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An Empirical Study on the Impact of E-Commerce Live Features on Consumers' Purchase Intention: From the Perspective of Flow Experience and Social Presence

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Abstract: The COVID-19 pandemic and the continuous advancement of live e-commerce technology pushed the swift growth of live e-commerce in China. Based on the S–O–R theoretical framework, this study investigates the impact of live broadcast characteristics on consumers' social presence and flow experience, along with their impact on the consumers' consumption intention in live e-commerce scenarios through questionnaires. Using structural equation modeling, data processing and involvement were introduced as regulating variables. Host charm, interaction, and trust in the host exerted a significant positive impact on social presence. In addition, host charm and trust in host significantly affected flow experience, and social presence significantly affected flow experience. Both social presence and flow experience significantly affected consumption intention, while involvement affected all paths to some extent. Overall, this study illustrates the significance of host in live e-commerce, and consumers with low involvement should be the focus of attention in live e-commerce.

1. Introduction

The COVID-19 pandemic has exposed offline mass shopping to potential risks. In recent years, online shopping has displayed rapid growth with advances in online shopping and logistics systems. Nevertheless, a large number of homogeneous suppliers in online shopping amplify the cost of consumer consumption. Thus, it has become a trend for consumers to choose recommended products in live e-commerce to decrease their time cost; this phenomenon is also highly prominent in China. Based on the Ecological Report of Live E-Commerce in China 2020, GMV of live e-commerce in China (e.g., Taobao, Kuaishou, and TikTok) increased radically in 2017–2019. In 2019, the turnover of live e-commerce reached 451.29 billion yuan, demonstrating a 200.4% year-on-year growth. Nevertheless, even in the context of rapid growth, live e-commerce accounts for 4.5% of the total scale of online shopping only, and there remains considerable growth room for live e-commerce.

Live e-commerce is a shopping mode where goods are endorsed to consumers and inquiries are responded through real-time videos, with the assistance of various live broadcasting platforms [1]. Compared with offline shopping and traditional online shopping, e-commerce shopping has both similarities and significant differences regarding the purchasing process. Unlike traditional online shopping, live e-commerce materializes a transition from pictures to videos, and the highly visualized interface increases the social presence of consumers [2]. Meanwhile, live broadcast sans clips facilitates consumers to systematically attain all information of goods, thereby enhancing their trust [3]. Contrary to traditional online shopping, live e-commerce can realize real-time one-to-many high-intensity interactions by virtue of developments in live broadcasting technology [4], thereby

augmenting consumers' intimacy and satisfaction with target goods [5]. The hosts, the main executors of live streaming, carry out a new type of online sales with the characteristics of promoting consumer participation and purchase [6], and can also be called streamers or broadcasters. Studies of the hosts that execute live e-commerce primarily includes two dimensions—the charm of the host and the trust in the host. First, the interaction between consumers and the host in live broadcasting can stimulate impulsive consumption [7]. Thus, hosts can be primarily categorized into stars and online hosts (usually the Key Opinion Leader, Hereinafter referred to as KOL). Stars have huge popularity and strong fan appeal, whereas KOL host has discrete personal characteristics and professional skills in vertical fields. Alternatively, KOL hosts can offer a professional presentation of goods to customers based on their understanding [6]. Furthermore, all hosts should be credible and professional [8] so that they can effectively communicate with consumers and influence their purchase intention [9]. In order to make it easier to understand, the present paper gives a common e-commerce live steaming page in Taobao and marks the main elements (see Figure 1 for details).

Figure 1. An e-economic live streaming page in Taobao.

