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# The influences of the characteristics of opinion leaders on consumer purchase intention in a mobile e-commerce webcast context

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**Abstract:** The mobile e-commerce webcast has great commercial value through the way of live streaming to sell products, place advertisements, and create an ecosystem in conjunction with other industries to make capital available. Based on the stimuli-organism-response (SOR) model, in a sample of 393 consumers in China, multiple regression analysis and bootstrap are used to estimate the influences of the characteristics of opinion leaders on consumer purchase intention in the context of mobile e-commerce webcast. The results show that the characteristics of opinion leaders exert a significant positive influence on consumer purchase intention and flow experience; flow experience has a significant positive influence on consumer purchase intention; and flow experience has partial mediating effects between the characteristics of opinion leaders and consumer purchase intention. The findings provide support for the research model. Furthermore, practical implications are provided for long-term development of mobile e-commerce live operators.

**Keywords:** opinion leaders; consumer purchase intention; flow experience; mobile e-commerce webcast; SOR model.

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## **1 Introduction**

E-commerce live streaming stimulated consumer online purchase needs during the COVID-19 pandemic, and was associated with disaster relief and poverty alleviation, showing a booming trend in the first half of 2020. As of June 2022, the number of China’s live webcast users reached 716 million, an increase of 12.9 million compared with December 2021, accounting for 68.1% of the total number of internet users (CNNIC). Mobile internet has strengthened its main position with its high portability of applications and high quality of content, which directly promotes the transfer of webcasting from computer terminal to mobile terminal. Mobile e-commerce webcasts are based on e-commerce, using the mobile live streaming system to recommend, display, and reach out to consumers, thus promoting the purchase intention (Huang and Xu, 2021). Compared with the traditional marketing model, live marketing shows outstanding characteristics. Firstly, consumers’ focus on any object is a shifting thing. The traditional marketing model in which consumers are more concerned about the store or the business itself, while the webcast is more important is the anchor on a personal level; its personal characteristics and these characteristics conveyed will affect the consumer’s judgement. An anchor with unique characteristics, their language style is easily propagated online; fans also readily see them as an opinion leader. In other words, the object of consumer attention is converted from business to the live-streaming anchor. Secondly, the element of consumers’ interest is changed. The interest of consumers can be stimulated by the anchor’s own talent show, humorous expression, etc. and no longer depends on the characteristics of the product or service itself (Liu and Shi, 2020). Finally, consumers get information from diversified sources. Under the live streaming model, consumers can learn about the product or service in a comprehensive way through fan messages, online comments, and other means, and information features play an important role. Considering the important role of anchors and information characteristics in the live streaming process, this research will focus on the influence of professionalism, credibility, interactivity, and attractiveness in the information-related characteristics of opinion leaders on consumer purchase intention.

With the development of Internet technology, online shopping is not only a tool to purchase items, but also a way for consumers to experience pleasure, and consumers enjoy the whole shopping session, which increases the value of Internet shopping (Ganesh et al., 2010). The ultimate purpose of consumer shopping is converted from the product to the experience activity itself, and consumers value the pleasurable experience of the purchase process. From a psychological perspective, observing people’s performance in consumer service activities, when individuals are fully engaged in a specific situation, their whole-body concentration will make them feel no other perceptions outside the current situation and be in a state of process immersion, i.e., flow experience. Rodgers and Harris (2003) found that when users shop online if the more pleasant the users are, it will increase the user’s viewing time and increase purchase

intentions. When consumers generate a flow experience, they can have a high level of pleasure in the activity in which they are engaged; generating an experience that merges behaviour and consciousness, and this flow plays a positive role in promoting consumer purchasing behaviour. The flow experience provides a new perspective from a psychological point for studying consumer experience and its related consumer online shopping behaviour. At the same time, consumers in the live webcasting environment have unique needs and behavioural characteristics, and flow experience plays an important role in studying the emotional and cognitive factors influencing consumer behaviour. Therefore, this study will evaluate the influence of flow experience on consumer purchase behaviour in the live webcasting context.

