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Dismantling the Black Box: Understanding Consumers' Motivations for the Usage of Live Streaming Shopping Platform

Quan Xiao
Jiangxi University of Finance and Economics, xiaoquan@foxmail.com

Xiaojie Wang
Jiangxi University of Finance and Economics, 787608926@qq.com

Lu Qu
Nanchang Jiaotong Institute, qulu2005@126.com

Shanshan Wan
Jiangxi University of Finance and Economics, shanshan_wan@foxmail.com

Mingsong Mao
Jiangxi University of Finance and Economics, mingsong.mao@outlook.com

See next page for additional authors

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Quan Xiao
Jiangxi University of Finance and Economics
Nanchang, China
xiaoquan@foxmail.com

Xiaojie Wang
Jiangxi University of Finance and Economics
Nanchang, China
787608926@qq.com

Lu Qu
(Corresponding Author)
Nanchang Jiaotong Institute
Nanchang, China
qulu2005@126.com

Shanshan Wan
Jiangxi University of Finance and Economics
Nanchang, China
shanshan_wan@foxmail.com

Mingsong Mao
Jiangxi University of Finance and Economics
Nanchang, China
mingsong.mao@outlook.com

Xing Zhang
Wuhan Textile University
Wuhan, Hubei, China
zhangxing1981@126.com

Abstract

Capturing consumers' motivations for using the live streaming shopping platform (LSSP) can help guide the optimization of the platform and enhance shopping experience of consumers while watching live videos. Previous studies on user motivation typically explored technical and psychological antecedents of usage by considering the platform holistically. However, this black-box like treatment to the platform blurs the finer-grained details of consumer usage. This study takes a micro-level approach, disassembling the LSSP into 13 representative design features, and refines nine user motivations based on the uses and gratifications theory. Through collecting 237 questionnaires and employing regression analysis, we reveal the nuanced relationship between platform design features and consumer motivations. Our findings show that different design features are driven by distinct motivations, diverging from overall LSSP usage motivations. This research broadens the scope of LSSP studies, improves platform functionality, and offers practical insights for service providers.

Keywords: live streaming shopping platform, uses and gratifications theory, IT affordance theory, usage motivation, design features

Introduction

The combination of real-time streaming technology and e-commerce has given rise to the boom of live streaming e-commerce (Sun et al., 2019), where products are presented to consumers in the form of real-time live streaming and product information is better understood by consumers in this emerging model. Unlike traditional e-commerce, live streaming shopping has many significant advantages, such as personalized service (Kang et al., 2021), real-time interaction (Xu et al., 2017), and shopping authenticity (Hu and Chaudhry, 2020), and thus live streaming has become an important sales channel for e-commerce (Li et al., 2021). As a key connecting bridge, LSSPs provide functions such as interaction with streamers and shopping. Previous studies on user motivation have explored platforms as a whole to explore antecedents such as technical and psychological aspects of user use, including visibility (Sun et al., 2020), interactivity (Li et al., 2018), and guidance (Sun et al., 2020). However, users' motivations for using different platform features may vary (Smock et al., 2011), and these motivations may differ from users' overall motivations for use, e.g., the user is motivated to watch a live stream for a discount, but is motivated by entertainment for the bulletin or chat room feature. Therefore, such black-box studies of platforms blur the granularity patterns of users in terms of usage, and the lack of analyzing user motivations at a finer granularity is not conducive to improving the functionality of the platform or its continuous use (Xiao, 2021). Therefore, it is important to understand users' motivations for using various features of the platform from a microscopic perspective and at a finer granularity.

If we take a magnifying glass and look at it, LSSP consists of many design features. Design features are elements of the system that provide functionality (DeSanctis and Poole, 1994), such as the streamer's information, bullet screen, etc. Uses and gratifications theory is studied how users choose to use to satisfy their needs based on their motivations, in the face of different design features (Katz, 1974), thus identifying the relationship between platform services and users' motivations to use them (Malik et al., 2016). Therefore, uses and gratifications theory can better explore the relationship between LSSP design features and users' usage motivations. Based on the research context, this study focuses on users' motivation to use the design features of LSSP. Based on the research gap, this study poses the following research questions:

RQ1: What motivates users to use the diverse design features of the LSSP?

RQ2: Considering the diversity of features of the LSSP, are users' motivations for using the design features of the LSSP different from the overall use?

To address the above research questions, this study takes Taobao Live, one of the most popular LSSPs in China, as the research object. Firstly, based on the characteristics of the LSSP, user usage motivation is refined from the perspective of uses and gratifications theory. Then, based on IT affordance theory, this study disassembles the LSSPs and extracts the main and representative design features from a microscopic perspective and a more fine-grained perspective. Finally, the questionnaire results were regression analyzed and used to explore the relationship between the use of design features of LSSPs and users' motivation to use them.

Theoretical Background

Live Streaming Shopping

The model of live shopping is used to interact with users in the form of real-time video, where streamers make products available for purchase by conveying product information, awareness of pricing mechanisms and discounts, and creating a sense of urgency to buy (Bharadwaj et al., 2022). Due to its technical convenience, live streaming is increasingly used by merchants to promote their products and brands (Gilbert, 2019), and the live streaming shopping industry has grown like never before, especially during the COVID-19 epidemic.