As sociality is a crucial feature of consumer shopping, online shopping cannot directly offer a strong social interaction experience, and the social presence of online consumption is characteristically lower than offline consumption [10]. Nevertheless, based on the mechanism of social presence (control factors, reality factors, dispersive factors, and sensory factors), the sense of presence [11] could be decreased by eliminating these factors if live e-commerce can replicate the real world, and users' behaviors are influenced by physical presence. Owing to exhaustive research of consumers' online consumption experience, studies have introduced flow experience theories to elucidate consumer behaviors in online shopping. Flow experience exerts a direct positive impact on consumers' consumption intention [12], which is reflected chiefly in cognition [13], attitude [14], intention [15], and behavior [16]. Compared with offline shopping, online consumers hold a stronger position in the purchasing process because of relatively low switching costs, stringent requirements, and utilitarian nature. Thus, the loyalty of online consumers is typically low [17]. Some studies highlighted that the involvement exerts a significant regulating effect on the interaction between products or brands and consumers [18]. Hence, consumers' involvement (and consumers' focus on live broadcasting) is a key regulator.

Readers should refer to [19] for the way to conduct research. In order to analyze the influencing factors of the purchase intention during the e-commerce live scene, for the

present study, the research framework was constructed based on the SOR theoretical model. The factors involved in each study were measured by modifying the existing maturity scale, then the significance degree of influence of each path was verified by structural equation.

Considering that there is little research on the interaction between various factors with similar characteristics in live e-commerce, the present research both bridges a gap in literature and offers directions for further research in this area. The result of this research will allow the live e-commerce platform operators and the hosts to better understand how to transform the consumer's views into purchase intentions and understand the types of consumers that they should focus more on.

To conduct research on this subject, the present study selects the content of live e-commerce, host charm, interaction, and trust in the host to validate the direct impact of live e-commerce characteristics on social presence and flow experience, as well as effects of social presence and flow experience on consumer intention. In addition, the significance of each path is tested, and involvement is investigated independently.

The remainder of this paper is structured as follows. In the following section, the literature reviews of every factor and the hypotheses are presented, Sections "Materials and Methods" and "Results" present the structure of research and methodology, and report the results, respectively. Finally, the last section draws out the conclusions of the research and outlines areas for further research.

The research contribution of this paper can be divided into theoretical and practical parts. Theoretically, this paper verifies the promoting effect of flow experience and social presence on the transformation of consumers' purchase intention in e-commerce live streaming. Furthermore, the influence path verification of social presence on flow experience is added, and the significance of each influence path is verified under different involvement degrees. At the practical level, this study concluded that the main factors influencing consumer experience during the current e-commerce live streaming still on the host, and thus developing trustworthy outstanding hosts is an important approach to raising the purchase intention. On the other hand, the low involvement degree of customers are more easily affected by experience, thus on the-commerce live streaming business marketing strategy, more attention needs to be paid to low-involvement consumers.

2. Literature Review

2.1. Social Presence Theories

The concept of social presence was proposed in 1976. In social presence theories, social presence implies the degree to which a person is considered a "real person" and the degree of perception of communicating with others via media [20]. For marketing, Shin defined social presence as a substitute for face-to-face communication and claimed that social presence could enhance the safety perception and purchasing attitude of consumers in virtual shopping centers, which is an essential behavioral premise for using virtual shopping centers [21].

For the constituent dimension of social presence, Lee categorized social presence in consumption into co-presence and psychological input. Reportedly, consumers (particularly extroverted consumers) would experience a strong social presence [22] when hearing audios similar to their personality, unlike those that do not match. Lu et al. categorized social presence in the online community into Web social presence, peer social presence, and communication social presence; these three factors markedly affect consumers' trust in merchants. Consumers' trust is proportional to their presence, and the increasing social presence of consumers promotes their purchase behaviors [23].

In the live e-commerce scenario, social presence is typically used to elucidate the influence on consumer intention. As a virtual experience of human beings in media communication [24], Ogonowski et al. confirmed that social presence affects perception of utility, interest, and trust of shopping sites by online consumers [25]. Shen et al. emphasized that the interactive nature of websites can promote social presence, which, in turn, can influence the intention and behaviors by affecting perceptions such as hedonism and

utility [26]. Additionally, Animesh et al. explored purchasing of virtual products by users in a 3D virtual world and reported that the social presence markedly affects flow experience, thereby altering users' consumption intention [27].

