Predicting Live Streamers' Continuous Streaming Marketing Intention via the Extended TPB Model

Lifu Li [a,*], Xiaofeng Wang [b]

[a] *Faculty of Business, City University of Macau, Macau, China*
[b] *Zhengzhou Technical College, Zhengzhou, China*

ABSTRACT

As a new economic innovation, live streamers have widely accepted video streaming technology combined with specific business activities in real time. To predict live streamers' continuous streaming marketing intention on live streaming platforms, the study refers to the theory of planned behaviour (TPB) and designs influencing factors from attitude, subjective norm, and perceived behavioural control. Meanwhile, given the interactive nature of live streaming platforms, the paper divides the subjective norm into online and offline subjective norms and considers the influence both from online and offline communities. The data analysis based on the partial least squares path modelling and variance-based structural equation modelling (PLS-SEM) shows that attitude, online subjective norm, offline subjective norm, and perceived control towards the continuous streaming marketing have positive relationships with live streamers' continuous streaming marketing intention and result in their final behaviours. Related scholars and platform managers should consider the impact of online and offline subjective norms when they analyse live streamers' marketing psychology. Properly guiding live streamers to carry out marketing activities can not only be beneficial to their mental health but also contribute to the stable development of live streaming economy.

KEYWORDS

* Corresponding author: Lifu Li
E-mail address: Leaf.lee@zohomail.com

1. Introduction

Video streaming technology is increasingly used by individuals as a new interactive model to communicate with each other, present daily life, introduce cultural customs, and advertise products. Many users are attracted to engage in live streaming platforms because they perceive hedonic and social value, which in turn can provide them with a comfortable using experience (Wongkitrungrueng et al., 2020). Unlike traditional social media platforms, live streaming platforms provide live streamers with a new method to interact with online consumers, potentially attracting their watching interest and affecting their shopping intention (Ko and Chen, 2020). Specifically, live streamers can introduce product information via the video streaming function, interact with online consumers through the online comment function, and display online products through the online store function. Because of advanced functions established on live streaming platforms, more and more live streamers prefer to use real-time video to produce marketing content rather than other forms of content, like pictures, texts, or long-form articles (Gilbert, 2019). Benefiting from the convenience of interaction, live streaming marketing can shorten the distance between live streamers and online consumers, and live streamers can have a remarkable influence on market behaviour. Because of the rapid development of live streaming industry, a growing number of academic scholars have started to focus on the marketing effect of live streamers (Li et al., 2023).

E-commerce, which is designed based on the live streaming function, has become a new marketing mode, and it can enable users to have a more intuitive and comprehensive understanding of product information (Su, 2019). As a new economic format, live streaming that combines specific business activities with real-time videos, has been widely recognised by live streamers (Wang, 2019). Considering its unique content design and high-level interaction, live streamers tend to continuously stream marketing content, aiming to increase their online traffic and solidify their consumer base (Zhang et al., 2022). As the statistic presented in Wang et al.'s article (2022), in 2021, more than 32% of Chinese online users, approximately 309 million people, had participated in live streaming commerce activities (Wang et al., 2022a). Meanwhile, due to the effect of the COVID-19 pandemic, online merchants find that the live streaming commerce is an effective way to build relationships with online consumers during lockdowns, which further contributes to the development of live streaming commerce around the world (Chen et al., 2023). Existing scholars have focused on the rapid development of live streaming commerce and analysed online users' streaming, watching, and shopping intentions, and some of them pay much attention to users' addiction problems, such as continuous watching and impulse buying (Wu and Huang, 2023, Lv et al., 2022). For instance, 44.1% of online consumers from Chinese live streaming platforms have impulse buying behaviours while engaging in live streaming commerce (Zhang et al., 2023). Such persistent behaviour is not conducive to the sustainable development of the live streaming economy.

However, limited studies have discussed live streamers' intention to continue streaming marketing on live streaming platforms. Since live streaming commerce has become increasingly popular worldwide, many live streamers have decided to apply streaming marketing methods to attract online consumers' attention and win their trust (Xie et al., 2022). Streaming marketing is the new marketing mode created by live streamers, and it is built based on video streaming technology(Zhang and Zamil, 2023). Compared with common streaming marketing behaviours, continuous streaming marketing is a kind of perseverance and effort in behaviour. It can be helpful for live streamers to enhance their online traffic and be beneficial for them to stand out from their competitor. Still, on the other hand, this kind of vicious competition will cause the mental pressure of live streamers, which is not conducive to their mental health. Two aspects of continuous streaming marketing have been overlooked by existing scholars. To comprehensively understand live streamers' continuous streaming marketing intention, this paper draws on the theory of planned behaviour (TPB) and explains their intention from three different aspects. In detail, based on the TPB model, three factors, including attitude, subjective norm, and perceived behavioural control, have a significant impact on users' intentions and result in their final behaviours (Ajzen, 2020). Previous studies have

successfully applied the TPB model to explore online users' watching, shopping, and marketing intention on live streaming platforms (Ho and Yang, 2015, Wang et al., 2022b, Apasrawirote and Yawised, 2022). Considering the broad application of the TPB in the live streaming context, the paper decides to use it to uncover live streamers' continuous streaming marketing intention. The first research objective is established as follows: Predict Chinese live streamers' continuous streaming marketing intention based on the TPB model.