Live marketing provides consumers with a real-time, authentic, professional, and interactive shopping scenario in which consumers feel the influence of certain traits from the core personalities in the live streaming process. These central figures appear as netizens, shopping experts and authorities in various live streaming processes, acting as an opinion leader, influencing consumer purchase choices and decisions. Environmental psychologists Mehrabian and Russell (1974) proposed the stimuli-organism-response (SOR) theory which combines cognitive psychology and emotional factors of the organism and is used to explain the mechanism of influence of environmental stimuli on individual psychological and behavioural change. When an individual is stimulated from the environment (external or internal stimuli), the organism internally generates a corresponding cognitive or affective response (pleasure, arousal, dominance) and engenders an approach or avoidance behaviour according to its own judgement (Jiang et al, 2010). This theory is then introduced into the marketing arena to study the changes of environmental stimuli on consumer psychology and behaviour in the marketing environment, and nowadays it is combined with the Internet to study the effects of online environmental stimuli on consumers.

The existing literature is mainly based on the SOR theoretical model to explain the influence of opinion leaders on consumer purchase intention, while some scholars have also studied the role of a particular aspect of opinion leader traits on consumer purchase intention from the perspective of information sources (Xiao and Lei, 2021). Unlike these studies, in the present research we consider that opinion leaders influence purchase intention in two ways. First, they input product information through two-way interaction with consumers watching live streaming. Second, they rely on their own charm or appearance to attract consumers to stop and watch, and present product information to consumers in a novel and interesting way; consumers are gradually attracted and fully engaged in the process of watching, resulting in flow experience, trust or admiration for the recommended products or opinion leader, thus generating purchase intention.

In summary, this study adopts a quantitative analysis method and tries to answer two questions. First, based on the SOR theory, this research explores the intrinsic attributes of opinion leaders in the mobile e-commerce webcast context from a micro perspective, analyses and verifies the mechanism of influence of the characteristics of opinion leaders on consumer purchase intention, and constructs a theoretical model of the characteristics of opinion leaders on consumer purchase intention in this context. Second, the inner flow experience of consumers and its influence on consumer purchase behaviour in the context of mobile e-commerce live streaming are studied. The innovations of this study are as following: first, based on the live mobile e-commerce context, which is different from the computer-based context of previous studies, this study provides a new perspective and

direction for studying the relationship between an opinion leader and consumer purchase intentions, and expands the application scenario of the SOR model. Second, this study uses the flow experience as an intermediate variable and pays more attention to the internal psychological state of consumers. Third, in the characteristic involved in selection of an opinion leader, in addition to the traditional professionalism, credibility, and attractiveness, this research adds interactivity as a new measurement variable.

## 2 Literature review

### 2.1 *The characteristics of opinion leaders*

Traditional opinion leaders can be defined as internet users who can produce a certain bridging effect and can influence a part of the population. They are generally characterised as having a more in-depth view on certain issues and are an important source of information in the group (Chen and Liu, 2015). Opinion leaders are the medium that connects the mass media and the masses, and they obtain information from traditional media, process and organise it, and deliver it to the audience. Applied to the e-commerce live streaming context, in this study opinion leaders are defined as e-commerce anchors who have rich information sources and expertise in a certain field and promote consumption by means of live webcasts for the purpose of product sales promotion. Opinion leaders are more likely to be trusted by consumers because of their expertise and authority in certain aspects, so the information delivered by an opinion leader is more likely to change consumer attitudes and behaviours (Stern and Gould, 1988). It is therefore reasonable to believe that the recommendations of opinion leaders are more credible and convincing than mass marketing.

Meng et al. (2020) used in-depth interview methods to summarise the characteristics of Internet celebrity information sources, namely credibility, professionalism, interactivity, and attractiveness. Based on references to existing literature, this study will empirically investigate these four dimensions as the characteristics of opinion leaders. Among them, credibility represents the degree of consumers' trust in the opinion leader during live streaming; professionalism represents the degree to which the opinion leader provides correct and effective expertise or experience as perceived by the consumers during live streaming; interactivity refers to the extent to which consumers can get feedback from the opinion leader through questions and answers, pop-ups and other means during live streaming, and exchange messages in real-time to solve problems; attractiveness refers to the extent to which consumers like the appearance and body, personal charm, lifestyle habits or talents of the opinion leader during live streaming.

