Live interaction and group dynamics: a study of the relationship between interaction rituals and purchase intension in fitness live streaming

[1*]Shuangning Tang, [2]Jingyuan Li
[1]Communication University of China, Beijing 100024, China
[2]East China Normal University, Shanghai 200062, China
[*]Corresponding author E-mail: 1120725035@qq.com

Abstract: With the arrival of the 5G era, the live industry is growing rapidly and users are proliferating. Among them, fitness live streaming is in a hot state. In this paper, in order to study the relationship between user interaction behavior and purchase intention between fitness live streaming, a model of the influence of different inter-subject interaction behavior of fitness live streaming on the consumptive desire of live streaming users is proposed by introducing intermediate variables immersion experience and emotional connection. The study conducted a questionnaire survey on 164 live-streaming users who had watched fitness live-streaming. The results show that anchor-user interaction and inter-subject interaction in fitness live streaming positively promote users' immersion experience and emotional connection; users' immersion experience and emotional connection will have a significant positive impact on their purchase intention.

Key words: Interactive ritual chain, live fitness, group dynamics

1 Introduction

In the context of the pandemic, online fitness live streaming has brought a new way of life for national fitness, and has also become a new marketing venue for e-commerce platforms. According to the 2022 Jitterbug Sports and Fitness Report, fitness anchors rose 208% year-on-year in 2021, and live broadcast revenue increased 141% year-on-year. In addition, other platforms such as Racer and Taobao live industry reports

show considerable growth in the volume of fitness products in the live stream. As a form of online sales and e-commerce that have emerged in recent years, an important attribute of the webcast composition is its creation of a special media scenario of instant interaction and anytime interaction, where anchors are able to build connections with users directly through real-time interaction and introduce products or services in a targeted manner, while fitness live streaming, as a content form that integrates teaching and carrying goods, provides a national physical quality improvement and economic growth in the post-epidemic era This paper focuses on the interactive ceremony. Based on this, this paper focuses on the interactive ritual chain theory to explore the factors that influence users' purchase intention in fitness live streaming and what factors can stimulate users' purchase intention to a greater extent, and tries to construct an interaction and consumption model with relevant connections between anchors and users, and users and users.

2 Review of Research

2.1 Concept definition

Webcast refers to the production and release of information in the scene with the occurrence and development process of the event simultaneously, with the characteristics of timely information dissemination; network recording refers to the dissemination of images and sounds through the network in the form of hardware devices instantly recorded into standard network format for release, and its dissemination of information has a delayed nature and more durable preservation (Jiang, et al., 2017). Compared with the traditional recording style, the interactivity of live fitness is the most prominent feature, and consumers can follow the anchor interaction in real time during the live broadcast, and the product sales in this mode can enhance consumers' evocation of emotions and perceived trust. (Liu, Li, Yin, 2020)

Foreign scholars Lindsay and Brandon Hunter emphasize that the "immediacy" and "high interactivity" of webcasting is the main characteristics that make it superior to other communication media (Lindsay, 2019).

Domestic scholar Hou Xizhen pointed out in his paper that webcasting not only has the advantages of traditional media that can be stored and played back to ensure the integrity of information, but also can broadcast the picture and sound simultaneously

and completely with the help of digital technology (Hou, 2020); in addition, domestic scholar Xie Jixin emphasized that the interactive rituals in the webcasting context build with a user community with circle association, thus improving user stickiness (Xie, 2021). Due to the strong content compatibility and broad market potential of webcasting, fitness live streaming formed by the fusion of fitness tutorials and webcasting has increasingly become the focus of market attention, while there are relatively few studies on fitness economy in academia.

