific practical implications.

2. Literature review

2.1. Impulse buying on live streaming platforms

Impulse buying means consumers' immediate purchase behavior without any pre-shopping plan or objective (Muruganantham and Bhakat 2013). Existing studies have supported the significant relationship between social media impact and sales volume results, and they have analyzed online consumers' impulse buying behaviors on traditional social media platforms (Nuseir 2020, Zafar et al. 2021). However, few of them display the unique characteristics of live streaming platforms and analyze online consumers' impulse buying phenomenon (Li, Kang, Zhao, et al. 2022). Specifically, online consumers can experience a rich shopping experience because of the interactive cyber-physical environment provided by live streaming platforms (Sun et al. 2019). The online shopping environment is significantly different from the traditional way of social media platforms, including real-time marketing, online payment system and online store function. The free interactive environment offered by live streaming platforms exacerbates online consumers' impulsive consumption problems, which is ignored by previous research (Li, Kang, Zhao, et al. 2022, Li, Kang, Feng, et al. 2022).

Live streaming shopping as a new form of e-commerce is developed based on peer-to-peer technology (Sun et al. 2020). Convenient functions, such as real-time video streaming, gift-sending system and danmuku function, not only provide a comfortable shopping experience but also easily cause online consumers' impulse buying behaviors. Influenced by the improved information quality in the form of real-time videos, online consumers' purchase decisions can be affected by live streamers in the virtual streaming commerce environment (Wongkitrungrueng and Assarut 2020, Xu, Wu, and Li 2020). Meanwhile, since live streaming commerce has just developed in recent years, many online consumers lack comprehensive live shopping experiences and rational consumption consciousness (Liu 2017, Sorce, Perotti, and Widrick 2005). It results that online consumers from live streaming platforms are easier to build trust with live streamers and impulsively purchase some products they do not need. Given the potential problems, it is essential for the current study to focus on online consumers' impulse buying behaviors on live streaming platforms and explore why they tend to purchase online products blindly.

2.2. Theory of planned behavior

According to the definition proposed by Ajzen (1991) and Rehman et al. (2019), the TPB is an extension of the theory of reasoned action, and it has been widely applied to discover individuals' online shopping intentions and behaviors. The TPB can provide a theoretical framework to analyze the effects of attitude, subjective norms and perceived behavioral control on purchasing intention (Rehman et al. 2019). Positive subjective norms, attitudes, and perceived behavioral control will execute specific intentions and actual behavior (Ajzen 1991; Kang et al., 2023). The TPB can be used to predict the behavior of consumers, which has been extensively identified by prior scholars (Tarigan, Putri, and Sabrina 2021). Although prior research has applied the TPB to discover online consumers' shopping behaviors, few of them pay much attention to online consumers' impulse buying intention on live streaming platforms (Apasrawirote and Yawised 2022, Sun 2020). Live streaming shopping as a new shopping mode is significantly different from the traditional online shopping model. Its distinct features, such as real-time video interaction, online payment system and fan group, have unique attractiveness for online consumers and potentially cause their impulse buying behaviors (Ming et al. 2021). Hence, it is significant for the current study to use the TPB to explore online consumers' impulse buying intentions and behaviors.

Although the TPB has been established in the 90s, it is still used to predict behavior in different sciences, such as economics, psychology, and medicine (Peña-García et al. 2020). Three motivational factors should be considered based on the TPB approach, including attitude towards the impulse buying, subject norm towards the impulse buying and perceived control towards the impulse buying (Ajzen 1991). Attitude, subjective norm, and perceived behavioral control could make online consumers engage in impulse buying activities. Specifically, attitude towards the impulse buying refers to the degree to which an online consumer has a favorable or unfavorable evaluation of the buying behavior, subjective norm towards the impulse buying refers to an online consumer with the perceived social pressure to perform or not to perform the impulse buying, and perceived control is defined as an online consumer's perception of the ease or difficulty of buying impulsively (Ajzen 1991, Peña-García et al. 2020). Given the definitions and effects of three motivational factors, they have significant impacts on online consumers' impulse buying intention on live streaming platforms, which should be a concern by the research.