Although the paper draws on the TPB model to predict live streamers' continuous streaming marketing intention, it improves the TPB model based on the interactive features of live streaming platforms, especially dividing the subjective norm into online and offline subjective norms. Subjective norm refers to whether the continuous streaming marketing behaviours are accepted, encouraged, and implemented by the live streamers' circle of influence (Xu et al., 2022, Ajzen, 1991). Offline subjective norm means the effect of people who are essential to live streamers in real life, and online subjective norm refers to the impact of people on live streaming platforms (Xu et al., 2022). Because of the convenience of interaction and communication on live streaming platforms, live streamers' specific intentions, i.e., continuous marketing intention, can be affected by online consumers and other live streamers. For instance, live streamers can receive feedback from online consumers through the online comment function and will continuously stream marketing content based on their requirements. In light of this, it is vital for the current study to focus on online and offline subjective norms, and hence, the second research objective is designed as follows: Analyse the impact of online and offline subjective norms on Chinese live streamers' continuous streaming marketing intention.

Given the research topic and objective, this paper can significantly contribute to the theoretical and practical implications. Regarding the theoretical implication, this study discusses live streamers' continuous streaming marketing intention, which prior scholars ignore. To explore their marketing intention, this article draws on the TPB model and designs influencing factors from three aspects, aiming to establish a specific research model. Meanwhile, based on the interactive nature of live streaming platforms, this study distinguishes the difference between online and offline subjective norms and pays more attention to the effect of online subjective norms on live streaming platforms. About the practical implication, the study findings can provide valuable suggestions for Chinese live streamers and platform designers. Although previous research discovers online users' addiction problems, such as continuous watching and impulse buying on live streaming platforms, limited studies analyse live streamers' continuous streaming marketing intention. Specific research results can help related stakeholders build a convenient and healthy environment for live streamers and online consumers.

2. Literature review and hypotheses

2.1. Continuous streaming marketing on live streaming platforms

Streaming marketing refers to a new online marketing strategy that is designed based on video streaming technology, and it allows live streamers to recommend products and interact with online consumers in real time (Na et al., 2020). Benefiting from peer-to-peer technology, Chinese live streamers have more chances to present product information and communicate with online consumers. Without strict limitations on time and sites, live streamers can market various products, such as clothing, electronics, and food, anytime and anywhere if they want (Wongkitrungrueng et al., 2020). The advanced marketing mode can explain why Jiaqi Li, a famous live streamer in China, can attract 20 million consumers and sell 80,000 eye shadows within one second (Wang et al., 2022a). Many live streamers insist on continuous streaming marketing to attract more online consumers. Because of no strict requirements of sites, time, and funds, live streamers can continuously stream marketing content, like introducing product details, answering questions, and building strong ties with consumers. Since continuous streaming marketing can give them more chances to interact with online consumers, many live streamers firmly intend to

stream marketing content continuously. However, prolonged live streaming can have a significant negative impact on live streamers' physical and mental health. Due to the increasing competition on live streaming platforms, live streamers might be pressured to continue streaming marketing content (Li, 2024a, Li et al., 2024a). In light of this, it is significant for the present research to understand live streamers' continuous streaming marketing intention and design specific strategies to build a comfortable and sustainable marketing environment for them.

2.2. Influencing factors based on the TPB model

The TPB model is a derivative of the theory of reasoned action, and it maintains that three core components together shape an individual's behavioral intentions, indicating it can be applied to predict individuals' behavioural intentions (Ajzen, 1991). Ajzen (1991) claims that the individual performance of a specific behaviour can be explored by three variables, including an individual's attitudes, subjective norms, and perceived behavioural control towards the behaviour (Ajzen, 1991). Given the predictive power of the TPB, it can be widely used to explore various individual intentions in different contexts, like management, business, and even healthcare (Ajzen, 2020). Existing scholars have used it to discuss online users' watching, marketing, shopping, and gifting intentions under live streaming backgrounds, fully proving the application value of the TPB in the field of live streaming research (Apasrawirote and Yawised, 2022, Xu et al., 2022, Wang et al., 2022b, Li, 2024b, Li and Kang, 2023). Because of the similar research context (the live streaming economy), this paper decides to apply the theoretical framework of the TPB to investigate live streamers' continuous streaming marketing intention and establish a research model. Specifically, attitudes towards continuous streaming marketing refers to the degree to which live streamers have a positive or negative assessment when they perform a streaming marketing behaviour on live streaming platforms. Perceived behavioural control means the perceived ease or difficulty of performing a continuous streaming marketing behaviour. Positive attitudes and perceived behavioural control towards continuous streaming marketing will result in live streamers' specific intentions and final behaviours on live streaming platforms, which prior scholars have proved (Wang et al., 2022b, Ajzen, 2020). This means that positive assessment will drive live streamers' continuous streaming marketing intention, and perceived ease of performing continuous streaming marketing will positively affect live streamers' marketing intention. In light of this, the theoretical framework of the TPB can be applied to explore live streamers' streaming marketing intention and propose hypotheses as follows:

Hypothesis 1: Live streamers' attitude towards continuous streaming marketing positively affects their intention to stream marketing continuously.

Hypothesis 4a: Live streamers' perceived behavioural control towards continuous streaming marketing positively affects their intention to stream marketing continuously.

As mentioned before, perceived behavioural control towards continuous streaming marketing can be defined as a live streamer's perception of assessing the ability to perform the streaming marketing behaviour (Ajzen, 2020). The higher the evaluation of their ability means the live streamers will have a stronger intention to perform a specific behaviour (Wang et al., 2022b, Ajzen, 1991). On the contrary, a negative evaluation will negatively affect live streamers' final performance. Hence, live streamers will have a clear behavioural response to streaming marketing when they have a specific perception of their accessibility. Based on the above argument, the paper supposes that:

Hypothesis 4b: Live streamers' perceived behavioural control towards continuous streaming marketing positively affects their final behavioural response.