2.2 Theoretical framework

The origin of the interactive ritual chain can be traced back to the 20th century when Emile Turgot introduced the word "ritual" in his book "The Basic Forms of Religious Life". He emphasized that "ritual" is an indispensable condition for generating collective excitement and emotion. Thus, through interactive behavior in rituals, the groups linked by rituals and their "common focus of attention" begin to become meaningful symbols (Lu, Hua, 2021); later, Irving Goffman proposed an "interactive ritual model" based on Turgot's theory "which affirms the role of "context" in the whole ritual process and proposes the performance component that individuals show when facing the context (Wang, 2021); finally, and Collins integrates many related theories and develops the "interactive ritual chain Finally, Collins integrated many related theories and developed the "interactive ritual chain" theory. In the "interactive ritual chain" theory, Collins focuses more on what individuals think and feel during the whole ritual process, emphasizing the role of "group solidarity" and "emotional energy" (Lu. Hua, 2021).

Foreign scholars David Boyns and Sarah Luery emphasize "emotional energy" in the theory of "interactive ritual chains" and discuss the effectiveness of associated communities on "emotional energy" (David, Sarah, 2015). Domestic scholars Pan Shuya and Zhang Yuqi found that the ritual of watching live broadcast is not only provided by the live broadcast platform, but also by the emotional interaction and connection built up within the fan community (Pan, Zhang, 2014). The domestic scholar Fan Xiaoping pointed out, based on the theory of interactive ritual chain, that through the communication and real-time interaction between anchors and users in the process of live streaming, users construct a sense of group virtual presence, which promotes the emergence of group virtual carnival activities and enhances the possibility

of joint consumption by user groups (Fan, Ma, 2009). 2009); another domestic scholar, Gai Shengnan, based on the theoretical perspective of interactive ritual chain, proposed a positive correlation between factors such as users' viewing time, favorite anchor type live-streaming room participation interaction behavior on users' purchasing behavior (Chen, 2022).

With the growing number of interactive marketing methods on the Internet, the vision of interactive marketing research has gradually broadened from the binary relationship of "customer-company" to multiple network relationships. The interactive nature of live e-commerce attracts consumers to consume and plays an important role in promoting the formation of customer fit (Li, Ma, Tian, 2022). Although online fitness is not an emerging product, the boom of live fitness has indeed emerged in recent years. Although live fitness user communities constructed by brand teams with organizational power or spontaneously by fans have existed for a long time, less existing research has focused on the study of inter-user interactions in the live fitness industry.

3 Research Methodology

3.1 Formulation of research hypothesis

The phenomenon of stimulating users' desire to consume in the form of live streaming has been researched from multiple perspectives in academia. The foreign scholar Godes, based on the perspective of social interaction, pointed out that in the process of live broadcasting, users can directly obtain the main information of the purchased goods and enjoyable interactive experience through real-time interaction with the live broadcasters, thus stimulating the formation of consumer desire (Godes, 2005).

In his paper, scholar Xiao Hongbo emphasizes that webcast anchors choose to use emotional communication and empathy in live interactions to create a deep emotional connection with users, and that the series of symbolic content generated in live interactions deepen users' sense of membership, thus improving the quality of live bandwagon (Xiao, 2020). Zeng Yanmei's study found that community interaction information had a positive impact on users' purchase intention (Zeng, 2021). Jing Lei and Yu Hongyan argued with an empirical test that inter-customer communication and interaction can improve the customer shopping pleasure experience, which in turn has

a positive impact on consumers' purchase intention (Jing, Yu, 2020). Liu Shengping and others found that product interaction information, price interaction information, and promotion interaction information all have significant positive effects on users' purchase intention through a study of live interaction of agricultural communities (Liu, Shi, and Lin, 2020). By studying the relationship between inter-customer interaction, service experience, and course repurchase intention of Internet fitness services, Peng, W.J., found that inter-customer interaction positively influenced course repurchase intention by affecting service experience and emotional experience (Peng, 2022).

