

A Study on the Factors Influencing the Willingness of Webcast Users Reward Based on SOR Theory

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Abstract: Based on SOR theory, dividing webcast features into visibility and interactivity, the perceived value is used as the mediator variable, constructing the impact model of webcast features on tipping behavior. And then, it studies how the characteristics of broadcasts influence users' willingness to reward and tests hypotheses by SPSS based on collecting the online questionnaires. Results show that visibility and interactivity significantly influenced users' desire to reward, and perceived value plays a mediating role.

Keywords: webcast, reward, SOR theory, perceived value

1. Introduction

The live broadcast has become a new marketing model [1]. And tipping has become a necessary way of marketing on live broadcasting platforms. According to the statistics, tipping by users has become a significant way to make money from live-broadcasting platforms. Therefore, it is necessary to comprehensively investigate the relationship between different influencing factors from the two aspects of users and media, reveals the influencing process of the user behavior of the webcast App, and form a systematic cognition of users' tipping under the background of the webcast. However, most scholars focus on analyzing network broadcast technology in the relevant research on live streaming. The impact of live-streaming tipping behavior was not unambiguous; most scholars tend to study e-commerce live streaming. Using the SOR model, this paper explores the influencing factors of the features of network broadcast on the enthusiasm of reward. First, according to the authority scale, a five-level Likert scale was designed, including authenticity, interactivity, entertainment, and visibility. They are sending questionnaires to obtain data. The paper then uses SPSS for reliability and validity tests and hypothesis tests, exploring the influencing factors of network broadcast tipping behavior, focusing on the interactive part of the study.

2. Literature Review

2.1. Media Technology and Live Streaming

In 2021, there will be 464 million live-streaming users in China [2]. Live-streaming market is flourishing and even more significant. Compared with e-commerce shopping, live streaming offers an interactive experience by empowering users to participate in some monetary (e.g., tips) events. As a new product, live streaming has become a flourishing topic to research.

In the relevant research on live streaming, most scholars focus on the study of network broadcast technology. For example, a design method for aggregating live streams allows users to navigate and select among video tiles of aggregated live streaming platforms to view and interact with the live video stream [3]. Uploading live streaming data using an electronic device and sending second target data to the server such that second data is transmitted in real-time [4].

2.2. Tipping Behavior

Tipping has become a necessary way to interact with others on live broadcasting platforms, and some studies have started to research its impact on live streaming. Virtual gifts used for tipping in live streaming crash live interaction [5]. These studies provide a general view of why live streaming has become a flourishing way to market. Tipping behavior has been explained from several perspectives. On the one hand, some research identified some personal influence factors, such as identity and distance [6], connection [7] anchor's characteristics [8]. On the other hand, researchers have a view of the user's way of interaction. Gao found that information richness during live broadcasting influences the number of tips [9]. MacDonald. guess that users' initial number of tipping influences their willingness to tip in live streaming [10]. However, previous studies seldom involve the emotional links between users [11].

3. Concept Definition

3.1. Reward Behavior of Network Broadcast Users

Live streaming bounty refers to buying virtual gifts from the live streaming platform to give the host and can therefore be seen as a specific consumer behavior developed in live video streaming. In this consumption process, the commodity is the live content viewed by the consumer, and the currency is the virtual gift with some real value, but the pricing power is in the hands of the consumer. Much of the previous research on online consumer behavior has used the stimulus-organism-response theory proposed by Russell to explain it [12]. This model suggests that consumers are stimulated by various factors in the external environment to develop emotions or perceptions about a product and thus make a purchase. The main stimulus factors in a traditional online shopping environment include information quality, system quality, virtual socialization, rewards, etc [13]. Some scholars consider live-streaming rewarding as transforming and reconstructing the stranger relationship between users and anchors into a familiar and private connection in the online context, in which the satisfaction of users' own emotional and psychological needs is achieved [14]. In terms of cognition, the live content of the anchor can convey information in various forms, including text, sound, and images. This information's visibility, authenticity, and social presence can enhance the user's cognitive state. When users interact with the anchor or other audience to generate emotion, they will tend to accept the message delivered by the anchor and promote identification with the anchor, which further influences the user's willingness to reward due to their title with the anchor. Unlike live-streaming, the live-streaming bounty is less related to physical goods and more related to emotions, and the role of shopping characteristics in bounty behavior is still unclear. Therefore, this paper constructs a model of the factors influencing users' rewarding behavior in live streaming by combining the stimulus factors, emotions, and cognition in live streaming.