In the live shopping context, most of the previous studies on user usage motivations have been holistic motivations for user engagement, including visibility (Sun et al., 2019), interactivity (Li et al., 2018), and guidance (Sun et al., 2020). For example, based on the SOR model, Hu and Chaudhry (2020) suggested that user engagement is influenced by social, structural, and economic ties through emotional commitment. Based on socio-technical systems theory, Zhang et al. (2022) concluded that trust can be enhanced by live interaction (active control, two-way communication, synchronization) and technical support (visibility,

personalization), which affects users' continuous intention to watch live streaming. Cai et al. (2018) used utilitarian and hedonic motivations as a theoretical framework and combined with the Technology Acceptance Model (TAM) to investigate how these two motivations affect the intention to engage in live streaming shopping.

It is worth noting that past research has been less likely to explore user motivations in terms of LSSP design features. Since LSSPs have a diversity of features, users are likely to use certain specific features of the platform for different reasons (Smock, 2011). This generalized treatment of the literature fails to provide an accurate understanding of the relationship between the use of LSSP design features and users' motivations for use. The current study fills this gap to help guide the optimal design of the platform to improve user experience and satisfaction by better matching their distinctive needs.

Uses and Gratifications Theory

Uses and gratifications theory is used to study the theory of media consumption regarding users' choice of different types of media (Rubin, 2009), and the study focuses on users' motivation to use media, the satisfaction they get from using media, and the impact of user behavior on media (Steiner and Xu, 2020). According to media choice studies, users choose media types based on functional perceptions (Daft et al., 1987), and users also choose the features that best satisfy their needs based on their needs. Thus, uses and gratifications theory has been widely used to explore user engagement in social media (Ku et al., 2013). For example, Lin (2022) found that millennial users get satisfaction from using Instagram, the specific motivations behind user engagement were explored, and the association between user engagement, emotions, and psychological dependence was revealed. Ku et al. (2013) studied three media, social networking sites, instant messaging, and E-mail, and relationship maintenance, information seeking, entertainment and style which are four overall gratifications were proposed. LSSP is an important medium for current e-commerce, so the uses and gratifications theory is applicable to explore users' motivations for using LSSP.

Motivations for LSSP Usage

In the context of live streaming, uses and gratifications theory has mostly been used to study user satisfaction with social live streaming services. Hilvert-Bruce et al. (2018) identified users' motivations for participating in live streaming through regression analysis as social interaction, sense of community, meeting new people, entertainment, and seeking information. Hou et al. (2020) proposed that sex and humor appeals, social status display, and interactivity play a considerable role in users' behavioral intentions and proposed that the effects of different types of live streaming vary. In the live streaming shopping context, Cai et al. (2019) identified four motivations, namely interactive enjoyment, substitutability of personal inspection, social needs, and trend pursuit, and explored the relationship between motivations and behaviors in three different scenarios: the general viewing scenario, the product search scenario, and the online celebrity scenario.

These studies have mainly explained the holistic motivations that predict users' use of websites. However, an increasing number of studies emphasize that a more granular approach to measuring media usage is necessary (Ferguson and Perse, 2000; Xiao et al., 2022c), one that focuses on specific features or content types within the media, such as LSSPs not only allow users to watch live streaming, but also have features such as socializing and ordering. Therefore, this study considers LSSP usage motivations not only limited to the platform as a whole, but also by disassembling the platform so that usage motivations of different design features are included. Within the framework of uses and gratifications theory, we sorted through the relevant motivations in the past literature, and finally nine user motivations for using LSSPs were refined, namely economic utility, information, convenience, entertainment, sensory stimulation, social presence, expertise, trustworthiness, and presence.

(1) Economic utility: The "economic utility" motivation refers to users' desire for economic advantages such as promotions, discounts, and low prices (Arnold and Reynolds, 2003). It has been demonstrated that the price of products or services offered by merchants is a major concern for users shopping online (Teo, 2002) and that economic benefits are an important reason for them to choose online channels for shopping (Joines et al., 2003; Man-Ling et al., 2010). In live streaming shoppping, economic benefits such as price mechanisms and discounts of products are highlighted by streamers, while information about relevant

product discounts is also highlighted by the platform, so it is difficult for users to use LSSPs without being driven by economic utility.

(2) Information: the "information" motivation refers to the knowledge and understanding that users can obtain from the media (Habes, 2019). The information delivered by the live streaming shopping service can be searched and accessed by the user, for example, in addition to the text descriptions and images displayed, the dynamics of the live streaming can be received in real time. This approach allows the desired information to be accessed by the user and the useful information to be selected, thus facilitating the user's purchase decision (Cenfetelli and Benbasat, 2019). LSSPs enable a wide variety of information to be accessed by the user. Therefore, information motivation is considered an important factor in the user's use of LSSPs (Gros et al., 2017).