Immersion experience is a psychological state in which people are attracted to environmental stimuli, and some researchers have demonstrated with empirical studies that consumer immersion experience created by online sales in the Internet environment is one of the key factors of success. Domestic scholars such as Chih-Hui Chiang point out that webcasting is social interaction, and in the process of live interaction, a connection is established between users and anchors and users. Immersion experience and emotional connection are built through interactive interactions (Jiang, Zhao, Li, Hu, Huang, 2017); domestic scholars Lulu Chen, from the perspective of immersion theory, point out that network interaction is positively correlated with users' immersion experience by conducting experimental studies, and the more interactive users feel the mobile live streaming platform, the more likely they are to have immersion experience and thus stimulate the generation of users' consumption desire (Chen, 2018).

Based on the above theoretical introduction and literature derivation, the following theoretical hypotheses are proposed in this paper.

H1 Live anchor interaction positively affects user immersion experience

H2 Live anchor interaction positively affects user emotional connection

H3 inter-user interaction positively affects the user's immersion experience

H4 inter-user interaction positively affects users' emotional connection

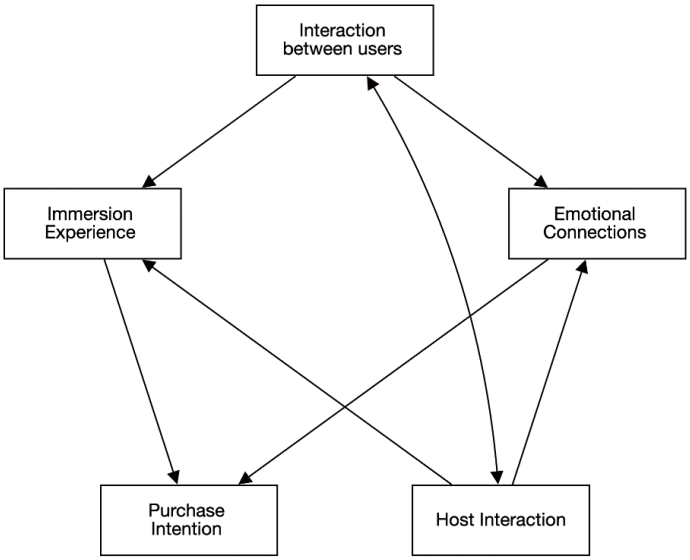
H5 immersion experience positively influences consumers' purchase intension to consume

H6 emotional connection positively influences consumers' purchase intension to consume

3.2 Constructing the research model

Aiming at the interaction characteristics and promotion results of fitness live streaming, this paper explores the dominant factors influencing users' purchase intention from two dimensions: anchor interaction and inter-user interaction, and builds the theoretical model in Figure 1.

Figure 1 Theoretical model



3.3 Questionnaire method

In this study, several fan groups of fitness live broadcast anchors were selected to distribute questionnaires, and the invitation guideline stated that this survey was for fitness live broadcast users and the survey followed the voluntary principle.

3.3.1 Questionnaire design and measurement tools

In this paper, the questionnaire method is used to collect data in conjunction with the content of the study. According to the established theoretical model and its variable system, the questionnaire is divided into four parts: the first part is the basic descriptive

information of the questionnaire, including the web fitness live broadcast, anchor interaction, interaction between users, and the system will automatically prompt the caution and the confidentiality principle before answering. The second part of the screening questions, the survey respondents are required to have fitness live viewing and purchasing experience, set screening questions "1. Have you watched fitness live?" "2. Have you ever purchased the products introduced by the fitness anchor?" The third part of the questionnaire is set up to measure live fitness shopping variables, and this part is the main part of the questionnaire, which measures respondents' emotional connection and immersion experience with anchor interaction and user interaction. To ensure the reliability and validity of the scale, this study draws on previous mature and relevant scales. The independent variable 1 anchor-consumer interaction refers to Zhao Hongxia and Wu Mingzhen's measurement of anchor-consumer interaction behavior, and the independent variable 2 inter-user interaction combines field experience to set co-occurring interaction behavior and Foster & West's measurement of consumer sharing interaction behavior and Tang Jageng's measurement of consumer mutual interaction behavior; the dependent variable purchase intention draws on Fang's (2012) online shopping purchase intention survey scale used in the empirical study. Each question consists of "strongly disagree", "disagree", "average", "agree", "agree", "agree", "agree" and "agree". Each question consists of five options: "strongly disagree", "disagree", "average", "agree" and "strongly agree". The fourth part is a survey of respondents' basic information, including age, gender, disposable income, fitness frequency, and fitness live viewing habits.