Hence, the following assumptions are proposed:

Hypothesis 1a (H1a). *The content of live broadcasting exerts a significant positive impact on the social presence experience.*

Hypothesis 1b (H1b). *Host charm exerts a significant positive impact on the social presence experience.*

Hypothesis 1c (H1c). *Interaction in live e-commerce exerts a significant positive impact on the social presence experience.*

Hypothesis 1d (H1d). *Trust in the host exerts a significant positive impact on the social presence experience.*

2.2. Flow Experience Theories

Flow experience implies a unique mentality when people are fully engaged in an activity. People in a flow state are completely fascinated by current events and stay highly focused; thus, irrelevant information is automatically filtered. Flow experience has nine general characteristics as follows: balance of skills and challenges; definite objectives; integration of immediate feedback actions; consciousness; concentration; sense of control; loss of self-awareness; distorted sense of time; and self-purpose experience [28]. In view of the causes of flow experience, Csikszentmihalyi proposes a flow experience channel model, which mainly includes three channels [28].

Currently, no consensus has been reached on the constituent dimensions of flow experience. The core proposals comprise the four-dimensional view of control, concentration, curiosity, and intrinsic interest [29], the two-dimensional view of concentration and pleasure [30], and the three-dimensional view of sense of control, concentration, and pleasure [31]—all of which have been used in consecutive studies.

Researchers are currently conducting a lot of research on live streaming; Jihye Kim and Minseong Kim verified that in e-sport live streaming, flow experience is significantly affected by achievement, drama and player skills [32]. Li, B et al., using flow experience as a mediating variable, studied the gift-giving mechanism of viewers in live streaming media [33]. In another study on gift-giving in live streaming, Yi, L. and Yi, P. found that flow experience would affect viewers' emotional attachment to the host [34]. Katrin Scheibe et al. found that for teenagers, simple design websites can effectively enable them to enter flow experience when watching live streaming [35].

In the live e-commerce scenario, flow experience affects consumption intention and consumer loyalty from multiple dimensions. Hoffman et al. illustrated that flow experience considerably affects cognition, attitude, behavioral intention, and behavior of Internet users [36]. Song et al. reported that flow experience markedly affects the perception of utility and satisfaction of online shopping websites by users, thereby affecting consumer loyalty [37]. van Noort et al. established that flow experience influences consumers' attitudes to the website and the brand, as well as consumption intention, revisit intention, and recommendation intention [14]. Furthermore, Oh et al. illustrated that flow experience significantly affects consumers' trust in online shopping centers [38].

Hence, the following assumptions are proposed:

Hypothesis 2a (H2a). *The content of live broadcasting exerts a significant positive impact on flow experience.*

Hypothesis 2b (H2b). *Host charm exerts a significant positive impact on flow experience.*

Hypothesis 2c (H2c). *Interactions in live e-commerce exerts a significant positive impact on flow experience.*

Hypothesis 2d (H2d). *Trust in the host exerts a significant positive impact on flow experience.*

Hypothesis 3 (H3). *Social presence experience exerts a significant positive impact on flow experience.*

2.3. Purchase Intention

Purchase intention denotes the likelihood of consumers to purchase a product with an understanding of the product in a specific scenario. It is a key prerequisite for purchase behavior [39]. Based on the standpoint of live e-commerce, various studies of factors affecting consumption intention from diverse perspectives, including the impact of intrinsic value and nature of goods on consumption intention, have been reported. Loiacono et al. established a positive impact of the utility value of goods on consumption intention [40]. Mathwick et al. demonstrated that the hedonic perceived value of goods also affects consumption intention [41]. Meanwhile, the service perception during the consumption process affects consumption intention. Hsu et al. illustrated that flow experience significantly and positively correlated with online shopping behaviors (persistence intention, purchase intention, and impulse purchase) [42]. Kim et al. demonstrated that flow experience and co-presence influence consumers' intention to use collaborative shopping sites [43].