(3) Convenience: The "convenience" motivation refers to the ability to shop anytime without the constraints of time and space, which reflects the desire of users to save transportation costs and control time (Kim and Eastin, 2011). A number of studies on online shopping motivations (Huang and Oppewal, 2006; Bagdoniene and Zemblyte, 2009; Jiang et al., 2013) have identified convenience as an obvious motivation for users to shop online. Through live streaming, product information or other information can be easily accessed by users and can be effective in saving time (Duarte et al., 2018).

(4) Entertainment: The "entertainment" motivation refers to users' ability to escape from reality, spend time, relieve stress, release emotions, and get pleasure from shopping through live streaming shopping (Chang and Zhu, 2011). It has been found that entertainment significantly affects users' attitudes (Kim et al., 2011), and LSSPs are inherently entertaining (Chen and Lin, 2018). If LSSPs provide higher entertainment value, users' willingness to use them is expected to increase (Kim et al., 2019).

(5) Sensory stimulation: "Sensory stimulation" is motivated by users' desire to explore new products, seek novelty and keep up with new trends (Kim and Eastin, 2011). Online shopping is considered to be a quest for variety and a creative way of shopping (Arnold and Reynolds, 2003). Sensory stimulation has also been used to describe the desire to explore new products. In live streaming scenarios, users experience online shopping while enjoying dual sensory stimulation from visual and auditory senses, thus keeping up with trends and experiencing creative shopping like never before (Parsons, 2002).

(6) Social presence: The "social presence" motivation refers to the user's expectation of interpersonal contact, interpersonal warmth, and thoughtful care (Sun et al., 2019). The user's need for social interaction is the key to drive live streaming viewing (Sjöblom and Hamari, 2017). Social interaction plays a crucial role in building a good relationship between users and streamers during live streaming shopping, as it contributes to quality communication (Ou et al., 2014). Therefore, social presence can be used to explain users' motivation to use LSSP (Hou et al., 2019).

(7) Expertise: The "expertise" motivation refers to the degree of product knowledge and experience that the user recognizes in the streamer. Expertise is one of the main factors influencing users' willingness to purchase (Sussman and Siegal, 2003). Before the start of a live streaming, the streamer can rely on a rich source of information to reserve sufficient expertise. During the live streaming process, the streamer has a significant impact on the user's attitude and behavior by providing a variety of professional information (Lyons and Henderson, 2005). Thus, expertise is one of the reasons why users watch live streaming.

(8) Trustworthiness: "Trustworthiness" is motivated by the user's trust in the streamer or product, to some extent, which in turn promotes sustainability in watching live streaming or making purchases (Yang et al., 2019). Yahia et al. (2018) stated that the user's trust increases the user's use of the platform. In live streaming shopping, platforms can provide practical value in terms of authenticity, responsiveness, and visualization, and reduce streamer uncertainty and product uncertainty, thereby increasing users' trust and thus their willingness to use (Wongkitrungrueng and Assarut, 2020).

(9) Presence: "Presence" is motivated by the user's desire for the warmth and social interaction that a platform brings to the user in a near-human way (Hassanein and Head, 2007). Online shopping presence consists of web social presence, other people social presence, and communication social presence, and significantly influences users' trust in the merchant, which in turn promotes purchase intention (Lu et al., 2016). In live streaming shopping, the platform provides visualized real-time communication, which helps to create a sense of immersive atmosphere for users and better enhances their sense of presence. Therefore, the sense of presence is a motivating factor for users to use LSSP.

Live Shopping Design Features

IT affordance theory dynamically describes the relationship and constraints between users and information technology (Faraj and Azad, 2012). In specific scenarios, affordances with different attributes influence user behavior in different ways to achieve goals (Leonardi, 2011). Treem and Leonardi (2013) classified social media functions into four categories based on affordance theory: i.e., visibility, persistence, editability, and relevance. Argyris and Monu (2015) combined affordance theory with public relations theory, social media visibility was divided into eight categories, which include presentability, monitorability, accessibility, self-expression, engagement, connectivity, recordability, and accessibility. In the context of online shopping, Dong and Wang (2018) classified IT affordances into six types of visibility: visibility, meta-voice, triggered participation, shopping guidance, social contact, and transaction.

In the live streaming shopping scenario, IT affordance refers to the design features of LSSPs that provide users with the possibility of purchase-oriented behavior based on their own capabilities and goals (Xiao et al., 2022a). In the field of information systems, design features are elements of a system that provide specific rules or functions (DeSanctis and Poole, 1994), e.g., using the chat function on a Taobao live platform, users can communicate and interact with streamers, as well as chat with other users, or even view others' messages without speaking. As different users are in different contexts, thus their perceived energetic supply and the social connections they exhibit vary. Therefore, unlike previous studies that identified the functionality of platforms from a holistic perspective (Xiao et al., 2022b), this study analyzes the functionality of LSSPs from a microscopic perspective and at a more granular level. In this study, by reviewing the literature related to live streaming shopping, actually observing LSSPs such as Taobao Live, Pinduoduo, Tiktok, and Kwai as well as consulting experts in the e-commerce field, the main and representative design features are extracted and filtered out based on IT affordance theory. The final 13 features of LSSPs frequently used by users were identified, as shown in Table 1, and design features screenshots are shown in Figure 1.