4 Data Analysis

A total of 237 questionnaires were collected in this study with the help of Questionnaire Star, and after excluding the screening questions, regular responses and other responses that did not meet the recall requirements, a total of 164 valid questionnaires were obtained from the valid sample. Among the surveyed users, 92.07% worked out at least once a week, and 87.2% watched fitness live at least once a month, indicating that the sample was effective fitness live users.

In terms of the age composition of those surveyed, the sample distribution is relatively concentrated among young people, and to ensure the spending power of the sample, only adults aged 18 and above were surveyed, of whom 9 (5.49%) were aged

18-21, 38 (23.17%) were aged 22-25, 47 (28.66%) were aged 26-29, 39 (23.78%) were aged 30-32, 33- 36 years old 9 (5.49%), 37 years old and above 22 (13.41%). According to the 49th Statistical Report on the Internet Situation in China released by the Internet Information Center (CNNIC), the percentages of Internet users aged 20-29, 30-39 and 40-49 as of December 2021 were 17.3%, 19.9% and 18.4%, respectively. Due to the lack of a specific report on the demographic characteristics of live online fitness users, referring to the "ShakeYin Sports and Fitness Report" released by ShakeYin in 2022, as of December 2021, users aged 18 to 23, mainly the "post-00s", were the loyal viewers of sports and fitness videos, with 30% of the total number of views of users in each age group the proportion of users aged 24 to 30 and 31 to 40 is similar, both at 28%, while middle-aged and older users aged 41 and above account for 14% of the total. The sample structure is basically consistent with the report.

4.1 Data statistics and analysis

SPSSAU was used for data pre-processing, descriptive statistics and the correlation analysis. According to Gefen et al. (2000), the sample size required to use the PLS method is 10 times the number of items measured within the most complex latent variable. The number of measurement items for the most complex latent variable (coefficient of interaction between users) was 10, so the sample size met the requirement.The PLS analysis was performed in two steps, first to verify the reliability and validity of the model, and second to perform a path analysis to verify the significance and predictive power of the structural model path coefficients.

4.1.1 Reliability analysis

Using Cronbach's alpha coefficient as a criterion, it can be seen from Table 3 that the coefficients for the five variables were derived as 0.948, 0.962, 0.944, 0.920, and 0.946, which are higher than the recommended value of 0.70 (Chin, Gopal, 1995), indicating that the study scale has good structural reliability.

4.1.2 Validity analysis

In this study, the convergent validity of the scale was examined by the standardized

loading coefficients of the measured items and the mean variance of the validated factor analysis. From Table 3, the standardized factor loading coefficients for the latent variables corresponding to the measured items ranged from 0.807 to 0.883, which is higher than the recommended value of 0.60 (Fornell-and Larcker, 1981) and can explain the respective dimension to a higher degree. The t-values passed the significance test at $p<0.001$; the AVE values of each latent variable were greater than 0.5, and the square root of AVE was greater than the correlation coefficient among the latent variables, indicating good differential validity among the variables. Table 4 Discriminant validity: Pearson correlation and AVE square root values.

Table 2 Discriminant validity: Pearson correlation and AVE square root values

	Host interaci-ton	**Interaction between users**	**Emotional Connections**	**Immersion Experience**	**purchase in-tension**
Host interaction	0.849				
Interaciton between users	0.948	0.848			
Emotional Con-nections	0.946	0.943	0.859		
Immersion Experience	0.931	0.924	0.932	0.861	
Purchase					
intension	0.929	0.942	0.937	0.916	0.863
Note: Diagonal blue numbers are AVE square root values					

4.1.3 Structural model

SPSSAU was used to test the fit of the five factors. Comparing the reference values shows that the research model fits well. Based on the above analysis, the multiple choice questions in the questionnaire were processed into four coefficients: As shown in Table 5, the anchor interaction coefficient (the higher the score, the stronger the interaction), the inter-user interaction coefficient (the higher the score, the stronger the interaction), the emotional connection coefficient (the higher the score, the stronger the connection), the immersion experience coefficient (the higher the score, the stronger the immersion), and the consumption desire coefficient (the higher the score, the stronger the purchase intention).