Hence, the following assumptions are proposed:

Hypothesis 4 (H4). *Social presence experience exerts a significant positive impact on consumption intention.*

Hypothesis 5 (H5). *Flow experience exerts a significant positive impact on consumption intention.*

2.4. Involvement Theories

Involvement denotes the degree to which an individual perceives something as significant or relevant to himself/herself based on his/her needs, interests, and values [44]. Song et al. reported that involvement is attributable to external factors, and it is an internal psychological process of information-processing. Involvement is eventually reflected as the correlation of this information and intrinsic needs, resulting in consumer preferences, attention, and participation for products, services, or brands. The level of interest and participation [18] can be explained as follows. At a high level of involvement, consumers methodically scrutinize capability, reliability, and other characteristics of suppliers and develop a rational cognition. At a low level of involvement, however, consumers are less focused on live broadcasting, and their motivation for precise information-processing is weakened, resulting in negative and rough processing [44].

In this study, involvement primarily denotes consumers' intention to watch live e-commerce broadcasting, as well as frequency and feelings of using live e-commerce. Moreover, it reflects consumers' attention to live e-commerce broadcasting.

Hence, the following assumptions are proposed:

Hypothesis 6 (H6). *Involvement exerts a regulating effect on the hypotheses in this conceptual model.*

3. Materials and Methods

3.1. Model Establishment

A theoretical model was built per the S–O–R theoretical framework to examine the impact of consumers' perception of live e-commerce on social presence and flow experience. We used the four characteristics of live e-commerce as independent variables, while social presence and flow experience were used as mediating variables, and purchase intention was used as the outcome variable. In addition, the transformation of purchase intention was verified empirically. Besides, we considered the regulatory role of involvement in the model. Furthermore, a conceptual model of factors influencing purchase intention in live e-commerce was established, as shown in Figure 2.
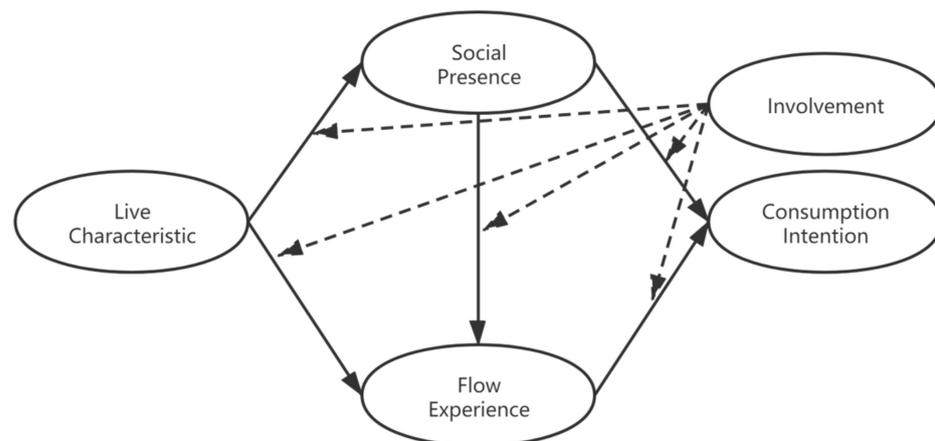

Figure 2. Theoretical framework.

3.2. Questionnaire Design

Prior research has demonstrated the measurement of social presence, flow experience, involvement, and consumption intention of live e-commerce. We designed and used a questionnaire (see Appendix A) to assess correlations of different characteristics of live e-commerce with social presence, flow experience, and consumption intention.

The questionnaires related to the live streaming feature are modified from Xiaoyi, H. Zhengliang, X (2020). The social presence experience part is modified from Yin, X et al. The flow experience part is modified from Jinwen, Z (2017). The consumption intention part is modified from Jin, H (2021). The involvement part is modified from Shuai, L (2017). The 7-point Likert scale was used for measurement.

In this study, the questionnaires were distributed via WeChat, which is the leading instant messenger in China, and a total of 346 valid questionnaires were collected.