### 2.2 *Flow experience*

Csikszentmihalyi introduced the concept of flow experience, which refers to a mental state in which a person is fully engaged in something of interest, highly focused, ignores time, and derives extreme pleasure there from. Scholars have defined flow experience on three levels: the mental level, the functional level, and the process level. The mental level of flow experience means that people will focus all their attention on what they are doing, ignore external noise, forget the passage of time, and reach a state of extreme pleasure (Csikszentmihalyi, 1991). This study focuses on the change of a consumer's mental state

during live e-commerce, so the definition of mental level is more suitable. In this research, flow experience is defined as a positive emotional state of full concentration, time distortion, and pleasure generated by the environmental stimulation of consumers during live streaming. The characteristics of flow experience include a sense of time distortion, high concentration, a sense of potential control, and a self-purpose experience. This study argues that in the process of watching a live stream, the opinion leader causes consumers to undergo a flow experience through their own charisma and product demonstration. Consumers are influenced by the flow, develop trust and loyalty to the opinion leader, thus follow the advice of the opinion leader and generate purchase intention.

### *2.3 The SOR model*

The SOR model is based on the behaviourist S-R model adds organismal variable, to explain the human behaviour as the result of the interaction of the objective environment and individual factors. The SOR model of Mehrabian and Russell (1974) first correlated the physical environment with human emotional and behavioural responses. With advance of information and internet technologies, the SOR model has been expanded to the virtual environment, since any stimuli factors, such as social, design, and ambient, could also be applied virtually (Kim and Lennon, 2013). In the context of online consumption, stimuli mainly refer to the website environment that affects consumers making purchase decisions, which can include aesthetic and sensory perceptions of a website, such as social group influence, website information quality, website back-end support capacity, website security (Xu et al., 2021), and shopping services. The organism refers to the cognitive and emotional state of consumers when browsing websites and watching live broadcasts. The information stimulation of the website live broadcast will cause the internal psychological changes of consumers and affect the purchase motivation of approach or avoidance. The response involves consumer's attitudes, purchase intention, and behaviour.

## **3 Hypotheses**

### *3.1 The characteristics of opinion leaders and flow experience*

This study classifies the characteristics of opinion leaders into four dimensions, which are credibility, professionalism, interactivity, and attractiveness. The establishment of trust requires frequent contact and communication, and consumers' perceived trust needs to be predicted by contacting and communicating with merchants (Gefen and Straub, 2004). Traditional shopping platforms cannot achieve face-to-face contact with consumers, but in the process of live streaming, consumers can directly contact and communicate with merchants and make direct judgements about whether the merchants are trustworthy, and this process will enhance consumer interest and attention, and once they are sure that the opinion leader is trustworthy, they will be fully engaged, generating a sense of pleasure, and more easily reach the state of flow experience. The professionalism of the opinion leader during the live streaming process is also a key factor in evaluating whether he or she is credible. Studies have shown that consumers tend to seek help from those who are more professional when shopping to reduce risk (Bansal and Voyer, 2000). During the

live streaming, consumers ask professional questions directly to the opinion leader through pop-ups, and the opinion leader can quickly use their expertise to solve problems for consumers. With the consumers themselves and other consumers asking questions at the same time, they gradually become clear about their target products under the professional explanation proffered by the opinion leader. The clear target will maintain consumer focus and is more likely to produce a flow experience (Csikszentmihalyi, 1993).

The interactivity of an opinion leader refers to the degree of interaction between the opinion leader and consumers. Live streaming can accelerate information processing, and some studies show that increased responsiveness can enhance focus and attention, increase consumer motivation and initiative, and promote the occurrence of flow experiences (Jerry and Gotlieb, 1991). From the perspective of the information source, the attractiveness of the information source is mainly reflected in exquisite appearance, attractive body, sweet voice, or skilfulness (Koufaris, 2002). When the information source has strong attractiveness, it will enhance consumer attention and curiosity, generate the desire to find out more, and create a strong desire to buy (Jerry and Gotlieb, 1991). Therefore, the more attractive the opinion leader is when consumers are watching a live stream, the more it will enhance their curiosity and concentration, and at the same time, consumers will naturally take pleasure in the beauty of the opinion leader and are more likely to have a flow experience. These lead to the following hypotheses:

- H1 The characteristics of an opinion leader positively influence consumer flow experience.
- H1a The credibility of an opinion leader positively affects consumer flow experience.
- H1b The professionalism of an opinion leader positively affects consumer flow experience.
- H1c The interactivity of an opinion leader positively affects consumer flow experience.
- H1d The attractiveness of an opinion leader positively affects consumer flow experience.