3.2. Willingness to Reward

Willingness to reward refers to the desire of a live stream user to give virtual gifts to the host during the stream. Rewards are a business model unique to live streaming platforms, where users can buy virtual gifts for cash and give them to the anchor, who can split the money with the venue for the

virtual gifts they receive. The goal of an anchor's career is to awaken as much as possible the willingness of users to reward them for their work.

3.3. SOR Theory

Stimulus - Organism - Response is the stimulus-organism-response theory. Jacob believes that consumer behavior is generated by a person's emotional response to external stimuli, resulting in the tendency or avoidance of consumer behavior. Numerous studies have shown that the SOR model can be used to study consumers' willingness to reward. The SOR theory is also suitable for studying web-streaming reward occasions, as the characteristics of live web-streaming are external stimuli that stimulate emotional or cognitive responses and lead to the tendency or avoidance of consumer behavior.

3.4. Perceived Value

Perceived value refers to consumers' comprehensive evaluation of a product or service because of their subjective impressions. Information, service, social interaction, and image influencing perceived value can directly affect consumers' purchasing behavior. When a host's live content has a certain level of usefulness and skill, if users gain something from watching it and perceive its value, it will stimulate a common normative perception that they deserve to pay for what they have learned and, therefore, will increase their willingness to consume virtual gifts.

4. Research Framework

4.1. Research Hypothesis

Webcasts have features such as visibility and interactivity [15]. Visibility refers to the degree of information visualization during the interaction between the user and the anchor. The main emphasis is visual effects such as scenes, gifts, and special effects in the live broadcast room, enhanced by Internet technology [16]. Live webcasting uses text, sound, and images to transmit information in many patterns, stimulating users from many senses. Not only is the live broadcast itself real-time, but the scene settings, reward gifts, reward special effects, and the titles that users receive in the live broadcasting platforms can offer a more impactful visual experience for users and, to some extent, enhance their willingness to reward. The hypothesis below is based on the above analysis:

H1a: Visibility has a significant positive effect on perceived value.

H1b: Visibility has a significant positive effect on users' willingness to reward.

Interactivity can also be referred to as real-time interactivity, which means that users can communicate with the information source to exchange information and feedback. Interactivity has become an essential marketing factor for companies to consider [17]. In live webcasting, users can interact with the anchor or other users through pop-ups and receive information from the anchor, creating an atmosphere where everyone watches the live broadcast together and is influenced by participatory culture to generate rewarding behavior [18]. The interaction between the anchor and the user can provide a psychological cue for feedback, which enhances the user's tipping motivation towards the anchor. In interacting with the anchor, the user unconsciously builds an emotional bond with the anchor. By interacting with each other through live streaming, both parties can understand each other's and perceive each other's sense of subjectivity in the interaction, which increases the user's familiarity with the anchor and, thus, trust. The hypothesis is based on the above analysis:

H2a: Reactivity has a significant positive effect on perceived value.

H2b: Reactivity has a significant positive effect on users' willingness to reward.

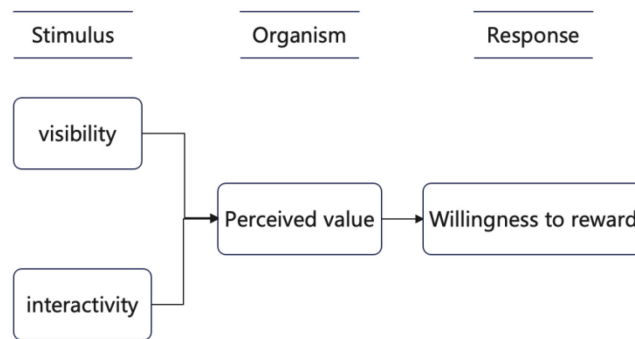


Figure 1: Research conceptual model.

Consumer perceived value is a term developed by foreign scholars such as Drucker, Zeithaml, and Holbrook since the mid-20th century. It refers to customers' subjective feelings and evaluation of the utility of a product or service after weighing its perceived benefits against the costs they pay. Some studies show that consumers' online consumer loyalty is influenced to a large extent by their perceived value, which can be obtained by weighing and comparing the perceived benefits with their gains and losses throughout the process before, during, and after consumption. The hypothesis is based on the above analysis:

H3a: Perceived value mediates the relationship between visibility and willingness to reward.