3. Research model and hypotheses

The research model is established based on the TPB, as Figure 1 shows. To be specific, this paper refers to the TPB to systematically analyse online consumers' impulse buying intentions and behaviors from attitude, subjective norm and perceived control (Ajzen 1991).

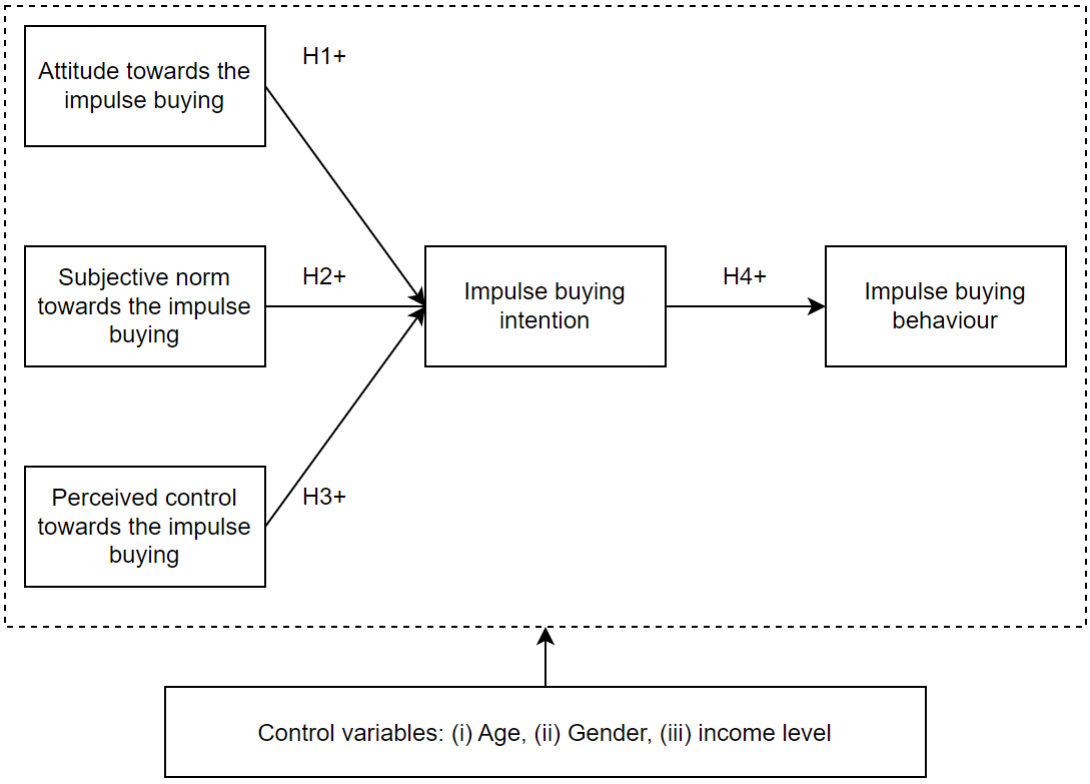

Figure 1. The research model.

3.1. Impulse buying intention

Impulse buying intention is understood as the degree to which an online consumer is willing to buy impulsively on live streaming platforms. As mentioned before, this paper applies the TPB approach to analyse online consumers' impulse buying, and the theory has been widely adopted to investigate consumers' impulse buying intention (Toh and Selvan 2015). According to the TPB, online consumers' attitude towards the impulse buying, coupled with

subjective norms and perceived control factors, significantly influence their intention to purchase impulsively (Ajzen 1991). Whether in online or offline shopping environments, the TPB has been successfully utilized to predict online consumers' attitudes, subject norms and perceived control toward their impulse buying intention (Toh and Selvan 2015, Tariq et al. 2019). As the results proposed by Chen et al. (2020) state, attitudes, subjective norms and perceived control, have positive impacts on online consumers' impulse buying intention (Chen et al. 2020). Considering the similarities between live streaming shopping modes and traditional online shopping modes, the research results could be applied to examine online consumers' impulse buying intention on live streaming platforms. Thus, the paper proposes:

Hypothesis 1: Online consumers' attitude towards the impulse buying positively affects their impulse buying intention on live streaming platforms.