4. Results

4.1. Verification of Reliability and Validity

Using the confirmatory factor analysis, the convergence validity of the model was verified. Table 1 presents the calculation results by the proposed model. Standardized factor loads and composite reliability (CR) of all latent variables were >0.7, and average variance extracted (AVE) of all latent variables were >0.5. The results fulfilled the criteria of convergence validity (standardized estimate > 0.5; CR > 0.6; AVE > 0.5; Hair et al., 2009).

Table 1. Reliability and convergence validity of the scale.

Variable	Factor	Standardization Estimate	AVE	CR	Cronbach's Alpha
The content of live broadcasting (A)	A1 A2 A3	0.907 0.979 0.927	0.880	0.957	0.956
Host charm (C)	C1 C2 C3	0.876 0.947 0.865	0.804	0.925	0.924
Interactions (D)	D1 D2 D3	0.938 0.932 0.904	0.855	0.947	0.946
Trust (F)	F1 F2 F3	0.897 0.911 0.884	0.805	0.925	0.925
Flow experience (I)	I1 I2 I3 I4	0.766 0.829 0.893 0.855	0.700	0.903	0.903
Social presence experience (J)	J1 J2 J3 J4 J5 J6	0.795 0.871 0.848 0.884 0.874 0.803	0.716	0.938	0.937
Consumption intention (L)	L1 L2 L3 L4 L5	0.854 0.892 0.890 0.911 0.882	0.785	0.948	0.948
Involvement (K)	K1 K2 K3 K4	0.811 0.800 0.827 0.794	0.653	0.883	0.877

Discriminant validity denotes the root mean square of dimensional AVE, and it should be in all probability greater than the correlation coefficient of other dimensions. As shown in Table 2, the discriminant validities of all dimensions were greater than the correlation coefficients of each dimension in this study, indicating that the discriminant validity fulfilled the requirements.

Table 2. Analysis of discriminant validity.

	The Content	Host Charm	Interactions	Trust	Flow Experience	Social Presence	Consumption Intention
The content	0.938						
Host charm	0.082	0.897					
Interactions	0.138	0.279	0.925				
Trust	0.255	0.253	0.270	0.897			
Flow experience	0.106	0.300	0.210	0.340	0.837		
Social presence	0.113	0.277	0.254	0.330	0.443	0.846	
Consumption intention	0.141	0.231	0.232	0.296	0.302	0.247	0.886

Notes: The value bolded on the diagonal is the AVE square root of the corresponding variable.

4.2. Path Detection

To validate the rationality and efficacy of the proposed model, we tested its fitness using AMOS 24.0; Table 3 shows the results. All indexes of the proposed model met the standards of fitting indexes. Indeed, the proposed model fitted well with the survey data. Each indicator has the following meanings. X^2: The size of X^2 value indicates the fitting degree of the correlation matrix of variables (causal path graph) contained in the whole model and the correlation matrix of actual data; standardized RMR: represents the square root of the sum of squares of standardized residuals; CMIN/DF: X^2 degree of freedom ratio; GFI (Goodness of Fit Index): the degree of fitting; NFI and FI and BFI: called the

value-added fit index, the theoretical model of the hypothesis to be tested is compared with the independent model to judge the fitting degree of the model.

Table 3. Fitness of the structural equation model.

Constucts		Absolute Fit Indices			Incremental Fit Indices		
	x^2	Standardized RMR	CMIN/DF	GFI	NFI	CFI	IFI
Model	0.000	0.051	2.282	0.86	0.914	0.949	0.95
Reference ranges	$p > 0.05$	<0.07	<3	>0.8	>0.8	<1.0	<1.0

Using the standard coefficient of the structural model path, we tested the hypotheses, the results of which are shown in Table 4. Host charm (=0.119, $p < 0.010$), interaction (=0.084, $p < 0.050$), and trust in the host (=0.167, $p < 0.001$) exerted a significant positive impact on the social presence, signifying that H1 is valid. In addition, host charm (=0.091, $p < 0.050$), trust in the host (=0.122, $p < 0.010$), and social presence (=0.296, $p < 0.001$) exerted a significant positive impact on flow experience, indicating that H2 is valid. Furthermore, social presence (=0.117, $p < 0.050$) and flow experience (=0.206, $p < 0.010$) exert a significant positive impact on purchase intention, suggesting that H4 and H5 are valid. However, H1a (=0.013, $p = 0.775$), H2a (=0.008, $p = 0.848$), and H2c (=0.021, $p = 0.584$) were not verified.