H3b: Perceived value mediates the relationship between reactivity and willingness to reward.

H3c: Perceived value has a significant positive effect on users' willingness to reward.

We planned to distribute the questionnaire to two hundred participants who had watched the live broadcast and had been rewarded. In the design phase, the questionnaire was designed by searching the relevant literature, using questionnaires designed by leading scholars at home and abroad as a benchmark, and adapting them to the research topic to make the questions contextualized and easy to understand.

To ensure the questionnaire's reliability and validity, this paper adopts mature scales at home and abroad and adjusts them according to specific situations. The questions are measured on a five-point Likert scale. To mitigate the influence of other problems on the study, two variables, the frequency of watching live streams and the frequency of rewards, are used as control variables in this paper. SPSS 26.0 was used to test the scales' reliability and determine whether they were suitable for factor analysis.

4.2. Research Model

This paper proposes a research model, as shown in Figure 1.

We adopted a questionnaire method to classify the factors influencing willingness to reward live streaming into technical aspects (visibility) and emotional factors (interactivity). We predicted that willingness to cite would positively correlate with visibility and interactivity. Among them, value perception was tested as a mediating variable in the effect of two factors on the willingness to reward.

5. Questionnaire Design

This questionnaire consists of 3 parts: part 1 is to ensure the validity of the questionnaire and to determine whether users have experience in live streaming; part 2 is to collect basic information about the users based on the respondents' own experiences and facts; and to investigate the factors influencing the willingness of live streaming users to reward; part 3 is to measure the specific statistics of visibility and interactivity and value perception mentioned above. The first two sections are in the

form of single-choice questions. In contrast, the third section uses Likert's 5-point scale to measure the factors that influence the willingness of live-streaming users to reward, with "1" indicating strongly disagree and "5" indicating the scale increases from 1 to 5, with increasing levels of agreement.

5.1. Variable Measurement Question Items

To ensure that the questionnaire has good reliability and validity, the variable measurement questions in this paper evolved from the literature on willingness to reward live streaming, with each variable containing three to four questions, and the measurement scales and sources are shown in Table 1.

Table 1: Variable measurement question items.

Variable		Measurement questions	Reference sources
Visibility	1.1	The live room is visually pleasing	Liu
	1.2	The live room displays a visually pleasing design	
	1.3	The design of the reward screen is attractive	
Interactivity	2.1	I can interact with the hosts and get to know them better in the live stream.	Flanagin
	2.2	I can interact with other users in the live room and learn about other users' reactions	
	2.3	I am willing to participate in an interaction (including commenting, liking, and sending gifts) during the live broadcast	
Perceived value	3.1	Live content has increased my learning efficiency and productivity	Mike Wang
	3.2	Live content to meet my needs at a low cost	
	3.3	Live content brings me spiritual satisfaction	
Willingness to reward	4.1	In the future, I will reward anchors by sending virtual gifts	Ye
	4.2	I have the intention of rewarding the anchor	
	4.3	I will reward hosts with virtual gifts in the future	
	4.4	If I had some money at my disposal, I would reward the hosts with virtual gifts	

5.2. Research Sample and Data Collection

In the questionnaire, the respondents were identified through questions such as "Have you ever watched a live webcast" to ensure the validity of the data. In the questionnaire distribution stage,

questionnaire star was used to distribute electronic questionnaires on social media platforms such as Weibo, Netflix fan QQ groups, and WeChat groups, where the research respondents came from a wide range of sources and were not restricted by geography, to reduce the possibility of common method bias and improve the accuracy of the questionnaire.

Two hundred twenty-six valid questionnaires were eventually returned. In the collected sample, 44.25% of the respondents were male and 55.75% were female, with a relatively balanced gender distribution; in terms of age, the respondents were mainly between the ages of 18 and 60, with the majority being young; in terms of education, over 50% of the respondents had a bachelor's degree or above; the average monthly income of the respondents was between RMB 4,000 and 8,000, accounting for 56.3%; in terms of frequency and length of viewing, most of the respondents watched between 30 minutes and one hour per day, accounting for 34.6%. In terms of education, more than 50% of the respondents had a bachelor's degree or above; the average monthly earning of respondents was between RMB4,000 and RMB8,000, with 42.47% of the respondents; in terms of viewing frequency, most of the users watched 3-4 times a week; and in terms of reward amount, most of them watched for less than RMB50 each time.