2.3. Online and offline subjective norms

Subjective norms can be defined as the opinions of other people who are close to live streamers and can influence their decision-making of streaming marketing (Wang et al., 2022b, Ajzen, 2020). Prior studies claim that

the subjective norm refers to whether an individual behaviour is accepted and encouraged by an individual circle of influence, such as friends, relatives, colleagues, and partners (Koay et al., 2023, Verma and Chandra, 2018). However, given the interactive nature of live streaming platforms, the study should divide the subjective norm into online and offline subjective norms, and it needs to consider the influence of both online and offline communities (Xu et al., 2022). Specifically, offline subjective norms refer to live streamers' close friends, partners, and relatives in real life, and their viewpoints about streaming marketing significantly affect live streamers' streaming marketing intention, which prior scholars have identified (Ajzen, 2020, Wang et al., 2022b). Although prior scholars discuss the impact of subjective norms, few of them distinguish the difference between online and offline subjective norms (Xu et al., 2022). To be specific, the online subjective norm is established based on the interactive phenomena on live streaming platforms (Xu et al., 2022). Live streamers on live streaming platforms have convenient methods to interact with audiences and other live streamers through the video streaming function, gift-sending system, and online comment function (Lu et al., 2018). During the interaction process, live streamers' streaming marketing intention can be easily affected by online viewers and other live streamers' viewpoints. For instance, positive feedback from online viewers will greatly encourage live streamers' streaming marketing enthusiasm. Fierce competition among peers will also motivate live streamers to keep broadcasting marketing content. In light of this, both online and offline subjective norms will positively affect live streamers' intention to stream marketing content continuously, and the paper proposes that:

Hypothesis 2: Live streamers' online subjective norm towards continuous streaming marketing positively affects their intention to stream marketing continuously.

Hypothesis 3: Live streamers' offline subjective norm towards continuous streaming marketing positively affects their intention to stream marketing continuously.

2.4. Intention and final behaviour

Live streamers' behavioural intention is the motivational factor affecting a given behaviour (Ajzen, 1991). According to the TPB model, an individual's intention has a significant relationship with their final behavioural response, which means that a stronger intention will be more likely to perform the behaviour (Ajzen, 1991, Xu et al., 2022). Hence, live streamers' actual behaviours are determined by their intent to perform continuous streaming marketing on live streaming platforms, and the paper states that:

Hypothesis 5: Live streamers' continuous streaming marketing intention positively affects their final behavioural response.

2.5. Control variables

Figure 1 shows that the research model is established based on the TPB model, aiming to predict live streamers' continuous streaming marketing intention. Live streamers' age, gender, educational background, and income level should be included as control variables because of their potential effects on live streamers' intentions and behaviours. Specifically, prior scholars include online users' age, gender, educational background, and income level as control variables while exploring online viewers' shopping and gifting intentions on live streaming platforms (Xu et al., 2022, Li et al, 2024b, Li and Pugalia, 2024). Therefore, to provide specific research results, the study should design the control variables and check their influences.
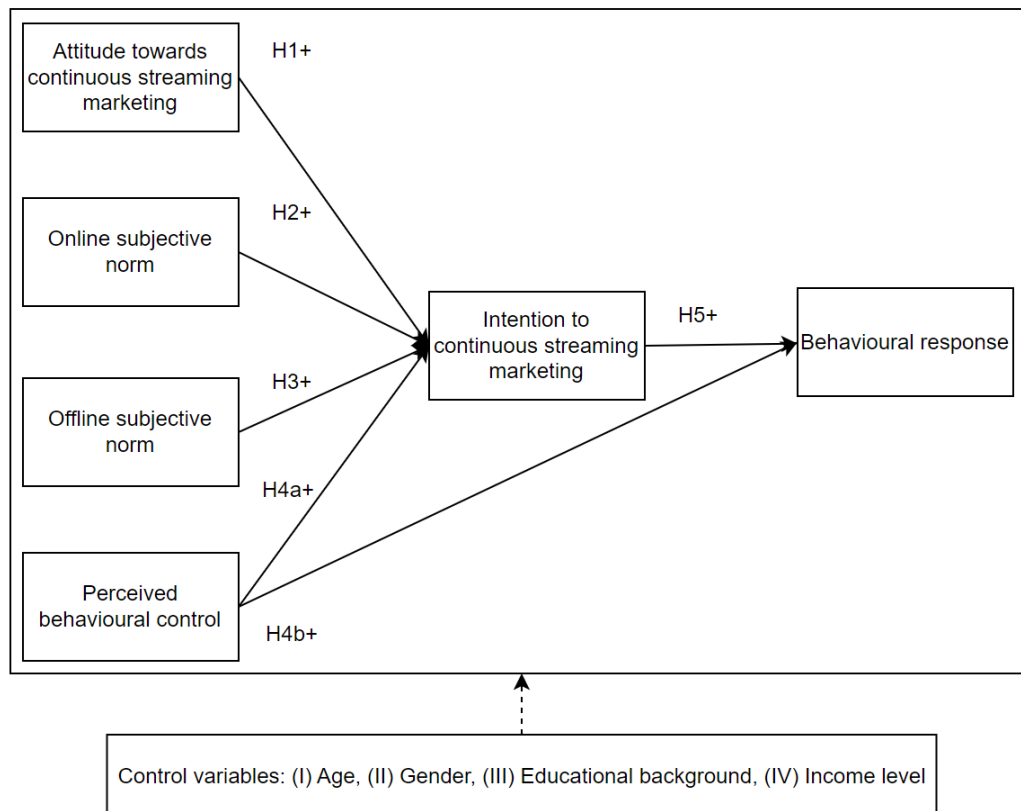
Figure 1. The research model.