Table 3 Basic indicators

Name	Sample size	Minimum value	Maximum value	Average value	Standard deviation	Median
Host interaction factor	164	9.000	34.000	25.494	7.946	29.000
Inter-user interaction factor	164	14.000	49.000	36.457	11.324	42.000
Emotional connection coefficient	164	7.000	30.000	22.091	6.977	25.000
Immersion experience factor	164	4.000	20.000	14.634	4.659	17.000
Purchase intension factor	164	6.000	30.000	21.811	7.092	25.000

To test the influence of interactive behaviors on users' desire to consume during fitness live streaming, this study takes anchor-user interaction and inter-user interaction as independent variables and emotional connection and immersion experience as mediating factors, and through model regression analysis, we can derive the results of the validation of the research hypothesis, as shown in Table 6 .

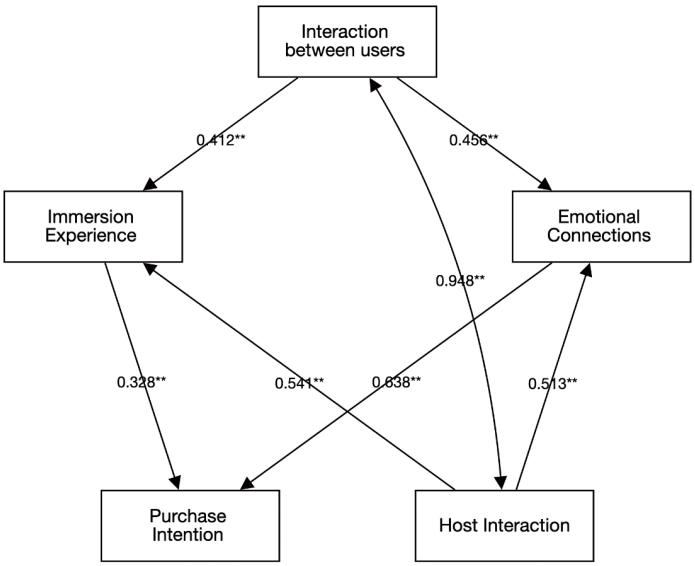
Table 3 Summary table of model regression coefficients

X	→	Y	Non-normalized path coefficient	SE	z (CR value)	p	Standardized path coefficient
Inter-user interaction factor	→	Emotional connection coefficient	0.281	0.044	6.444	0.000	0.456
Host interaction factor	→	Emotional connection coefficient	0.451	0.062	7.247	0.000	0.513
Emotional connection coefficient	→	Purchase intension factor	0.645	0.060	10.833	0.000	0.638

Immersion experience factor	→	Purchase intension factor	0.496	0.089	5.560	0.000	0.328
Inter-user interaction factor	→	Immersion experience factor	0.169	0.034	4.943	0.000	0.412
Host interaction factor	→	Immersion experience factor	0.317	0.049	6.494	0.000	0.541

Based on the above test results, the final path diagram of the interaction relationship between variables is drawn in this study, as shown in Figure 2.

Figure 2 Analytical results of the study model



The results of the structural model analysis and hypothesis testing above show that all six hypotheses proposed in this study have passed the empirical test. In fitness live streaming, anchor interaction can positively influence users' immersion experience and emotional connection (H1 and H2), and anchors' product-related interaction and attention to users' feedback can help users better participate in live streaming interaction and develop a good feeling towards the live streaming room and gain a better viewing experience. Interaction among users can positively promote immersion experience and

emotional connection (H3 and H4), where users share information with each other, actively participate in chatting, and building a lively atmosphere is conducive to users' better engagement in live viewing and promote users' emotions towards the live room. The emotional connection and immersion experience significantly enhance users' purchase intention, respectively.