### *3.2 The characteristics of opinion leaders and purchase intention*

Opinion leaders play an important role in the social networks. Lyons and Henderson (2005) demonstrated that opinion leaders can informally influence a variety of consumer behaviours such as information search, purchase, and product use, and play an important role in the entire consumer decision-making process. In this study, the characteristics of opinion leaders are classified into four dimensions: credibility, professionalism, interactivity, and attractiveness. Liu et al. (2020) empirically found that professionalism, interactivity, homogeneity, and credibility of individual characteristics of an opinion leader in online brand communities positively affect consumer flow experience, and flow experience positively affects impulsive buying intention. A study by Zhao et al. (2011) found that the more credible the information source is in a marketing context the more consumers will transfer their positive evaluation of the source to the corresponding product or service. The expertise of opinion leaders comes from their long history of product involvement and use, and by taking advantage of this information collection and processing; they provide consumers with specialised explanations or highly relevant information about their recommended products to influence consumer behaviour.

Similarly, the attractiveness of opinion leaders in the live streaming process, including appearance, body, and other personal characteristics, will attract consumers to watch, and while watching, they are likely to comment and interact with the opinion leader in real time, generating trust in the process of interaction and finally reaching a deal. Thus, it can be hypothesised that:

- H2 The characteristics of an opinion leader positively influence consumer purchase intention.
- H2a The credibility of an opinion leader positively affects consumer purchase intention.
- H2b The professionalism of an opinion leader positively affects consumer purchase intention.
- H2c The interactivity of an opinion leader positively affects consumer purchase intention.
- H2d The attractiveness of an opinion leader positively affects consumer purchase intention.

### *3.3 Flow experience and purchase intention*

Beatty and Ferrell (1998) stated that consumer behaviour depends on the level of inner pleasure, and shopping is more likely to occur when a flow state is reached. Xu et al. (2021) proved that the flow experience generated by consumers in a live streaming scenario positively and significantly affects purchase intentions. During live streaming, e-commerce anchors, consumers themselves, and other consumers work together to create an immersive shopping environment by interacting with each other through pop-ups and asking questions and other activities that generate a great sense of pleasure and the strong emotional response from this immersive experience promotes willingness to purchase. Compared with traditional web shopping, the live shopping approach provides consumers with a stronger sense of control (e.g., asking questions, reviewing previous recordings), participation, (e.g., pop-ups, comments, lotteries), security and pleasure, and therefore a better shopping experience that is more likely to generate shopping behaviour. Based on these findings, a hypothesis can be proposed:

- H3 Flow experience positively affects consumer purchase intention.

According to the SOR theory, external environmental stimuli will cause changes in cognition or emotion within the body, so that the body will respond accordingly, and internal cognition or emotion acts as a mediator of this process. This study uses this theoretical model to examine the influence of the characteristics of opinion leaders on consumer purchase intention. As shown in the previous analysis, the characteristics of opinion leaders have a significant influence on the generation of flow experience, at the same time; flow experience has a significant influence on consumer purchase intention. Therefore, this study suggests that flow experience plays a mediating role between the characteristics of opinion leaders and consumer purchase intention. Based on above analysis, these hypotheses can be proposed:

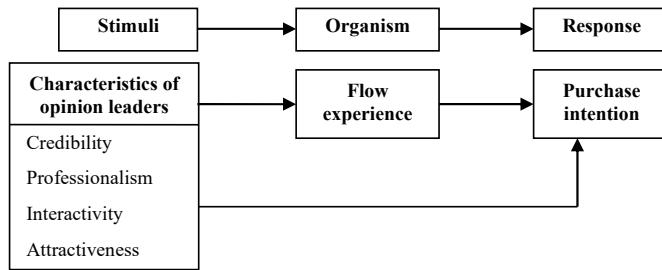
- H4 Flow experience mediates between the characteristics of opinion leaders and consumer purchase intention.



- H4a Flow experience mediates between the credibility of an opinion leader and consumer purchase intention.
- H4b Flow experience mediates between the professionalism of an opinion leader and consumer purchase intention.
- H4c Flow experience mediates between the interactivity of an opinion leader and consumer purchase intention.
- H4d Flow experience mediates between the attractiveness of an opinion leader and consumer purchase intention.

The research model is constructed based on aforementioned discussions using the SOR model as shown in Figure 1.