3. Methodology

3.1. Sampling Plan and Data Collection

The online questionnaire method is conducted to examine hypotheses and evaluate the research model in this paper. Unlike the offline questionnaire, the online questionnaire link can be conveniently distributed among participants, and it can overcome time and location restrictions. Regarding questionnaire participants, this study aims to focus on Chinese live streamers. Compared with other countries, China's live-streaming economy is developing at an astonishing speed. In China, sales promotion combined with video streaming technology as a novel strategy has been featured by numerous e-commerce platforms, such as Taobao Live, Jingdong Live, and TikTok Live. As a famous live streaming shopping platform in China, Taobao Live has generated nearly 50 billion US dollars in gross merchandise volume (Liu and Wang, 2022). Because of the tremendous growth of the live streaming industry, the live streaming market has increased from RMB 2.27 trillion in 2021 to RMB 4.9 trillion in 2023 (Zhang and Zamil, 2023). Considering the rapid development of live streaming commerce and the large base of live streamers in China, the Chinese live streaming marketing environment is selected as the research context. Meanwhile, all constructs measured in the current study are designed according to existing scholars, as the questionnaire list in the Appendix shows. For instance, live streamers' attitude towards continuous streaming marketing is examined by three question items (Wang et al., 2022b, Ajzen, 1991). Online and offline subjective norms are evaluated based on three questions separately (Xu et al., 2022, Ajzen, 1991, Wang et al., 2022b). To examine all relevant dimensions of the concept, all questions are evaluated using a seven-point Likert scale ranging from 1 point for strongly disagree to 7 points for strongly agree.

3.2. Data collection

The online questionnaire link is distributed among Chinese live streamers, and this study applies the Tencent Questionnaire (https://wj.qq.com) as the questionnaire design platform. This is because its link can be convenient to be shared and forwarded by Chinese social media platforms, such as Wechat, QQ, and Sina Weibo. Since many Chinese respondents are not skilled in English, the questionnaire content has been translated into Chinese. Meanwhile, to avoid participants misunderstanding the research background, the invitation letter has been presented in advance to assist them in knowing the research topic and objectives. Participants can only fill out the questionnaire after confirming their understanding of the research topic. The study selects the Taobao Live platform as it is the most popular live streaming shopping platform in China. Live streamers on Taobao Live have abundant marketing experiences and can provide valuable feedback. A pilot test has been conducted with ten live streamers on Taobao Live, which is helpful in improving the instrument and avoiding minor issues. The data collection is promoted from October 2023 to December 2023, and 311 online questionnaires have been received from Taobao Live users. Among these questionnaires, inappropriate responses have been deleted, including the same responses, same IP address, and incomplete responses. Finally, 293 questionnaires are valid for this research, and the percentage of valid questionnaires is 94.21%.

4. Data analysis

4.1. Descriptive statistics

Among these 293 respondents (Table 1), 43.69% are males, and 56.31% are females. Regarding participants' age, 25.94% are between 18 and 25 years old, 39.25% are between 26 and 40 years old, and 34.81% are more than 40 years old. Meanwhile, 33.11% have a high school or junior college background, and 40.96% have a bachelor's background. Furthermore, 43% of participants' income levels are less than 5001 RMB, and 34.47% are between 5001 and 10000.

Table 1. The basic information of respondents (N=293).

Demographic Variables	Category	Frequency	Percentage (%)
Gender	Male	128	43.69%
	Female	165	56.31%
Age	18-25	76	25.94%
	26-40	115	39.25%
	≥41	102	34.81%
Educational background	High school or junior college	97	33.11%
	Bachelor's degree	120	40.96%
	Master's degree or above	76	25.94%
Income level	≤5000	126	43.00%
	5001-10000	101	34.47%
	≥10001	66	22.53%

The study decides to use variance-based structural equation modelling (SEM) and partial least squares (PLS) path modelling based on SmartPLS 3. This is because PLS-SEM can be applied to analyse data samples and test the hypotheses based on the research model, and it tolerates fewer than 500 research samples (Hair et al., 2019). PLS-SEM is reasonable for scholars to test measurement model parameters and calculate structural path coefficients, and it allows the estimation of complex cause-effect relationships in path models (Hair et al., 2019). Meanwhile, SmartPLS 3 has the most improved functions to promote PLS-SEM analysis, which is suitable for the current study

to utilise (Sarstedt and Cheah, 2019). Therefore, this study applies the PLS-SEM on SmartPLS 3.

4.2. Measurement model

To assess the measurement model, the study needs to be involved in evaluations of reliability, convergent validity, and discriminant validity. Specifically, average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha can check the reliability of the research model. 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, Hair et al., 2019). As Table 2 shows, the reliability of the research model is reasonable.

Table 2. The results of factor loadings, AVE, CR, and Cronbach's Alpha.

Item	Indicator	Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
AC	AC1	0.942	0.923	0.951	0.867
	AC2	0.923			
	AC3	0.928			
BR	BR1	0.911	0.903	0.938	0.835
	BR2	0.920			
	BR3	0.911			
IM	IM1	0.975	0.969	0.980	0.942
	IM2	0.973			
	IM3	0.964			
OF	OF1	0.945	0.954	0.970	0.915
	OF2	0.965			
	OF3	0.959			
ON	ON1	0.916	0.893	0.933	0.823
	ON2	0.904			
	ON3	0.902			
PC	PC1	0.949	0.931	0.956	0.880
	PC2	0.954			
	PC3	0.909			

Note: AC=Attitude towards continuous streaming marketing, BR=Individuals' behavioural response, IM=Intention to continuous streaming marketing, OF=Offline subjective norm, ON=Online subjective norm, PC=Perceived behavioural control.