Hypothesis 2: Online consumers' subject norm towards the impulse buying positively affects their impulse buying intention on live streaming platforms.

Hypothesis 3: Online consumers' perceived control towards the impulse buying positively affects their impulse buying intention on live streaming platforms.

3.2. Impulse buying behavior

Impulse buying behavior as an unplanned purchase is characterized as abrupt behavior with a lack of deliberation (Zafar et al. 2021). The impulse buying intention of online consumers is an indicator of the extent to which consumers are willing to carry out impulse buying behaviors (Peña-García et al. 2020). Prior scholars have identified a positive relationship between impulse buying intention and impulse buying behaviors (Li, Kang, Zhao, et al. 2022). Based on the above argument, the research hypothesis has been proposed as follows:

Hypothesis 4: Online consumers' impulse buying intentions have a positive effect on their impulse buying behaviors.

3.3. Control variables

The research model (see Figure 1) aims to test the hypotheses. Gender, age, and income level should be included as control variables. Previous scholars have noted that online consumers' impulse buying intentions and behaviors could be affected by gender, age, and income level (Zafar et al. 2021). Thus, it is necessary to examine the influence of control variables.

4. Methodology

4.1. Research setting and measurement

To test the research model, the online questionnaire method is suitable to be conducted in this paper. Specifically, the advantages of the online questionnaire method include comprehensive coverage, time-saving and easy filling (Rowley 2014). This study utilises Chinese online consumers as samples and promotes an online survey among them. Chinese live streaming commerce has been developed since 2017, and many live shopping platforms, such as TikTok, Kuaishou, Taobao Live and Pinduoduo Live, have attracted millions of online consumers (Kang et al. 2021, Li, Kang, and Sohaib 2023a). For example, during the 11.11 sales period in 2020, more than 300 million Taobao users have engaged in live streaming shopping activities, and 33 live streamers have gotten a sales revenue of 100m RMB (Zhong et al. 2022). Some consumers could have impulse buying issues during live shopping activity. Given the rapid development of live streaming commerce and the large base of online consumers on Chinese live streaming platforms, the Chinese live shopping environment is chosen as the research context.

All constructs measured in the current study are employed based on existing literature. For instance, attitude, subject norm and perceived control are measured based on Peña-García et al.'s research (2020). According to Wu et al. (2016), online consumers' impulse buying behavior is tested based on three items. In addition to basic information statistics, the main questionnaire content is shown in Table 1. To improve users' responses, the form utilizes the Likert 7-point scale, ranging from the lowest score=1 to the highest score =7.

Table 1. The list of questionnaire contents.

Variable	Item	Measurement
Attitude towards the impulse buying (Peña-García et al. 2020)	AT1	Impulse buying on live streaming platforms is attractive.
	AT2	I like to impulsively buy while watching live streaming.
	AT3	Impulse buying on live streaming platforms is a good idea.
Subject norm towards the impulse buying (Peña-García et al. 2020)	SN1	I will buy impulsively if people of importance to me encourage me to do that.
	SN2	Recommendations from close friends will make me want to try impulse buying.
	SN3	The opinions of those who are important to me will affect my decision to buy impulsively.
Perceived control towards the impulse buying (Peña-García et al. 2020)	PC1	I would be able to use live streaming platforms for impulse buying.
	PC2	Using live streaming platforms to impulsively purchase is entirely under my control.
	PC3	I have the resources, knowledge and skills to buy impulsively.
Impulse buying intention (Peña-García et al. 2020)	IN1	If the opportunity arises, I intend to impulsively buy from live streaming platforms.
	IN2	If given a chance, I can predict that I will impulsively buy from live streaming platforms in the future.
	IN3	I am likely to impulsively transact with a live streaming platform soon.
Impulse buying behavior (Wu, Chen, and Chiu 2016)	IB1	When shopping on live streaming platforms, I often have the idea, "buy now, think about it later".
	IB2	When shopping on live streaming platforms, I often buy things according to how I feel at the moment.
	IB3	When shopping on live streaming platforms, I often buy things without thinking.