**Figure 1** The research model



## 4 Empirical research and results

### 4.1 Method of measurement and the sample

The characteristics of opinion leaders were measured with thirteen items adapted from Ohanian’s (1991) scale, including four characteristics: credibility (three items), professionalism (four items), interactivity (three items), and attractiveness (three items). Flow experience was measured using the four-item flow experience scale (Skadberg and Kimmel, 2004). Three items adapted from Dodds et al. (1991) were used to measure purchase intention. The value of Cronbach’s  $\alpha$  of all the above scales exceeded 0.8, and the overall scale coefficient of opinion leaders was 0.945, suggesting their reliability. The questionnaire contained 20 items related to six latent variables. Responses were rated on a seven-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree).

The study surveyed consumers who had experience watching mobile webcast. A total of 479 questionnaires were collected, and a total of 393 respondents (a response rate of 82%) in China were obtained. Respondents include men and women (45.3% and 54.7% of the sample respectively). They are mainly young people (85.4% ages from 18 to 40 years), and highly educated (84.5% people completed higher education, among them 35.4% completed postgraduate education). About 49.6% respondents come from enterprises and institutions, and government; 19.6% from others; 30.8% were students. Their annual online shopping cost ranges from RMB 2,000 to 3,500 yuan and above

accounting for 76.1% of the sample, those spending less than RMB 2,000 yuan account for 23.9% thereof.

## 4.2 Results

### 4.2.1 Common method deviation test

Common method deviation is the overlap of variance between variables due to the same data source, measurement tool, and environment, and does not represent the true relationship between constructs. To minimise the influence of common method variation, this study used control methods such as anonymous filling and disordering of questions. Meanwhile, the study was tested for common method deviation by using Harman's one-factor method. The results implied that the first factor can explain 38.57% of the variance of all question items, which is less than the critical value of 40%, indicating that this study can better control the problem of common method variance in the data.

**Table 1** Reliability and validity analysis for all variables

<i>Variables</i>	<i>Items</i>	<i>Factor loadings</i>	<i>Cronbach's <math>\alpha</math></i>	<i>AVE</i>	<i>CR</i>
Credibility (KX)	KX1	0.830	0.866	0.683	0.866
	KX2	0.821			
	KX3	0.828			
Professionalism (ZY)	ZY1	0.735	0.855	0.594	0.854
	ZY2	0.730			
	ZY3	0.804			
	ZY4	0.811			
Interactivity (HD)	HD1	0.790	0.839	0.635	0.839
	HD2	0.813			
	HD3	0.788			
Attractiveness (XY)	XY1	0.812	0.863	0.677	0.863
	XY2	0.800			
	XY3	0.855			
Flow experience (XT)	XT1	0.750	0.884	0.577	0.845
	XT2	0.772			
	XT3	0.740			
	XT4	0.776			
Purchase intention (GY)	GY1	0.782	0.821	0.606	0.822
	GY2	0.789			
	GY3	0.764			

### 4.2.2 Reliability and validity analysis

To ensure the validity of the test results, the final 393 data were analysed for reliability using SPSS 22.0 software. The consistency of latent variables was assessed using Cronbach's  $\alpha$  coefficient and combined reliability (CR), as shown in Table 1, and the

Cronbach’s coefficients of all latent variables exceeded 0.8 and the CR values exceeded 0.8, indicating that all the variable measures used in this study have good internal consistency.

Both convergent validity and discriminant validity were assessed. Convergent validity was determined using the factor loading coefficients of the variables and the average variance extracted (AVE) of the latent variables, and discriminant validity was tested by comparing the square root of the AVE of the latent variables with the correlation coefficients between the other variables. In Table 1, the AVE values of all latent variables are greater than 0.5, indicating that the model has qualified convergent validity. As displayed in Table 2, the diagonal values represent the square root of AVE of each latent variable, and the non-diagonal values denote the correlation coefficients between the variables, where the square root of AVE of each latent variable is greater than the correlation coefficients between the latent variables and other latent variables, indicating that the discriminant validity of the scale is acceptable.

**Table 2** Correlation coefficients between latent variables and the square root of AVE

<i>Variables</i>	<i>KX</i>	<i>ZY</i>	<i>HD</i>	<i>XY</i>	<i>XT</i>	<i>GY</i>
Credibility (KX)	0.826					
Professionalism (ZY)	0.759**	0.771				
Interactivity (HD)	0.761**	0.715**	0.797			
Attractiveness (XY)	0.752**	0.679**	0.730**	0.823		
Flow experience (XT)	0.709**	0.662**	0.687**	0.615**	0.760	
Purchase intention (GY)	0.713**	0.670**	0.679**	0.681**	0.687**	0.778

Note: \*\* $p < 0.01$ , \* $p < 0.05$ .