Table 3. Discriminant validity.

Fornell-Larcker criterion						
Item	AC	BR	IM	OF	ON	PC
AC	0.931					
BR	0.700	0.914				
IM	0.719	0.724	0.970			
OF	0.762	0.676	0.729	0.957		
ON	0.755	0.688	0.688	0.729	0.907	
PC	0.763	0.722	0.785	0.799	0.718	0.938
HTMT criterion						
Item	AC	BR	IM	OF	ON	PC
AC						
BR	0.752					
IM	0.759	0.756				
OF	0.811	0.709	0.755			
ON	0.829	0.752	0.734	0.787		
PC	0.822	0.770	0.825	0.847	0.784	

The convergent validity and discriminant validity can be evaluated by testing the confirmatory factor analysis.

As Table 3 presents, the factor loadings within their intended constructs are highly correlated, claiming that the measurement model meets the requirement of convergent validity and discriminant validity. The range of marked items shown in Table 2 is from 0.902 to 0.975, 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 should be examined by assessing the Fornell-Larcker criterion. The AVEs' square root on the diagonals (Table 3) can be utilised to check whether the discriminant validity of the model meets requirements (Chin, 1998, Fornell and Larcker, 1981). As Table 3 states, the AVEs' square root on the diagonals is significantly higher than other correlations, meeting the discriminant validity requirement. Meanwhile, values of the HTMT ratio remain lower than 0.90, indicating that the model is acceptable (Hair et al., 2019).

4.3. Structural Model Evaluation

A common method variance could be an issue while self-report questionnaires are applied in the research to collect data simultaneously from the same participants. Regarding the issue of common method variance, this study can use the score of variance inflation factor (VIF) to check it (Kock, 2015, Hair et al., 2019). Specifically, the occurrence of a VIF higher than five 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 (Jony and Serradell-López, 2021). The VIF score for all constructs in the present study is between 2,642 and 3.518; hence, the paper can conclude that no collinearity problems are detected.

Regarding model fitness, the paper studies the standardised root mean square residual (SRMR) and normed-fit index (NFI) as indicators. SRMR values less than the threshold of 0.8 are satisfactory for model fitness, while NFI values need to be higher than the threshold of 0.8 (Asghar et al., 2022). Specifically, the SRMR is 0.053, which is lower than 0.08, showing an acceptable fit (Kline, 2011). The NFI is 0.877, which is greater than 0.8, indicating an acceptable model fit (Tabachnick and Fidell, 2001).

4.4. Description of Hypothesis Testing

To evaluate each path's significance and the t-statistical test, this paper applies bootstrapping on SmartPLS 3. First, as Table 4 presents, the bootstrapped results claim that control variables (i.e., gender, age, educational background, and income level) claim insignificant effects across the models. Second, according to Table 4, all hypotheses can be supported because t-statistics results are notably higher than 1.96 (Hair et al., 2019). Specifically, attitude towards continuous streaming marketing has a significant positive effect on live streamers' continuous streaming marketing intention (β=0.153, t=2.670, p<0.01), supporting Hypothesis 1. Online subjective norm (β=0.144, t=3.116, p<0.01) and offline subjective norm (β=0.156, t=2.401, p<0.05) towards continuous streaming marketing positively correlate with live streaming marketing intention, supporting Hypothesis 2 and Hypothesis 3. Meanwhile, perceived control positively affects live streamers' continuous streaming marketing intention (β=0.436, t=5.364, p<0.001) and final behavioural response (β=0.409, t=4.481, p<0.001), supporting Hypothesis 4a and Hypothesis 4b. Finally, live streamers' continuous streaming marketing intention can lead to their behavioural response (β=0.407, t=4.304, p<0.001), supporting Hypothesis 5.

Table 4. Hypotheses results.

Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AC -> IM	0.153	0.153	0.057	2.670	0.008
Age -> BR	0.048	0.044	0.038	1.247	0.213

Age -> IM	-0.040	-0.039	0.042	0.973	0.331
Educational background -> BR	0.021	0.022	0.040	0.521	0.602
Educational background -> IM	-0.050	-0.049	0.037	1.362	0.174
Gender -> BR	0.023	0.025	0.038	0.599	0.549
Gender -> IM	0.038	0.036	0.034	1.093	0.275
IM -> BR	0.407	0.408	0.095	4.304	0.000
Income level -> BR	-0.023	-0.021	0.042	0.551	0.582
Income level -> IM	0.016	0.018	0.038	0.421	0.674
OF -> IM	0.156	0.158	0.065	2.401	0.017
ON -> IM	0.144	0.142	0.046	3.116	0.002
PC -> BR	0.409	0.409	0.091	4.481	0.000
PC -> IM	0.436	0.435	0.081	5.364	0.000

5. Discussion and implications

5.1. Key findings

Several key findings can be discussed based on the results of the data analysis. Notably, attitude towards continuous streaming marketing and perceived control towards continuous streaming marketing have positive relationships with live streamers' continuous streaming marketing intention, which accords with the theoretical basis of the TPB model. To be specific, live streamers' continuous streaming marketing intention will be affected by their evaluation of the continuous streaming marketing behaviour. Perception of the ease of continuous streaming marketing significantly impacts live streamers' continuous streaming marketing intention. Meanwhile, both online and offline subjective norms positively affect live streamers' continuous marketing intention. This means that perceived social pressure from their family members and other live streamers will affect live streamers' continuous streaming marketing on live streaming platforms. Hence, whether for live streaming watching, shopping, or streaming activities, the influencing factors designed based on the TPB will positively affect online users' specific intentions and result in their final behaviour. Furthermore, live streamers' continuous marketing intention will positively impact them to continuously stream marketing content. Finally, regarding live streamers' continuous streaming marketing intentions and behaviours, four control variables, including gender, age, educational background, and income level, demonstrate insignificant effects across the relationships.