Table 4. Coefficients of latent variable paths.

Hypothesis		Path		Estimate	S.E.	C.R.	p	Results
H1a		<—	The content	0.013	0.047	0.286	0.775	
H1b	Social	<—	Host charm	0.119	0.043	2.735	0.006	Supported
H1c	presence	<—	Interactions	0.084	0.04	2.088	0.037	Supported
H1d		<—	Trust	0.167	0.044	3.78	***	Supported
H2a		<—	The content	0.008	0.043	0.192	0.848	
H2b	Flow	<—	Host charm	0.091	0.041	2.226	0.026	Supported
H2c	experience	<—	Interactions	0.021	0.037	0.548	0.584	
H2d		<—	Trust	0.122	0.042	2.912	0.004	Supported
H3		<—	Social presence	0.296	0.059	5.05	***	Supported
H4	Consumption intention	<—	Social presence	0.117	0.059	1.98	0.048	Supported
H5		<—	Flow experience	0.206	0.064	3.225	0.001	Supported

Notes: *** $p < 0.01$.

4.3. Detection of Regulating Effect

In this study, consumer involvement was introduced to validate the path regulation of the proposed model. We calculated the average of measurement items of involvement (4.7658) and then centralized. All samples were categorized into the low involvement group (SD = 0.582, N = 150) and the high involvement group (SD = 0.471, N = 167; t = 18.757, $p < 0.000$). In addition, the structural model was introduced into both groups; fitness and internal consistency of the models were within the expected ranges. Table 5 summarizes the results of the path coefficients comparison.

Table 5. Results of the regulation analysis.

Path			Involvement				C.R.
			Low (N = 150, SD = 0.582)		High (N = 167, SD = 0.471)		
			Estimate	p	Estimate	p	
Social presence	<—	The content	0.119	0.093	−0.036	0.524	−0.012
	<—	Host charm	0.200	0.001	0.034	0.519	−0.488
	<—	Interactions	0.211	***	−0.049	0.323	0.241
	<—	Trust	0.093	0.165	0.134	0.01	−0.822
Flow experience	<—	The content	−0.013	0.844	−0.014	0.788	−1.708
	<—	Host charm	0.101	0.102	0.062	0.211	−2.036
	<—	Interactions	−0.029	0.617	−0.011	0.815	−1.381
	<—	Trust	0.152	0.020	0.084	0.093	2.485
	<—	Social presence	0.451	***	0.053	0.517	−3.190
Consumption intention	<—	Social presence	0.134	0.128	−0.001	0.989	−1.437
	<—	Flow experience	0.209	0.022	0.035	0.664	2.415

Notes: *** $p < 0.01$.

In the path of characteristics of live e-commerce and flow experience, the values of trust in the host in low- and high-involvement samples were 0.152 ($p < 0.050$) and

0.084 ($p = 0.093$), respectively; the critical ratio of both groups was 2.485 (>1.965). The values of social presence in low- and high-involvement samples were 0.451 ($p < 0.001$) and 0.053 ($p = 0.053$), respectively; the critical ratio of both groups was -3.190 (>1.965). In the path of flow experience and purchase intention, the values of flow experience in low- and high-involvement samples were 0.209 ($p < 0.050$) and 0.035 ($p = 0.664$), respectively; the critical ratio of both groups was 2.415 (>1.965). The results demonstrated that the paths mentioned above exerted a significant regulatory effect on consumer involvement. Hence, the effects of characteristics of live e-commerce on flow experience and effects of flow experience on purchase intention were more significant in low consumer involvement.