4.2. Data collection

WJX. CN platform is chosen as the online questionnaire design platform because its link can conveniently be shared and forwarded on Chinese social media platforms. Considering most Chinese participants are not skilful in the English language, the online questionnaire has been translated into Chinese by related scholars who are familiar with English and Chinese languages. The invitation letter has been presented in advance to assist participants in understanding the questionnaire topic and content. Each questionnaire filler needs to confirm that they understand the research topic in order to proceed with the questionnaire. Moreover, given that different live streaming platforms have specific online shopping environments, this study focuses on online consumers who are most familiar with the Taobao Live platform, aiming to improve the data quality. The online questionnaire has been distributed among Taobao Live users from March 2022 to May 2022. During this period, 371 online questionnaires have been received. Among these questionnaires, inappropriate responses have been deleted, including the same responses, incomplete responses, and mismatched platforms. Finally, 340 questionnaires are valid for this research, and the percentage of valid questionnaires is 91.64%.

5. Data analysis

5.1. Descriptive statistics

Among these 340 respondents (Table 2), 51.76% are males, and 48.24% are females. Regarding participants' age, 31.76% are between 18 and 25 years old, 38.82% are between 26 and 40 years old, and 29.41% are more than 40 years old. Meanwhile, 32.06% have an income level between 0 and 5,000 RMB, 38.82% are between 5,001 and 10,000 RMB, and 29.12% are more than 10,000 RMB. According to the statistic presented by Wang et al. (2020), the demographic of respondents is similar to the online users' profiles of live shopping in China (Wang, Somogyi, and Charlebois 2020).

Table 2. The basic information of respondents (N=340).

Demographic Variables	Category	Frequency	Percentage (%)
Gender	Male	176	51.76%
	Female	164	48.24%
Age	18-25	108	31.76%
	26-40	132	38.82%
	≥41	100	29.41%
Income level (RMB/ Monthly)	0-5,000	109	32.06%
	5,001-10,000	132	38.82%
	≥10,001	99	29.12%

The research uses variance-based structural equation modelling (SEM) and partial least squares (PLS) path modelling based on SmartPLS 3.3.9 to analyze data and test hypotheses. PLS-SEM is professional for scholars to evaluate measurement model parameters and check structural path coefficients (Chin, Marcolin, and Newsted 2003). Meanwhile, SmartPLS has the most comprehensive and improved functions to promote PLS-SEM analysis, which is supported by existing literature (Sarstedt and Cheah 2019). Thus, SmartPLS 3.3.9 has been applied to promote the data analysis.

5.2. Measurement model

To assess the measurement model, the study needs to be involved in evaluations of reliability, convergent validity, and discriminant validity (Hair et al. 1998). Firstly, average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha, must be utilized to evaluate the reliability of the research model. In detail, AVE should be greater than 0.50, CR should be higher than 0.70, and Cronbach's Alpha should be greater than 0.70 (Chin 1998). Table 3 shows that all data results meet the requirements, indicating reliabilities are reasonable.

The convergent validity and discriminant validity can be examined by checking the confirmatory factor analysis. As Table 3 presents, the factor loadings within their intended constructs are highly correlated, showing that the measurement model meets the requirement of convergent validity and discriminant validity. The range of marked items shown in Table 3 is from 0.934 to 0.978, which is higher than 0.708, indicating that the model meets the convergent validity (Hair et al. 2019).

In addition to the convergent validity, the discriminant validity can be tested by checking the Fornell-Larcker criterion. The AVEs' square root on the diagonals (Table 4) can be utilized to evaluate whether the discriminant validity of the model is acceptable (Chin 1998, Fornell and Larcker 1981). As shown in Table 4, the AVEs' square root on the diagonals is significantly higher than other correlations, meeting the discriminant validity requirement.

Table 3. The results of factor loadings, AVE, CR and Cronbachs Alpha.