5.2. Theoretical implications

Streaming marketing is developed based on video streaming technology, and it breaks the limitations of time and space in the marketing process. Although existing scholars pay much attention to online users' activities on live streaming platforms, such as watching, shopping, gifting, and streaming activities, limited studies focus on live streamers' continuous streaming marketing intention. Unlike traditional social media platforms, the video streaming function provides live streamers with an opportunity to display products and recommend services. Hence, the research results can be helpful for related scholars to understand live streamers' unique marketing intentions. Meanwhile, to comprehensively analyse live streamers' continuous streaming marketing intention, this study draws on the TPB model and discovers influencing factors from three aspects. The data analysis results once again confirm the broad application field of the TPB model. Furthermore, considering the interactive nature of live streaming platforms, live streamers can conveniently communicate with online audiences and other live streamers. This feature requires the study to divide the subjective norm into online and offline subjective norms. Specifically,

the offline subjective norm is more like the traditional subjective norm and analyses effects from live streamers' family members and friends. Online subjective norms are established based on the interactive characteristics of live streaming platforms, and scholars need to focus on the effects of online communities. Real-time interaction can help live streamers receive feedback from online viewers, and various comments will cause potential pressure on live streamers. In light of this, future research should distinguish the difference between online and offline subjective norms and pay more attention to the effect of online subjective norms.

5.3. Practical implications

As mentioned above, live streaming platforms provide Chinese live streamers with a convenient way to broadcast marketing information and build trust with online viewers in real time. Although streaming marketing brings live streamers convenience and overcomes the limitations of time and space, it also causes live streamers to behave continuously. On the positive aspect, continuous streaming marketing can help live streamers introduce product information in detail and increase their customer base. However, continuous streaming marketing can also cause a psychological burden on live streamers and have a negative impact on marketing activities. To build a healthy streaming marketing environment, relevant scholars should explore live streamers' continuous streaming marketing intention and design suitable strategies. In addition to focusing on three factors based on the TPB model, researchers should divide subjective norms into online and offline subjective norms. Previous studies have discussed the effect of individuals' family and friends, but few of them identify the effect of the online community. As a prominent feature on live streaming platforms, interactivity helps live streamers know online viewers' requirements in real time, which can cause their streaming marketing motivation to be influenced by viewers' and other streamers' feedback. For instance, live streamers have to continue streaming marketing activities due to the pressure of the audience and other live streamers, even if they want to take a break from live streaming. In light of this, related scholars and platform managers should consider the impact of online and offline communities when they analyse live streamers' marketing psychology. Otherwise, this will not be conducive to the sustainable development of the live streaming economy. Properly guiding live streamers to carry out marketing activities, like ignoring the vicious competition of peers and taking appropriate rest measures, can not only be beneficial to their mental health but also contribute to the stable development of live streaming economy.

5.4. Limitations and future study

To deeply understand live streamers' continuous streaming marketing intention, this study draws on the TPB model and divides the subjective norm into online and offline subjective norms. In addition to referring to the TPB, future studies should consider the impact of social and cultural backgrounds. For instance, live streamers from China tend to accept collectivism and follow their families' advice while making important decisions (Hofstede, 2011, Li et al, 2024c, Li and Kang, 2025). However, others from Western countries will prefer individualism and tend to make decisions by themselves. This difference requires future research to make a multi-group analysis based on live streamers' social backgrounds. Related research results can be helpful for platform managers to design specific strategies to establish a healthy live marketing environment.

6. Conclusion

The study refers to the TPB model and explores Chinese live streamers' continuous streaming marketing intention on live streaming platforms. Different from previous scholars, this paper divides subjective norms into online and offline subjective norms based on the interactive characteristics of the video streaming function. According to the research results, attitude, online subjective norm, offline subjective norm, and perceived

behavioural control towards continuous streaming marketing have positive relationships with live streamers' continuous streaming marketing intention and result in their final behavioural responses. Related findings can be helpful for scholars to understand live streamers' specific marketing intentions. To establish a healthy live streaming marketing environment, platform managers should guide live streamers to rationally promote streaming marketing strategies and make reasonable use of live streaming platforms.

Funding Statement

Acknowledgments

Conflict of interest

We would like to submit the enclosed manuscript entitled "Predicting live streamers' continuous streaming marketing intention via the extended TPB model," which we wish to be considered for publication in the Journal. On behalf of my co-authors, I would like to declare that the work described was original research that has not been published previously and is not under consideration for publication elsewhere, in whole or in part.

Author contributions

Conceptualization: Lifu Li; Investigation: Xiaofeng Wang; Methodology: Lifu Li; Writing – original draft: Lifu Li; Writing – review & editing: Xiaofeng Wang.

Appendix

A1. The list of questionnaire contents.