5. Discussion

This study focused on China e-economic live streaming, using information about China's online shopping industry rapid development; for each sales shops, just using pictures and simple discount method, it seems difficult to gain the attention of consumers among many similar shops. E-economic live streaming, as a new rising marketing strategy in recent years, can not only show the products on the basis of the store's plan, but also respond to potential buyers more immediately and turn them into orders for goods.

In China, the current software information collect limitation policy mainly focuses on the privacy of personal information protection, but the record of behavior within the software is considered a kind of enterprise's internal resources, and there is quite a lot of research studying in the means of collecting data [45]. Although using the collected data may cause ethical problems [46], with the right strategies to avoid risk [47], it cannot be ignored as an important reference for enterprise management decision; the data need the corresponding analysis method (factors convert the consuming intention into purchasing). Because traditional marketing means are mostly based on offline consumption, but the characteristics of online shopping are different, these characteristics present both advantages (one-to-many at same time) [4] and disadvantages (low-conversion cost of the customer which let them be more strict) [17]. The improvement of the social presence can effectively mean that these disadvantages are avoided; by the same token, the flow experience is an excellent state to improve the purchase intention, whether im online or offline consumption. Especially in online shopping, the flow experience has special advantages, as consumers usually tend to be in a more comfortable position and relaxed spirit when watching e-economic live streaming, which in a way, means that it is easier to become invested in a streaming experience [28].

In this case, the present study uses empirical research to focus on analyzing various factors that affect the transformation of purchase intention, as well as the characteristics of live streaming that affect these factors, in order to enable each business or e-commerce live broadcasting platform itself to make a better strategic choice. Meanwhile, it is necessary to analyze the consumer groups that are highly affected by these factors.

6. Conclusions

This study investigated the impact of characteristics of live e-commerce on social presence and flow experience based on the S–O–R theoretical framework. The empirical analysis revealed that host charm, interaction, and trust in the host exerted a significant impact on social presence, whereas trust in the host and perception of host charm exerted a significant impact on flow experience. In addition, consumer involvement was found to play a significant regulatory role in the proposed model. Overall, the following conclusions can be drawn:

(1) Live e-commerce is principally a marketing behavior, but significantly differs from offline marketing. On the one hand, consumers cannot contact goods or intuitively feel the quality of goods. In this scenario, the host serves as a bridge between consumers and goods. Through live broadcasting without clips, the host experiences and feels the goods for the consumers. Hence, the personal charm of the host plays a vital role in consumer experience and resonance. In ideal cases, consumers believe that the product experience presented

by the host is consistent with theirs; this requires the host to interact with consumers for both shared and unique needs and suggestions in real-time. Thus, these two factors exert a significant positive impact on social presence. On the other hand, the host cannot physically contact consumers in live e-commerce, whereas consumers can enter and leave all live broadcasting rooms. Thus, the host should develop their trust in audience consumers. Meanwhile, online shopping consumers should also identify merchants and hosts that can be trusted to decrease time and augment the shopping experience. Hence, when watching live broadcasting by trusted hosts, consumers are exposed to high social presence and flow experience owing to relaxation and trust.

(2) At present, the entry barrier of live e-commerce is low, and any merchant and individual are eligible to participate. Hence, live e-commerce has extremely large coverage, and most industries have live e-commerce hosts nowadays. The cost for consumers to switch between different live broadcast rooms is meager, and consumers have access to various channels of information in online shopping. Hence, it is highly challenging for the broadcasting content to be the reason for enhanced social presence and flow experience.

(3) Consumer involvement plays a regulatory role in the proposed model. In low involvement, social presence and trust in the host exert a significant positive impact on flow experience. In addition, flow experience exerts a significant positive impact on purchase intention, and interaction exerts a significant positive impact on social presence, although the significance was not statistically significant in this study.

To date, the host remains the central part of live e-commerce. A host with personal charm and rational interaction can enhance consumers' trust, thereby enhancing the social presence and flow experience of consumers in live e-commerce. Furthermore, merchants should focus on low-involvement, high-liquidity consumers and increase their consumption intention and purchase behavior by focusing on surprises, newcomer welfare, and flash sales.