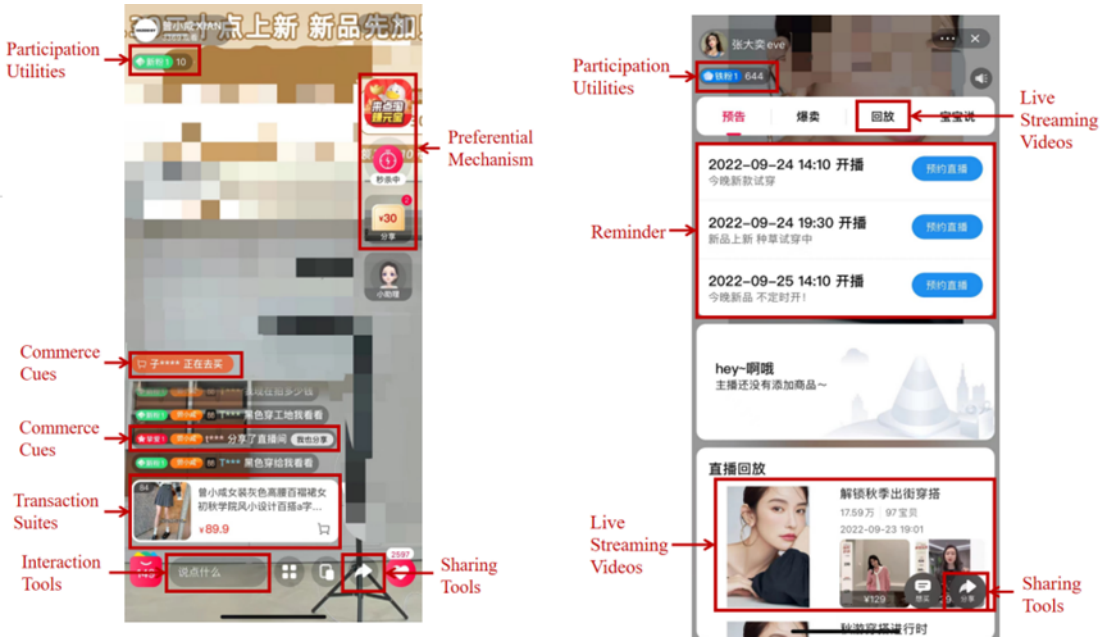

Figure 1. Schematic diagram of some design features

Design Features	Description
Streamer Information	The design features for users to view the profile of the streamers, including streamers avatar, nickname, number of fans, number of favorites, area of expertise, streamers ranking, number of contents, number of likes, ect.
Live Streaming Videos	The design features for users to view the current and historical live streaming videos of the streamer, including the video's status, number of viewers, title, number of hot products, recommended products, preview, ect.
Channel List	The design features for users to view all live channels of the LSSP, including the number of views, the title of the live streaming, the nickname of the streamer, and the recommended products.
Live Streaming Logs	This design feature allows users to view live content profiles and key information that has been published in the live streaming, such as live streaming overviews and live streaming imprints.
Event Information	This design feature highlights the content of specific thematic events for users to view and participate in, such as celebrity tips, lifestyle festivals, origin direct supply, night markets and other event pages.
Reminder	This design feature reminds users to follow the streaming in time, or pay attention to the start time of the live streaming, which includes following reminder and starting reminder.
Recommendation	This design feature can push live streaming that may be of interest to the users, or similar live streaming to those that the users have watched, which includes guess the favorite live streaming and similar live streaming recommendations.
Interaction Tools	This design feature encourages users to communicate and interact with the streamers or other users, and the interaction tools include chatting, liking, rewarding, and connecting.
Sharing Tools	This design feature supports sharing interesting live streaming to other users
Participation Utilities	This design feature supports users to increase the popularity of the streamers and bring them closer to the streamers by completing tasks on the platform, such as intimacy enhancement and joining the fan list, etc.
Preferential Mechanism	This design feature provides participating users with ways to earn monetary or non-monetary rewards, including earning credits, sharing coupons, newcomer bonuses, discount coupons, and group buying, etc.
Commerce Cues	This design feature provides clues to user behavior in the live streaming channel, such as information like “xxx is here”, “xxx is following the streamers”, “xxx is going to buy”, ect.
Transaction Suites	This design feature supports users to add products to the shopping cart or place orders immediately, including links to products in the shopping cart, “grab now button”, links to products on the product shelf, etc.

Table 1. Design features and their description

Research Methodology

Data Collection

Among many LSSPs, Taobao Live has the largest market share, so this study takes Taobao Live platform as the research object and uses questionnaire survey method to obtain user data. This questionnaire survey uses the paid sample service of Questionnaire Star to collect the data, and the limited object to fill in must be Taobao Live users. After invalid questionnaires such as selected options with regularity and contradictory options were eliminated, a total of 237 questionnaires were used in this study for formal analysis, of which 109 were male samples and 128 were female samples. The descriptive statistics of the demographic characteristics of the subjects are detailed in Table 2.