Variable	Item	Measurement
Attitude towards continuous streaming marketing (Wang et al., 2022b, Ajzen, 1991)	AC1	By continuous streaming marketing, I would improve the sales in my live streaming channel.
	AC2	I like to stream marketing continuously.
	AC3	I feel that continuous streaming marketing for product sales is promising.
Online subjective norm (Xu et al., 2022, Ajzen, 1991, Wang et al., 2022b)	ON1	I will stream marketing continuously if people in the live streaming channel encourage me to do that.
	ON2	Viewpoints from online viewers and other live streamers will make me want to stream marketing continuously.
	ON3	Other users whose opinions I value think it is reasonable to stream marketing continuously.
Offline subjective norm (Xu et al., 2022, Ajzen, 1991, Wang et al., 2022b)	OF1	My family encourages me to stream marketing continuously.
	OF2	Most people who are important to me in real life think it is good to stream marketing continuously.
	OF3	The opinions of those who are important to me in real life believe that continuous streaming marketing is beneficial.
Perceived behavioural control (Wang et al., 2022b, Ajzen, 1991)	PC1	The method of continuous streaming marketing is easy for me.

	PC2	Using live streaming platforms to stream marketing continuously is entirely under my control.
	PC3	I do not have a technical problem streaming marketing continuously.
Intention to continuous streaming marketing (Wang et al., 2022b, Ajzen, 1991)	IM1	If the opportunity arises, I intend to stream marketing continuously.
	IM2	If given a chance, I can predict that I will stream marketing continuously.
	IM3	I am willing to stream marketing continuously.
Individuals' behavioural response (Ajzen, 1991)	BR1	I will stream marketing continuously while using live streaming platforms.
	BR2	I tend to stream marketing continuously.
	BR3	I will stream marketing content continuously.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human behavior and emerging technologies*, 2(4), 314-324. https://doi.org/10.1002/hbe2.195

Apasrawirote, D., and Yawised, K. (2022). Factors influencing the behavioral and purchase intention on live-streaming shopping. *Asian Journal of Business Research*, 12(1), 39. https://doi.org/10.14707/ajbr.220119

Asghar, M. Z., Arif, S., Iqbal, J., and Seitamaa-Hakkarainen, P. (2022). Social Media Tools for the Development of Pre-Service Health Sciences Researchers during COVID-19 in Pakistan. *International journal of environmental research and public health*, 19(1), 581. https://doi.org/10.3390/ijerph19010581

Chen, H., Dou, Y., and Xiao, Y. (2023). Understanding the role of live streamers in live-streaming e-commerce. *Electronic commerce research and applications*, 59, 101266. https://doi.org/10.1016/j.elerap.2023.101266

Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modeling. *JSTOR*. https://www.jstor.org/stable/249674

Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50. https://doi.org/10.1177/00222437810180010

Gilbert, M. A. (2019). Strengthening your social media marketing with live streaming video. in Smart Technologies and Innovation for a Sustainable Future: Proceedings of the 1st American University in the Emirates International Research Conference—Dubai, UAE 2017, 357-365. https://doi.org/10.1007/978-3-030-01659-3_42

Hair, J. F., Risher, J. J., Sarstedt, M., and Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203

Ho, C.-T., and Yang, C.-H. (2015). A study on behavior intention to use live streaming video platform based on TAM model. in Proceedings of the Asian conference on psychology and behavioral sciences, 1-20. https://papers.iafor.org/wp-content/uploads/papers/acp2015/ACP2015_08818.pdf

Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. Online readings in psychology and culture, 2(1), 8. https://doi.org/10.9707/2307-0919.1014

Jony, A. I., and Serradell-López, E. (2021). A pls-sem approach in evaluating a virtual teamwork model in online higher education: why and how?. in Research and Innovation Forum 2020: Disruptive Technologies in Times of Change, 217-232. https://doi.org/10.1007/978-3-030-62066-0_17

Kline, R. B. (2011). Principles and practice of structural equation modeling (3. Baskı). New York, NY: Guilford.

Ko, H.-C., and Chen, Z.-Y. (2020). Exploring the factors driving live streaming shopping intention: A perspective of parasocial interaction. in Proceedings of the 7th International Conference on Management of e-Commerce and e-Government, 36-40. https://doi.org/10.1145/3409891.3409901

Koay, K. Y., Teoh, J. Y., and Cheung, M. L. (2023). Understanding factors influencing viewers' intention to watch video game live streaming on Twitch: Combined use of PLS-SEM and NCA. First Monday. http://dx.doi.org/10.5210/fm.v28i5.12644

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1-10. https://www.igi-global.com/article/common-method-bias-in-pls-sem/132843

Li, G., Tang, P., and Feng, J. (2023). How streamer channels influence luxury brand sales in live streaming commerce: an empirical study. *Asia Pacific Journal of Marketing and Logistics*, 35(12), 3069-3090. https://doi.org/10.1108/APJML-01-2023-0096

Li, L. (2024a). Impact of the propensity to cross-cultural adaptation on online viewers' attitudes toward ethnic minority group cultural streaming: An extension of the theory of planned behaviour. *Computers in Human Behavior*, 160, 108365. https://doi.org/10.1016/j.chb.2024.108365

Li, L. (2024b). Online consumers build trust with online merchants through real-time interaction function. *Journal of Information Economics*. 1(4), 17. https://doi.org/10.58567/jie01040002

Li, L., Feng, Y. and Zhao, A. (2024a). An interaction–immersion model in live streaming commerce: the moderating role of streamer attractiveness. *J Market Anal*, 12, 701–716. https://doi.org/10.1057/s41270-023-00225-7

Li, L., and Kang, K. (2023). Discovering online Chinese consumers' impulse buying in live streaming by the theory of planned behavior. *Journal of Economic Analysis*. https://doi.org/10.58567/jea03020008

Li, L. and Kang, K. (2025). How do family support factors influence college students' online-startup thinking? *Journal of Entrepreneurship in Emerging Economies*, 17(2), 215-238. https://doi.org/10.1108/JEEE-06-2023-0238