### 4.2.3 Multiple regression analysis

Multiple regression analysis was conducted using SPSS 22.0, and the results were analysed using the survey respondents’ gender, age, education, occupation, and annual online purchase cost as control variables. As shown in Table 3, there are significant positive influences of opinion leaders, credibility, professionalism, interactivity, and attractiveness on flow experience ( $\beta = 0.926, p < 0.001$ ;  $\beta = 0.781, p < 0.001$ ;  $\beta = 0.813, p < 0.001$ ;  $\beta = 0.722, p < 0.001$ ;  $\beta = 0.615, p < 0.001$ ), and Hypotheses 1, 1a, 1b, 1c, and 1d were supported, with the highest influence coefficient of professionalism on flow experience. There are significant positive influences of opinion leaders, credibility, professionalism, interactivity and attractiveness on purchase intention ( $\beta = 0.866, p < 0.001$ ;  $\beta = 0.732, p < 0.001$ ;  $\beta = 0.770, p < 0.001$ ;  $\beta = 0.666, p < 0.001$ ;  $\beta = 0.636, p < 0.001$ ), Hypotheses 2, 2a, 2b, 2c, and 2d were supported, with the highest influence coefficient of professionalism on purchase intention. The positive influence of flow experience on purchase intention is significant ( $\beta = 0.640, p < 0.001$ ), and Hypothesis 3 was validated.

A bootstrap mediation effect test was used to check whether flow experience can play a mediating role between the characteristics of opinion leaders and purchase intention. As shown in Table 4, none of the five mediated paths contained 0 between LLCI and ULCI, indicating that flow experience was partially mediated in all five paths. That is, opinion leaders and their credibility, professionalism, interactivity and attractiveness can

indirectly influence consumer purchase intention through their flow experience, and Hypotheses 4, 4a, 4b, 4c and 4d were confirmed.

**Table 3** Multiple regression analysis

<i>Regression variables</i>	$\beta$	<i>F</i>	$\Delta R^2$	<i>R</i> <sup>2</sup>
YL → XT	0.926***	89.873***	0.557	0.583
KX → XT	0.781***	66.744***	0.484	0.509
ZY → XT	0.813***	52.301***	0.448	0.423
HD → XT	0.722***	59.138***	0.479	0.453
XY → XT	0.615***	40.553***	0.361	0.387
YL → GY	0.866***	91.538***	0.567	0.587
KX → GY	0.732***	68.003***	0.493	0.514
ZY → GY	0.770***	54.937***	0.440	0.461
HD → GY	0.666***	56.556***	0.447	0.468
XY → GY	0.636***	56.768***	0.448	0.469
XT → GY	0.640***	60.414***	0.464	0.484

Note: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ .

**Table 4** Bootstrap mediation effect analysis

<i>Path</i>	<i>Indirect effect</i>	<i>Direct effect</i>	<i>SE</i>	<i>T</i>	<i>LLCI</i>	<i>ULCI</i>
YL → XT → GY	0.227	0.639	0.056	11.514	0.530	0.749
KX → XT → GY	0.271	0.461	0.048	9.526	0.366	0.556
ZY → XT → GY	0.329	0.440	0.052	8.498	0.339	0.542
HD → XT → GY	0.285	0.380	0.046	8.284	0.290	0.470
XY → XT → GY	0.251	0.385	0.039	9.816	0.308	0.462

## 5 Discussion and implications

### 5.1 Conclusions

Based on the SOR model, this present study examines the mechanism of influence of the characteristics of opinion leaders on consumer purchase intention in the context of mobile e-commerce webcast. In a survey of 393 consumers in China, the basic assumptions have been tested, and the results provide support for our hypothesised theoretical model. Combining the theoretical framework permits us to draw the following conclusions.

First, this study indicates that credibility, professionalism, interactivity, and attractiveness of an opinion leader have a positive effect on consumer flow experience, akin to the findings of Liu et al. (2020). When consumers perceive these characteristics of opinion leader, they are more likely to have a flow experience. As noted in Table 3, four characteristics of opinion leaders have the greatest influence on flow experience in professionalism and the least in attractiveness. A possible reason for this is that there are more channels available from which to obtain information, filled with much useless information, so consumers urgently need a professional and reliable information channel,

and opinion leaders are good at gaining consumer trust with their authority and professionalism. Consumers prefer more professional opinion leaders ahead of preference based on their physical appearance.