Variables	Classification	Number of people	Percentage	Variables	Classification	Number of people	Percentage
Gender	Male	109	46.0 %	Average consumption amount of live streaming shopping per month	200 yuan and below	65	27.4%
	Female	128	54.0%		201-500 yuan	73	30.8%
Age	18 years old and below	8	3.4%		501-1000 yuan	60	25.3%
	19-24 years old	66	27.8%		1001-2000 yuan	30	12.7%
	25-30 years old	63	26.6%		2001yuan and above	9	3.8%
	31-35 years old	51	21.5%	Average length of time spent watching each live streaming session	Less than 10 minutes	27	11.4%
	36-40 years old	24	10.1%		10- 30 minutes (not included)	93	39.2%
	41-50 years old	19	8.0%		30 -60 minutes (not included)	96	40.5%
	51 years old and above	6	2.5%		60 -120 minutes (not included)	18	7.6%
Education level	Elementary school and below	3	1.3%		2 hours and above	3	1.3%
	Junior High School	5	2.1%	Frequently purchased product categories	Clothing	177	74.7%
	High school/junior high school/technical school	18	7.6%		Shoes, hats and bags	94	39.7%
	Bachelor's degree/college	189	79.7%		Jewelry Accessories	31	13.1%
	Master and above	22	9.3%		Food & Beverage	157	66.2%
Years of live streaming shopping	Within 3 months	31	13.1%		Beauty & Skincare	112	47.3%
	3 - 6 months (not included)	30	12.7%		Daily necessities	145	61.2%
	6 months - 1 year (not included)	60	25.3%		Home Appliances	36	15.2%
	1-2 years (not included)	57	24.1%		Electronic Products	71	30.0%
	2-3 years (not included)	24	10.1%		Other	6	2.5%
	3 years and above	35	14.8%				
Average frequency of live streaming shopping per month	Less than 1 time	43	18.1%				
	1-3 times (not included)	103	43.5%				
	3-6 times (not included)	67	28.3%				
	6-10 times (not included)	20	8.4%				
	10 times and above	4	1.7%				

Table 2. Descriptive statistics of subjects' demographic characteristics

46.0% of the total sample was male and 54.0% was female. The vast majority of users, 75.9%, were between the ages of 19 and 35, which is an appropriate sample considering that the group using LSSP is primarily young.

Measurement

The questionnaire design of this study is divided into five parts, which are (1) demographic characteristics: including the gender, age, and education level of the subjects; (2) live streaming shopping: including years of live streaming shopping, average frequency of live streaming shopping per month, average consumption amount of live streaming shopping per month, average length of time spent watching each live streaming session, and frequently purchased product categories; (3) users' frequency of use: the concept of design features is spelled out in detail before the questions, with screenshots to illustrate, and its frequency of use is measured by a set of questions (I often view or use "XXXX" (design feature name)); (4) the frequency of users' use of Taobao Live platform; (5) users' motivation for using Taobao Live platform: this study refers to the established scales in the literature to measure users' motivation to use. Economic utility refers to Man-Ling et al. (2010) and Hur et al. (2007), information refers to Luo (2002) and Chang et al. (2011), convenience refers to Kim and Eastin (2011), entertainment refers to Smock et al.'s (2011) scales, sensory stimulation measures refer to Man-Ling et al.'s (2010) scale, social presence and presence measures refer to Sun et al.'s (2019) scale, and expertise and trustworthiness measures refer to Yang et al.'s (2019) scale. The first and second parts of the questionnaire provided options for the participants to choose from, and the third, fourth, and fifth parts were measured using a five-point Likert scale ranging from "strongly disagree" to "strongly agree".

The frequency of subjects' use of each design feature of Taobao Live platform is shown in Table 3, and the user motivation scale and its descriptive statistics are shown in Table 4.

Title item	Average value	Standard deviation
I always view the "streamer information"	3.60	0.98
I always view the "live streaming videos"	3.84	0.87
I always view the "channel list"	3.80	0.89
I always view the "live streaming logs"	3.46	0.97
I always view the "event information"	3.80	0.95
I always view "reminder"	3.66	0.99
I always view the "recommendation"	3.52	1.01
I always use "interaction tools"	3.46	1.00
I always use "sharing tools"	3.38	1.00
I always use the "participation utilities"	3.43	1.02
I always use the "preferential mechanism"	4.02	0.90
I always view the "commerce cues"	3.23	1.03
I always use "transaction suites"	4.00	0.78