6. Empirical Analysis and Results

6.1. Confidence Analysis

Table 2: Scale reliability test.

Variate	Number of items	Cronbach's Alpha values
Visibility	3	0.735
Interactivity	3	0.707
Willingness to reward	4	0.765

As can be seen from Table 1, Cronbach's Alpha values for all variables in this study's questionnaire were above 0.7, and the reliability coefficient value for the full scale reached 0.774, indicating good reliability of the questionnaire.

6.2. Validity Analysis

The results of the KMO test on the data were $KMO = 0.814$, respectively, indicating a good factor analysis. After determining that the data were suitable for factor analysis, the paper then carried out a factor analysis on the questionnaire data using principal component analysis and maximum variance rotation and finally extracted six main components with eigenvalues greater than one, with a cumulative variance explanation of 59.72%, indicating that the extracted principal components had good explanatory power and good questionnaire validity.

6.3. Descriptive Statistical Analysis

Table 3: Direct effects test results.

Research hypothesis	Paths	t-value	p-value	Test results
H1a	visibility→perceived value	4.004	* *	support
H1b	visibility→willingness to reward	4.885	* *	support
H2a	reactivity→perceived value	4.015	* *	support
H2b	reactivity→willingness to reward	4.966	* * *	support
H3c	perceived value→willingness to reward	4.959	* *	support

The study results are shown in Table 3, and the hypotheses are all supported.

6.4. Intermediary Effects Test

Multiple linear regression with SPSS 26.0 was used to mediate the hypothesis effects were tested, and the study results are shown in Table 4. The results show that after the inclusion of the mediating variable, perceived trust, the impact of visibility on purchase intention and the positive effect of interactivity on reward intention decreased. Thus, perceived trust partially mediates the relationship between webcast characteristics and tipping meaning, and hypotheses H3a and H3b were tested.

Table 4: Intermediary affect test results.

Research hypothesis	Intermediary pathway	Indirect Effect Value	Boot standard error	Boot CI lower limit	Boot CI upper limit
H3a	visibility→perceived value→willingness to reward	0.133	0.048	0.053	0.240
H3b	reactivity→perceived value→willingness to reward	0.150	0.056	0.058	0.274

A self-help method was used to test the data using the Process program in SPSS 26.0. A sample of 5000 and the confidence interval was set at 95% to push further the mediating role of perceived value between live streaming characteristics and willingness to reward. The results display that the indirect effect value of visibility through perceived value and thus reward willingness is 0.133, with an asymmetric interval of [0.053, 0.240]; the indirect effect value of interactivity acting on purchase willingness through perceived trust is 0.150, with an asymmetric gap of [0.058, 0.274], and none of the asymmetric intervals contain 0. Hypotheses H3a and H3b were further validated.

7. Conclusion

From the model's paths and coefficients, it can be seen that the technical and emotional aspects of live webcasting have a positive and significant impact on users' willingness to reward, with interactivity having a more substantial effect on the desire to reward. Currently, all live streaming platforms focus on designing more advanced rewarding products and smoother live streaming interfaces. At the same time, anchors often decorate and beautify their live streaming rooms to attract users, which will to a certain extent, motivate users to reward; for example, some users will reward to become first place on the reward list and obtain administrator icons [19]. But at the same time, users' viewing of a live stream for value acquisition purposes is linked to the more profound emotional value of the stream and the anchor who is doing it. For example, the host will thank the user for their bounty or perform their talent, and through the net, some users can stand out from the many others in the live stream, creating a more profound, friend-like emotional connection with the host.

As an emerging form of consumption, the emotional and value factors of live streaming are higher than those of ordinary online shopping. The ability to make users feel and reap the value of the live-streaming process is one of the main factors that promote user appreciation [20]. Therefore, anchors should focus on developing live content while increasing the interactive links to enhance user participation, improve quality, and form personality charm. At the same time, anchors must discipline and control the live broadcast room to enhance the user group's identity while avoiding excessive rewarding behavior.

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