Second, the results confirm that credibility, professionalism, interactivity and attractiveness of opinion leaders have positive effects on consumer purchase intention. As shown in Table 3, professionalism and credibility remain the two most important variables influencing consumer purchase intention. The more professional the opinion leader, the stronger the will to purchase among consumers, because the professionalism reflected by an opinion leader invisibly reduces the perceived risk among consumers while increasing their perceived trust. Opinion leaders use their professional knowledge to lead interactive discussions among consumers in the live streaming room, arouse cognitive and emotional resonance, establish a sense of identity to gain trust, and promotes willingness to purchase.

Third, the results show that flow experience has a significant positive influence on consumer purchase intention. In the process of live webcast, the more intense the consumer flow experience, the more likely they are to generate purchase intention and behaviour. The flow experience often implies concentration and full engagement, which leads to a loss of time and is accompanied by a great sense of pleasure, and both repetitive and unplanned purchase behaviours are significantly enhanced (Chen et al., 2009).

Fourth, the current study shows that flow experience partially mediates the influences of credibility, professionalism, interactivity, and attractiveness on consumer purchase intentions at different levels. As shown in Table 4, the direct influences of interactivity and attractiveness are smaller compared to credibility and professionalism. Possible reasons for this are: a prominent appearance and body attractiveness can instantly generate a great sense of pleasure, which is more likely to produce a flow experience and purchase behaviour; interactivity has similar characteristics, in the process of studio interaction, consumers have a sense of participation, concentrated thoughts, generate trust and recognition in the process of mutual communication, and then create purchase intention (Meng et al., 2020). After credibility and professionalism are confirmed, it will reduce consumer perceptions of risk, making it easier to generate purchase behaviour directly.

## 5.2 *Implications*

The theoretical contribution is mainly reflected in three aspects:

- 1 This research applies SOR model to the live broadcast marketing mode and expands the application scenarios and research applicability of the SOR model. Recently the mobile e-commerce live streaming in China is a rapidly developing marketing model, because it mainly relies on the high interaction and diversified real-time interactive marketing modes between opinion leaders and consumers (Meng et al., 2020). Live-streamers ride marketing imperatives directing consumers to cross-integrated e-commerce platforms that fuel China's emerging consumption culture (Cunningham et al., 2019) and the Wang Hong economy. This study proves that the SOR model remains an effective, and generally practical, theory with which to study consumer behaviour in mobile e-commerce webcasts.

- 2 This study enriches the research of emotional state using flow experience as a mediating variable. Some studies have used pleasure, arousal, and dominance (three emotional dimensions) as organismal variables (Zimmerman, 2012; Loureiro, 2014). In positive psychology, the flow experience is a positive subjective state originating from intrinsic motivation or autotelic activities. In this study, the flow experience is regarded as an emotional state, because it includes pleasure and arousal, even other features, such as intrinsic motivation. Due to e-commerce webcast making full use of the fragmented leisure time of consumers, once the live-streaming environment created by opinion leaders attracts consumers to focus on and enjoy the live activities, flow experience of consumers is more likely to arise. This study proves that the flow experience positively predicts consumer purchase intention in the mobile e-commerce live streaming, and the flow experience plays a partial mediating role between the characteristics of opinion leaders and consumer purchase intention.
- 3 This study verifies and enriches the theory of information source features: this posits that the information source influences the persuasive effect on the audience from the three characteristics of credibility, professionalism and attractiveness (Silvera and Austad, 2004). This study believes that characteristics of opinion leaders are composed of four characteristics: professionalism, credibility, interactivity, and attractiveness, which are mutually independent and act together on the emotional state and purchase intention of consumers. This study verifies the idea that four characteristics of opinion leaders have a positive impact on the flow experience and purchase intention of consumers.