Item	Indicator	Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
AT	AT1	0.978	0.968	0.979	0.940
	AT2	0.961			
	AT3	0.970			
IB	IB1	0.970	0.966	0.978	0.936
	IB2	0.958			
	IB3	0.975			
IN	IN1	0.955	0.948	0.967	0.907
	IN2	0.955			
	IN3	0.947			
PC	PC1	0.964	0.952	0.969	0.913
	PC2	0.934			
	PC3	0.968			
SN	SN1	0.960	0.954	0.970	0.915
	SN2	0.951			
	SN3	0.959			

Note: AT= Attitude towards the impulse buying, IB= Impulse buying behavior, IN= Impulse buying intention, PC= Perceived control towards the impulse buying, SN= Subject norm towards the impulse buying.

Table 4. Discriminant validity based on Fornell–Larcker criterion.

Item	AT	IB	IN	PC	SN
AT	0.969				
IB	0.869	0.968			
IN	0.824	0.857	0.952		
PC	0.827	0.910	0.872	0.956	
SN	0.850	0.907	0.876	0.910	0.957

Note. The diagonals represent the square root of AVE, and the lower cells represent the correlation among constructs.

5.3. Structural Model Evaluation

The paper applies the standardized root mean square residual (SRMR) and normed-fit index (NFI) as indicators to check the model fitness. In detail, SRMR results should be less than the threshold of 0.8, and NFI values must be higher than the threshold of 0.8 (Asghar et al. 2022). The SRMR of the current study is 0.064, which is lower than 0.08. The NFI is 0.882, significantly higher than 0.8. Thus, the research model has good model fitness.

Moreover, a common method variance (CMV) can be a problem while self-report questionnaires are applied to collect data simultaneously from the same participants. Regarding the CMV issue, this study can use the score of variance inflation factor (VIF) to check it (Hair et al. 2019). The occurrence of a VIF higher than 10.0 can be proposed as an indication of pathological collinearity, and it is also an indication that the research model may be contaminated by common method bias (Hair et al. 2010, Aminu and Shariff 2014). According to the data analysis results, the VIF score for all constructs is between 1.002 and 7.125, and hence the study can present that there are no collinearity problems detected.

5.4. Description of Hypothesis Testing

To assess each path's significance and the t-statistical test, this paper utilizes bootstrapping on SmartPLS 3.3.9 (Hair et al. 2019). First, as Table 5 presents, the bootstrapped results claim that control variables (i.e., gender, age, and income level) demonstrate insignificant effects across the models. Second, according to Table 5, all hypotheses

can be supported because t-statistics results are notably higher than 1.96 (Hair et al. 2019). Specifically, attitude towards the impulse buying has a significant positive effect on online consumers' impulse buying intention (β=0.214, t=3.790, p<0.001), supporting Hypothesis 1. Subjective norm towards the impulse buying positively correlates with online consumers' impulse buying intention (β=0.364, t=5.552, p<0.001), supporting Hypothesis 2. Meanwhile, perceived control towards the impulse buying positively affects online consumers' impulse buying intention (β=0.365, t=5.680, p<0.001), supporting Hypothesis 3. Finally, online consumers' impulse buying intention can lead to their impulse buying behaviors (β=0.857, t=64.358, p<0.001), supporting Hypothesis 4.

Table 5. Hypotheses results

Path	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AT -> IN	0.214	0.057	3.790	0.000
Age -> IB	-0.038	0.099	0.385	0.700
Age -> IN	0.051	0.097	0.527	0.599
Gender -> IB	-0.019	0.028	0.671	0.503
Gender -> IN	-0.009	0.023	0.378	0.706
IN -> IB	0.857	0.013	64.358	0.000
Income level -> IB	0.036	0.098	0.362	0.717
Income level -> IN	-0.064	0.096	0.662	0.508
PC -> IN	0.365	0.064	5.680	0.000
SN -> IN	0.364	0.066	5.552	0.000

6. Discussion and implications

6.1. Key findings

Based on the research results, several key findings need to be presented. Attitude towards the impulse buying, subject norm towards the impulse buying, and perceived control towards the impulse buying have positive relationships with online consumers' impulse buying intention. In detail, online consumers' impulse buying intentions are affected by their evaluation of the impulse buying behavior, perceived social pressure to perform the impulse buying, and perception of the ease of buying impulsively. Hence, the influencing factors based on the TPB model positively affect online consumers' impulse buying intention on live streaming platforms, which consists of previous impulse buying studies. This means that, whether for live streaming shopping or traditional online shopping, the influencing factors based on the TPB play significant roles in online consumers' impulse buying intention and lead to their final behaviors. Furthermore, for online consumers' impulse buying intentions, three control variables, including gender, age, and income level, demonstrate insignificant effects across the relationships.