Table 3. Summary of the frequency of use of design features

Motivation and its items	Alpha	Mean	SD
Economic utility	0.58	4.09	0.77
Because I can get the product at a lower price		3.97	0.69
Because I like to find discounts		4.22	0.84
Because the products purchased in this way are good value for money		4.08	0.77
Information	0.64	3.87	0.8
Because it is possible to learn the unknown		3.55	0.89
Because I can search for the information I need		4.03	0.79
Because useful information can be obtained		4.03	0.73
Convenience	0.68	4.01	0.87
Because you can watch live streaming shopping anytime and anywhere		4.04	0.86
Because it is convenient to use Taobao Live platform		4.19	0.80
Because it is easy to use the Taobao Live platform		4.16	0.78
Because I can get what I want with less effort		3.65	1.01
Entertainment	0.62	3.83	0.92
Because Taobao live shopping can make me feel happy		3.86	0.84
Because Taobao live shopping allows me to relax myself		3.84	0.88
Because Taobao live shopping can past time		3.80	1.02
Sensory stimulation	0.67	3.48	0.99
Because I can see interesting products		4.07	0.78
Because I think Taobao live shopping is an adventure		2.97	1.14
Because I found Taobao live shopping is very exciting		3.20	1.03
Because Taobao live shopping makes me feel like I'm in my own world		3.41	1.00
Because I want to keep up with new trends		3.73	0.97
Social Presence	0.78	3.67	0.93
Because Taobao live shopping has the feeling of contact with people		3.68	0.93
Because Taobao live shopping has a personalized feel		3.75	0.91
Because Taobao live shopping has the warmth of humanity		3.62	0.96
Because Taobao live shopping has a humane and considerate		3.64	0.94
Expertise	0.74	3.88	0.85
Because I think the content of the streamers is very professional		3.78	0.82
Because I think the streamers is very experienced in what he/she is talking about		3.92	0.86
Because I think the streamers knows more about what he/she is talking about compared to other streamers		3.95	0.87
Trustworthiness	0.83	3.50	0.94
Because the streamer is sincere to the audience		3.69	0.78
Because the streamer is someone that I can trust		3.59	0.90
Because the streamer is always honest with the audience		3.55	1.03
Because the streamer never tries to mislead the audience		3.16	1.03
Presence	0.87	3.38	1.06
Because I feel that my mind enters the world created by the streamers when Taobao live shopping		3.39	0.98
Because I feel immersed in the world created by the streamers when Taobao live shopping		3.32	1.10
Because the world created by the streamers makes me feel like "I went to this place"		3.41	1.12
Because the world created by the streamers makes me feel like I'm in the "real world"		3.38	1.05

Table 4. Descriptive statistics of user motivation scale

Data Analysis

From the perspective of uses and gratifications, previous studies have explored users' motivations for using social media, e-commerce platforms, and live streaming platforms. In contrast to previous studies from a holistic perspective, this study takes the perspective of design features, and the LSSP is broken down into several design features to explore the motivations that influence users' use of specific design features. To this end, 13 independent linear regression models were constructed in this study, with the frequency of use of design features as the dependent variable, nine motivational factors as independent variables, and demographic factors as control variables. The linear regression results are shown in Table 5.

The regression model on predicting streamer information use had three significant motives, namely, expertise, trustworthiness, and presence. Economic utility is the only motivation that significantly predicts the use of live streaming videos, channel list and recommendation. Presence is the only motivation that significantly affects the use of live streaming logs and interaction tools. Information is the only motivation that significantly influenced the use of reminder. The two motivations that significantly influence the use of the participation utilities are economic utility and presence. The two motivations that significantly predicted the use of the preferential mechanism are economic utility and entertainment. The three motivations that significantly influenced commerce cues are social presence, expertise, and trustworthiness. The four motivations that significantly influenced transaction suites are economic utility, information, convenience, and entertainment. However, there is no motivation to significantly influence the use of event information and sharing tools.

In order to explore the association and difference between the usage motivation of design features and the overall usage motivation of LSSP, a linear regression model was again constructed in this study, with the frequency of users' usage of Taobao Live platform as the dependent variable, nine motivations were used as independent variables, and demographic factors were used as control variables. The regression results are shown in Table 5 for the overall usage results. The results show that economic utility and entertainment significantly influence the overall platform use.

	Streamer Information	Live Streaming Videos	Channel List
(Constant)	1.116	1.131	0.873
Gender	-0.018	-0.087	0.026
Age	-0.063	-0.059	-0.046
Education level	-0.159	-0.110	0.017
Shopping Year	0.056	0.037	-0.006
Frequency of purchase	0.230**	0.132	0.124
Spending amount	0.059	0.067	0.119
Viewing time	0.094	0.160*	0.076
Economic utility	0.161	0.249*	0.322**
Information	0.204	0.018	0.091
Convenience	0.190	0.100	-0.074
Entertainment	-0.047	0.104	0.147
Sensory stimulation	-0.046	-0.054	0.007
Social Presence	-0.104	0.008	-0.148
Expertise	-0.264*	0.114	0.134
Trustworthiness	0.281*	0.051	0.003
Presence	0.239*	0.040	0.088
R^2	0.342	0.311	0.255

Table 5. Linear regression results

	Live Streaming Logs	Event Information	Reminder	Recommendation
(Constant)	0.686	0.994	1.397*	-0.185
Gender	-0.114	-0.224	-0.081	0.066
Age	0.013	-0.018	-0.036	0.031
Education level	0.036	0.091	-0.270**	-0.076
Shopping Year	0.095*	-0.025	0.053	0.009
Frequency of purchase	0.125	0.102	0.071	0.015
Spending amount	-0.039	0.047	0.127	0.114
Viewing time	0.061	0.114	0.081	0.112
Economic utility	0.168	0.136	0.097	0.280*
Information	0.159	0.031	0.240*	0.211
Convenience	0.122	0.009	0.037	0.017
Entertainment	-0.156	0.118	0.063	0.093
Sensory stimulation	0.238	0.088	0.230	0.208
Social Presence	-0.184	-0.092	-0.103	-0.113
Expertise	-0.014	0.042	0.053	-0.007
Trustworthiness	0.014	0.206	0.072	0.047
Presence	0.219*	0.089	0.038	0.105
R^2	0.686	0.229	0.257	0.232