6.1. Theoretical Implications

With e-economic live streaming, as a form of online consumption strategy, there are several methods for measuring consumer experience, and some of these measurements are feature-wise similar. The present study verifies the correlation between social presence and flow experience. In addition, for other measurement dimensions, the correlation between them can be rearranged on the basis of existing dimensions, and a comprehensive evaluation system for e-commerce live streaming experience can be obtained. It will provide a theoretical basis for researchers to measure the live streaming experience of e-commerce more comprehensively.

6.2. Implications for the E-Economic Live Streaming Platform and Hosts

Low involvement of the customer can be understood as those who do not often watch live streams; they watch the e-economic live streaming only occasionally due to demand or by accident. Compared to the high involvement consumers who watch every day, their consumption ability and the willingness to accumulate is relatively higher; if their consumer experience improved, are more likely to receive orders. Compared at the same time, it can also attract similar consumer experience. Therefore, hosts or live broadcast businesses can pay more attention to how to attract such consumers into the live broadcast room and improve their interest and experience in a short period of time.

6.3. Limitations and Future Research

This study was conducted in China during the COVID-19 period. During this period, some offline stores were closed due to the impact of the epidemic, and consumers mostly chose online shopping for the same reason. After the epidemic is controlled, the situation may change. On the other hand, this study adopts the questionnaire method, which may have some errors.

Despite the above limitations, the results of this study are still meaningful, because our hypothesis is based on the inherent properties of e-commerce live streaming, which will not be affected by whether there is an epidemic situation or not. In addition, researchers can conduct future studies based on the findings of this study, that is, as the characteristics of hosts are the main factors affecting e-commerce live streaming, with the standardization of the live streaming industry, what should be the focus of cultivating hosts and what are the most cost-effective characteristics to cultivate? At the same time, since consumers with low involvement are more likely to enter the flow experience, which marketing strategies are most effective and which promotion methods are most likely to enable consumers to enter the live stream when consumers are less concerned about them?

Appendix A

Table A1. Survey Items.

Constructs and Items
A: The content of live broadcasting A1: Broadcast with goods can be a comprehensive dynamic display of goods or services A2: Anchors in live streaming can give professional responses to questions related to products or services A3: Anchors in live broadcasting can give personalized suggestions according to their own descriptions
C: Host charm C1: I prefer to watch the products recommended by network celebrities C2: I expect to purchase and use web celebrity hot style C3: Recommended by network celebrities, increased my demand for online shopping
D:Interactions D1: I can effectively interact with network celebrities in the live broadcast with goods D2: I live with goods to be able to communicate with other consumers D3: I am eager to participate in the interaction in the live broadcast with goods
F: Trust F1: By viewing live video with goods, I trust the host more F2: I believe that the products and services recommended by the host are shared after their personal experience F3: I believe the products and services recommended by the host are useful to everyone
J: Social presence experience J1: You can have a social feeling while watching a live webcast J2: When you watch a live webcast, you can feel the situation of contact with people J3: Watching a live webcast, you can feel a sense of human passion

Table A1. *Cont.*

Constructs and Items
J4: While watching a live webcast, you can feel the presence of other relevant parties J5: Other interested parties will be aware of your presence while watching a live webcast J6: In the course of watching a live webcast, you can exchange information with other interested parties
I:Flow experience I1: I was very focused when I was watching the live broadcast I2: When I watch live, I feel manipulative I3: When I watched the live broadcast, I felt the time passed quickly I4: I enjoyed the whole live broadcasting
L: consumption intention L1: If the shop has the goods I need, I am willing to spend in this shop L2: If there is a future demand for similar goods, I would like to purchase them here L3: I would like to recommend this shop to others for suggestions L4: I would like to recommend this shop when others inquire about the goods L5: If the goods in this shop meet my needs, I am willing to spend money in this shop
K: Involvement K1: I am very interested in live streaming of e-commerce K2: I often watch live broadcasts through live streaming platforms K3: I usually attach great importance to the practicality and entertainment of e-commerce live broadcast K4: I consider myself a member of the e-commerce live streaming community

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