6.2. Theoretical implications and Practical implications

Although live streaming shopping has developed rapidly in recent years, few types of studies pay much attention to online consumers' impulse buying intentions and behaviors on live streaming platforms (Li, Kang, Zhao, et al. 2022). Hence, the paper's first theoretical contribution is exploring online consumers' live shopping environment and presenting how their impulse buying intentions are influenced during live streaming shopping. Meanwhile, the study applies the TPB to analyze online consumers' impulse buying intentions. As mentioned before, existing studies have applied the theory to discuss online consumers' impulse buying behaviors on traditional social media platforms. Still, few of them identify the distinct features of live streaming commerce and explore online consumers' impulse buying based on the new mode. Specifically, unlike the online shopping mode on traditional social media platforms, live streaming shopping provides online consumers with the unique conveniences of

knowing product information and interacting with live streamers (Li and Kang 2022b, 2023). The comfortable shopping environment potentially exacerbates online consumers' impulse buying intentions, which needs related business research to focus on.

Given that live streaming shopping gets popular around the world, it is meaningful to understand online consumers' impulse buying intentions and help them avoid this negative shopping habit. Health shopping awareness needs to be popularized and guided by relevant departments. It should be helpful to provide a comfortable shopping environment for online consumers and promote the development of live streaming commerce. The research results show that, related departments, especially the industrial and commercial bureau and the commerce department, should focus on online consumers' impulse buying intentions from attitude, subject norm, and perceived control aspects. Specifically, to avoid impulse buying behaviors, online consumers should keep a rational attitude to live streaming shopping content, and they need to consider their actual needs rather than their peers' opinions. A rational consumption attitude can not only reduce unnecessary expenses of online consumers, but also create a secure shopping atmosphere. With the improvement of the live streaming shopping environment, more and more consumers are willing to build trust with the new business mode.

6.3. Limitations and future study

Although this paper establishes the research model based on the TPB and tests related hypotheses, some limitations should be concerned in the future. Firstly, the data is collected from Taobao Live users. Although Taobao Live is a popular live shopping platform in China, its functions and features could differ from other live streaming platforms. Thus, future studies should promote a multi-group analysis based on users' platform using experiences. Meanwhile, most live streaming platforms, like TikTok and Kuaishou, have provided users with the short video function, which means most online users are both familiar with the video streaming function and short video function. Hence, related research should consider the depth and breadth of the dataset and distinguish these two features. Furthermore, given the social and cultural differences between China and Western countries, the study results cannot be applied to Western backgrounds directly. Future studies should make comparisons between them and design specific research models according to Western consumers' using experiences. Finally, the influencing factors developed based on the TPB model can be improved and be more specific. For instance, the perceived control can be divided into time, technical and financial controls. It could be helpful for related scholars to understand online consumers' impulse buying behaviors.

7. Conclusion

The study explores online consumers' impulse buying intentions and behaviors on live streaming platforms, which differs from previous research. With the development of real-time video streaming, numerous consumers are attracted to engage in live shopping activities and impulsively purchase online products. To understand their impulse buying behaviors, the paper establishes the research model based on the TPB model and analyses influencing factors from attitude, subject norm, and perceived control aspects. Through the data analysis, the research results show that, three factors positively affect online consumers' impulse buying intentions and lead to their final behaviors. Meanwhile, control variables, such as gender, age, and income level, demonstrate insignificant effects across the models. The results are beneficial for related scholars and departments to understand the live shopping environment and focus on online consumers' impulse buying situation. As the live streaming shopping environment improves, more and more consumers are willing to engage in live streaming commerce and build trust with the new business mode.

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Declaration of Competing Interest

All the authors claim that the manuscript is completely original. The authors also declare no conflict of interest.

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