(Continued) Table 5. Linear regression results

	Interaction Tools	Sharing Tools	Participation Utilities
(Constant)	1.121	1.260	0.790
Gender	-0.082	-0.072	-0.182
Age	0.006	-0.054	-0.014
Education level	-0.064	-0.202	-0.162
Shopping Year	0.016	0.029	-0.009
Frequency of purchase	-0.047	0.122	-0.121
Spending amount	0.062	0.036	0.186*
Viewing time	0.201*	0.108	0.222**
Economic utility	0.169	0.206	0.330**
Information	-0.138	0.110	0.152
Convenience	0.162	-0.026	0.055
Entertainment	0.030	0.045	0.020
Sensory stimulation	0.120	0.231	0.018
Social Presence	-0.119	0.175	0.222
Expertise	-0.091	-0.170	-0.224
Trustworthiness	0.090	-0.091	-0.055
Presence	0.367**	0.198	0.261*
R^2	0.234	0.251	0.304

(Continued) Table 5. Linear regression results

	Preferential Mechanism	Commerce Cues	Transaction Suites	Overall Use
(Constant)	0.839	1.426	1.057	2.455***
Gender	0.067	-0.130	-0.021	-0.008
Age	0.009	-0.069	-0.013	-0.043
Education level	-0.193*	0.000	-0.012	-0.047
Shopping Year	0.026	0.019	0.007	0.005
Frequency of purchase	0.024	0.076	-0.078	0.031
Spending amount	0.119	0.000	0.048	0.070
Viewing time	0.031	-0.054	0.097	0.068
Economic utility	0.510***	0.090	0.324**	0.223**
Information	-0.064	0.136	-0.189*	0.040
Convenience	0.082	-0.056	0.263**	0.025
Entertainment	0.247*	0.019	0.249**	0.137*
Sensory stimulation	0.119	0.104	0.059	0.076
Social Presence	-0.098	0.338**	0.122	0.014
Expertise	-0.118	-0.542***	-0.042	0.026
Trustworthiness	0.081	0.380**	-0.114	0.014
Presence	0.092	0.166	0.050	-0.009
R^2	0.306	0.272	0.281	0.334

(Continued) Table 5. Linear regression results

Note: * indicates p<0.05; ** indicates p<0.01; *** indicates p<0.001

Discussion and Implication

Discussion

The results revealed that different motivations drive users to use different design features, and these motivations deviate from their overall usage motivations. The regression analysis showed that only two motivations significantly affected the overall use of LSSP, while a total of eight motivations significantly affected the use of design features, suggesting that the overall use may blur the users' desired needs for individual design features.

In the results of economic utility motivation, it can be seen that the economic utility motivation significantly affects the use of live streaming videos, channel list, recommendation, participation utilities, preferential mechanism, and transaction suites. When users use LSSP, they will check the live streaming videos of the streamer to determine the strength of the live streaming offers, and they can also look through the historical live streaming videos of the streamer to determine the promotion form and discount strength of the streamer, so as to decide whether to participate in the current live streaming of the streamer. According to the user's viewing habits, the platform recommendation algorithm will recommend other similar live streaming shopping, which also leads to the frequent use of the information recommendation function by this type of users. In addition, the streamer will issue different strength rights and benefits for fans of different levels, such as coupons, red packets, lucky draws, etc. The more actively the user participates, the higher his or her fan level and the more benefits he or she may receive. As the live streaming promotion is strong and the stock is limited, users will seize the opportunity to click on the product link or order button to buy immediately, thus promoting the use of the transaction suite.

Information motivation significantly influences the use of reminder and transaction suites. Depending on users' needs, reminder provide specific information, which allows users to focus on the parts that interest them and facilitates access to live streaming information for users with high information needs. However, information motivation does not drive users to use transaction suites, due to the fact that users may be in a

time-constrained situation when adding products to the shopping cart or ordering immediately, and too much information can instead make the user experience poor.

The convenience motivation significantly influenced the use of transaction suites, such as product links and "grab now" buttons embedded in the LSSP, which allowed users to add their favorite products to the shopping cart or order immediately through the product links in the live streaming shopping cart, without having to exit the live streaming room to purchase the products. This saves users' time and energy and provides convenience and improved shopping efficiency.

Entertainment motivation significantly influences the use of preferential mechanisms and transaction suites. Users are engaging in live streaming preferential mechanisms such as sharing coupons, receiving red packets, grabbing full coupons, grouping together, or getting rewards by playing mini games. In such a shopping process, users feel that they are engaged in a leisure activity. And in the case of limited time or limited number of products, users need to hurry to order or compete with other users, which can make users entertained, which can effectively satisfy people's desire to enjoy and relieve emotional stress.