5 Conclusions and Recommendations

Based on the theoretical framework of sociological interaction ritual chain, this study investigates the connection between anchor interaction behavior and user interaction behavior and consumption desire in fitness live streaming, and constructs a path model to clarify the multiple factors affecting users' purchase intention in fitness live streaming with emotional connection and immersion experience as mediating variables.

5.1 Form a perfect training mechanism for anchor interaction behavior to create a better interactive experience

Consistent with most previous research findings, the effective interaction between anchors and audiences in live streaming has a significant positive relationship on the generation of immersion experience and emotional connection of audiences. Therefore, perfecting the interaction behavior of anchors in live streaming can enhance users' experience when watching live streaming, and thus enhance users' willingness to consume in live streaming. Thus, the formation of a perfect training mechanism for anchor interaction behavior, so as to create a better interactive experience for users is an important part of improving the quality of live broadcast.

In the process of improving the interactive behavior effect of the live anchor, we can try to start from the following directions: first, the network anchor should establish a professional and friendly image, take the initiative to understand the live goods, and through several interactive strategies of the live anchor: objective recommendation interaction (for example, before the live anchor carefully understands, screens, selects multiple forms of judging goods, the live anchor objectively shows the product through a variety of forms); timely response interaction in the process of interaction with users (for example, the behavior of the anchor during the live broadcast is synchronized

and clear) and humorous language strategy (for example, the anchor during the live broadcast adopts humorous language to interact with the audience) and promotion strategy (for example, the anchor during the live broadcast fights for the best product price for the audience) to constantly show the professionalism and closeness of the anchor, help users understand the characteristics of the products, and at the same time, maintain good interaction with users Maintain good interaction with users in terms of emotion and content.

5.2 Build an effective and diversified user communication mechanism to create a more intimate emotional experience

In addition, the interaction between users can also effectively promote the establishment of emotional connection among the audience. The questionnaire survey found that effective interaction between users in the process of watching live streaming can make audiences feel happy and even enjoy communicating with other users in the live streaming room. Therefore, it is crucial to build an effective and diversified user communication mechanism to create a more intimate emotional experience.

First of all, anchors and their operational team should pay attention to the importance of the relationship between users, on the one hand, through the formation of community, creating topics to boost the relationship between users, on the other hand, anchors should keep the atmosphere of the live room active, driving interaction between users, rather than focusing on the output of their own content; in addition, the immersion degree of the live room can also be strengthened through promotional activities, such as red envelope rain and other interactive forms, to improve the In addition, the immersion level of the live broadcast room can also be strengthened through promotional activities, such as red envelope rain and other interactive forms, to improve the activity of the live broadcast room, and to strengthen the group cohesion and sense of identity of users by implying the reciprocal relationship between anchors and users through words.

5.3 Shortcomings of this study

Finally, through the research this paper proved the influence of interaction factors in the live broadcast on the desire to purchase, but there are still incompleteness in this

paper, which should be solved in the future. First, the study only takes the interaction factor in the live broadcast room as the independent variable, and does not consider the basic demand for goods caused by users' own fitness habits, meanwhile, the purchase intention has a strong subjective nature, and the conversion rate of actual purchase behavior has not been measured, and the user's consumption behavior can be further observed in the subsequent study, not only staying in the examination of the user's consumption tendency.

The research in this paper mainly focuses on the Jitterbug community, while the users of fitness live streaming on e-commerce platforms such as Taobao are neglected in the study, and they have stronger consumption purpose and more ritualistic consumption demands. Therefore, this group should be included in further research, and even compare the difference of users' consumption desire between e-commerce-dominated platforms and entertainment-dominated platforms, so as to provide theoretical and practical basis for advertisers and anchor operation teams' different display and interaction strategies in different live streaming environments.

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