Li, L., Kang, K. and Namisango, F. (2024b). Online younger viewers' motivation to purchase virtual gifts: multi-group analysis of urban-rural backgrounds. *Aslib Journal of Information Management*. https://doi.org/10.1108/AJIM-03-2024-0201

Li, L., Kang, K. and Feng, Y. (2024c). Parents' effects on Chinese students' digital entrepreneurship motivation on live streaming platforms: regional perspective using multi-group analysis. *Journal of Entrepreneurship in Emerging Economies*. https://doi.org/10.1108/JEEE-09-2023-0372

Li, L., and Pugalia, S. (2024). How Wanghong Live Streamers Affect Online Users' Purchasing Behavior on Live Streaming Platforms: A PLS-SEM Approach. *Journal of Global Information Technology Management*, 27(4), 277–292. https://doi.org/10.1080/1097198X.2024.2410675

Liu, F., and Wang, Y. (2022). Marketing by live streaming: How to interact with consumers to increase their purchase intentions. *Frontiers in Psychology*, 13, 933633. https://doi.org/10.3389/fpsyg.2022.933633

Lu, Z., Xia, H., Heo, S., and Wigdor, D. (2018). You watch, you give, and you engage: a study of live streaming practices in China. in Proceedings of the 2018 CHI conference on human factors in computing systems, 1-13. https://doi.org/10.1145/3173574.3174040

Lv, X., Zhang, R., Su, Y., and Yang, Y. (2022). Exploring how live streaming affects immediate buying behavior and continuous watching intention: A multigroup analysis. *Journal of Travel & Tourism Marketing*, 39(1), 109-135. https://doi.org/10.1080/10548408.2022.2052227

Na, W., Changhui, N., and Xiaoxiao, G. (2020). Research on the influence mechanism of communication style similarity on purchase intention in live streaming marketing. *Foreign Economics & Management*, 42(08), 81-95. https://doi.org/10.16538/j.cnki.fem.20200511.301

Sarstedt, M., and Cheah, J.-H. (2019). Partial least squares structural equation modeling using SmartPLS: a software review. *Journal of Marketing Analytics*, 7(3), 196-202. https://doi.org/10.1057/s41270-019-00058-3

Su, X. (2019). An empirical study on the influencing factors of e-commerce live streaming. in 2019 International Conference on Economic Management and Model Engineering (ICEMME), 492-496. https://doi.org/10.1109/ICEMME49371.2019.00103

Tabachnick, B. G., and Fidell, L. S. (2001). SAS for windows workbook for Tabachnick and Fidell using multivariate statistics, Allyn and Bacon. https://cir.nii.ac.jp/crid/1130282271473640960

Verma, V. K., and Chandra, B. (2018). An application of theory of planned behavior to predict young Indian consumers' green hotel visit intention. *Journal of cleaner production*, 172, 1152-1162. https://doi.org/10.1016/j.jclepro.2017.10.047

Wang, Y.-S. (2019). User experiences in live video streaming: a netnography analysis. *Internet Research*, 29(4), 638-658. https://doi.org/10.1108/IntR-01-2018-0029

Wang, Y., Lu, Z., Cao, P., Chu, J., Wang, H., and Wattenhofer, R. (2022a). How live streaming changes shopping decisions in E-commerce: A study of live streaming commerce. *Computer Supported Cooperative Work (CSCW)*, 31(4), 701-729. https://doi.org/10.1007/s10606-022-09439-2

Wang, Z., Li, J., and Chen, P. (2022b). Factors influencing Chinese flower and seedling family farms' intention to use live streaming as a sustainable marketing method: an application of extended theory of planned behavior. *Environment, Development and Sustainability*, 1-24. https://doi.org/10.1007/s10668-021-01616-5

Wongkitrungrueng, A., Dehouche, N., and Assarut, N. (2020). Live streaming commerce from the sellers' perspective: implications for online relationship marketing. *Journal of Marketing Management*, 36(5-6), 488-518. https://doi.org/10.1080/0267257X.2020.1748895

Wu, Y., and Huang, H. (2023). Influence of perceived value on consumers' continuous purchase intention in live-streaming e-commerce—Mediated by consumer trust. *Sustainability*, 15(5), 4432. https://doi.org/10.3390/su15054432

Xie, C., Yu, J., Huang, S. S., and Zhang, J. (2022). Tourism e-commerce live streaming: Identifying and testing a value-based marketing framework from the live streamer perspective. *Tourism management*, 91, 104513. https://doi.org/10.1016/j.tourman.2022.104513

Xu, Y., Ye, Y., and Liu, Y. (2022). Understanding virtual gifting in live streaming by the theory of planned behavior. Human Behavior and Emerging Technologies, 2022. https://doi.org/10.1155/2022/8148077

Zhang, L., and Zamil, A. (2023). Live stream marketing and consumers' purchase intention: An IT affordance perspective using the SOR paradigm. *Frontiers in Psychology*, 14, 1069050. https://doi.org/10.3389/fpsyg.2023.1069050

Zhang, M., Liu, Y., Wang, Y., and Zhao, L. (2022). How to retain customers: Understanding the role of trust in live streaming commerce with a socio-technical perspective. *Computers in Human Behavior*, 127, 107052. https://doi.org/10.1016/j.chb.2021.107052

Zhang, X., Cheng, X., and Huang, X. (2023). Oh, My God, Buy It!" Investigating impulse buying behavior in live streaming commerce. *International Journal of Human–Computer Interaction*, 39(12), 2436-2449. https://doi.org/10.1080/10447318.2022.2076773