Sensory stimulation motivation doesn't significantly affect the use of features. In the era of rapid information technology development, users get novelties from a variety of platforms, and the widespread use of social live streaming has enabled users to have their sensory stimulation satisfied and to become accustomed to the experience provided by the live streaming form. Therefore, in LSSP, users' sensory experience is not strongly stimulated.

Social presence motivation significantly influences the use of commerce cues. In watching a live streaming, information about the user's behavior is displayed, including information that prompts the user to enter the live streaming, shows that the user is following the streamer and that the user is purchasing a product. This causes the user to feel engaged with other users, resulting in a high engagement and quality experience.

The expertise motivation significantly influences the use of streamer information and commerce cues. When users see the behavioral information of other users in the live streaming, they will feel that the expertise of the streamer is recognized by everyone, which leads to herd mentality and more recognition of the streamer's product knowledge and degree of experience. The streamer information contains information about the streamer's expertise such as the streamer's area of expertise, rank, number of content, number of likes, etc. Through this information, the expertise of the streamer can be initially determined.

Trustworthiness motivation significantly influences the use of streamer information and commerce cues. To a certain extent, users' behavioral information reflects the popularity of the streamer or product, thus increasing the trustworthiness of the streamer or product. The streamer information also reflects various information about the streamer, which enables users to know more about the streamer and thus generate trust in the streamer.

The presence motivation significantly affects the use of the streamer information, live streaming logs, interaction tools and participation utilities. By viewing the streamer information, users can get to know the streamer better. By viewing the live streaming logs, users can better understand the content and key information points of the live streaming. In addition, the use of interaction tools and participation utilities can bring users closer to the streamers and increase their intimacy with each other, enhancing their sense of engagement and thus giving them a strong sense of authenticity and presence.

Economic utility and entertainment motivations significantly influence users' overall use of LSSPs. Overall, streamers will emphasize the economic benefits such as price mechanism and discounts of products in the live streaming, while the platform will also focus on displaying relevant discount information, so users will use LSSPs for economic utility. As an emerging information technology, live streaming shopping will bring users more experience and meet their needs for relieving stress, spending time, etc. It has high entertainment value, thus prompting users to use LSSP.

Implication

By exploring the relationship between LSSP design features and user motivation, this study has important theoretical and practical implications. Theoretically, this study has the following three theoretical implications. First, this study contributes to the research on LSSPs. This study contributes to the study of LSSP by exploring users' motivations for using design features of LSSP, users' motivations for using design

features were compared with holistic motivations, and the results of this study are the same as those of Smock et al. (2011). Secondly, this study extends the scope of application of uses and gratifications theory. The uses and gratifications theory is more often applied in the field of social media. LSSPs are essentially real-time interactive decision support systems developed on e-commerce technology (Fei et al., 2021) with features such as information systems and social media. In this study, the uses and gratifications theory is applied to the study of the design features of LSSPs, and the scope of application of the theory is extended. Third, from the perspective of IT affordance, this study contributes to the application of IT affordance by analyzing the design features of LSSPs. While existing studies have more often used IT affordance to identify platform features from the overall perspective of LSSPs, this study extracts design features that are frequently used by users from a microscopic perspective and at a finer granularity, which provides new insights into the use of IT affordance in LSSPs.

From a practical point of view, this study provides practical implications for service providers. The findings of this study help to improve the functionality of LSSPs. By exploring the relationship between the design features of LSSPs and users' usage motivations to reveal how users' usage motivations drive users to use the features, service providers can target their development and design as well as operations to meet the motivations according to users' needs. For example, if it is found that users' convenience motivation significantly influences the use of transaction suites, service providers can design more convenient and faster shopping measures to motivate users to use the transaction function more often, thus motivating users to use LSSPs more frequently.

Conclusion

Through the analysis of existing studies and the theoretical framework of uses and gratifications, this study combined the characteristics of LSSPs, nine user motivations for using LSSPs were extracted, namely, economic utility, information, convenience, entertainment, sensory stimulation, social presence, expertise, trustworthiness, and presence. The study also extracted and filtered the main and representative design features of LSSPs based on the IT affordance perspective, and 13 functions of LSSPs frequently used by end users were identified, namely, streamer information, live streaming videos, channel list, live streaming logs, event information, reminder, recommendation, interaction tools, sharing tools, participation utilities, preferential mechanism, commerce cues and transaction suites. This study explored the relationship between the design features of LSSP and users' usage motivation, and the findings showed that the usage of different features is influenced by different usage motivation, and users' usage motivation for feature design is also different from that for overall usage.

This study has some limitations. First, this study adopts a questionnaire method, which may be influenced by users' subjective feelings and thus may lead to deviations between the collected data and users' real thoughts. Objective behavioral data of users can be obtained for further exploration in the future. Second, this study mainly explores Taobao Live, and some functions of Taobao Live may differ from those of other LSSPs. Future research can consider the relationship between features in more LSSPs and users' usage motivations to draw broader conclusions applicable to LSSPs in general. Third, the user usage motivations used in this study were analyzed based on the findings of existing studies, and there may be motivations that were not presented. Future research could capture a more diverse range of user usage motivations.

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