Beyond the theoretical contributions, our findings offer interesting implications for e-commerce anchors or companies when conducting marketing activities. First, they should strengthen the characteristics of the opinion leader. Both opinion leaders and companies need to focus on shaping their own image to improve credibility; enhance interactions with consumers, through questions, lotteries, and special offers and other high-frequency interaction and use innovative and interesting ways to display products to improve the quality of consumer perception. Second, they should promote consumer generation of flow experience. E-commerce companies should strengthen their professional training when choosing opinion leaders, as well as choosing e-commerce anchors with good looks and appearance. The more charming they are, the more likely they are to bring pleasure to consumers, thus generating a flow experience. Third, they should enhance contextual factors to strengthen consumer purchase intentions. The live streaming room is a virtual environment, and opinion leaders should strengthen the shaping of this environmental atmosphere. A tense atmosphere can be created through measures such as live streaming of music, sound, and limited-time purchase mechanisms to motivate consumers and capture their attention. Moreover, the live streaming strategy by reducing psychological distance and perceived uncertainty can improve customers' online purchase intention (Zhang et al., 2019).

### *5.3 Limitations and future research*

This study evaluates the influence of the characteristics of opinion leaders on consumer purchase intention during mobile e-commerce webcasts, and obtains some valuable conclusions, but there are also certain limitations. Firstly, this study takes the flow

experience as the mediating variable but does not discuss the breakdown of the mediating variable, and future research can continue to estimate the influence of the characteristics of opinion leaders on each dimension of flow experience. Secondly, this study only chooses flow experience as a mediating variable without considering other factors. In the future, those variables such as social presence and trust (Ng, 2016; Alnassar and Aloud, 2021) can be chosen to reveal the mechanism of their joint influence on consumer purchase intention and build a more complete model; the measurement of flow experience involves individual subjective judgement, there are inevitably limitations to the measurement of variables with higher subjectivity. Finally, the scope of research subjects in this study is limited; some of them are graduate students, which may affect the generalisability of the results. Future research will expand the scope of research, collect more complete data, and obtain more reliable conclusions.

Future research can take several directions:

- 1 The types of opinion leaders in the webcast, mainly include entertainment, skill, and lifestyles with certain goods (Meng et al., 2020). In the future, the influences of three types of opinion leaders on consumer behaviour can be studied by comparison of a certain type of commodity.
- 2 In addition to the information characteristics of network anchors or opinion leaders, the e-servicescape (Tran et al., 2010) cannot be ignored. Boukabiya and Outtaj (2021) found that the e-servicescape can positively influence the flow, which can in turn affect consumer's behavioural intention. Future research can explore the effect on consumer behaviour by combining opinion leaders and the e-servicescape.
- 3 Future research should consider more variables in the webcast marketing.

The response variables may focus on consumers' search-behaviour for web-celebrity products, continuous viewing intention (Hu et al., 2017), and repurchase intention (Trivedi and Trivedi, 2018).

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## Appendix

Please refer to your usual real habits, choose the items that best fit your true thoughts.

Where 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = generally, 5 = somewhat agree, 6 = agree, 7 = strongly agree.

**Table A1** Characteristics of opinion leaders (people who recommend products and facilitate transactions through live streaming, such as Li Jiaqi and Weiya) during e-commerce live streaming

	1	2	3	4	5	6	7
<b>Credibility (KX)</b>							
KX1: You think the live streaming content of consumer opinion leaders is credible.							
KX2: You think the products recommended by the consumer opinion leaders are more reliable.							
KX3: You trust the consumer opinion leaders.							
<b>Professionalism (ZY)</b>							
ZY1: You think the consumer opinion leaders you watch have professional skills.							
ZY2: You think the consumer opinion leaders you watch have special skill and expertise.							
ZY3: You think the consumer opinion leaders you watch have rich experience in using recommended products.							
ZY4: You think the consumer opinion leaders you watch have professional knowledge.							

**Table A1** Characteristics of opinion leaders (people who recommend products and facilitate transactions through live streaming, such as Li Jiaqi and Weiya) during e-commerce live streaming (continued)

	1	2	3	4	5	6	7
<b>Interactivity (HD)</b>							
HD1: You think the consumer opinion leaders you watch have a good interactive relationship with you during the live streaming process.							
HD2: You think the live streaming content of consumer opinion leaders you watch can allow you to participate effectively.							
HD3: You think the live streaming content of consumer opinion leaders can arouse your interest.							
<b>Attractiveness (XY)</b>							
XY1: The reason you watch a consumer opinion leader is because their appearance attracts you.							
XY2: You follow a consumer opinion leader because they are very attractive.							
XY3: You think a consumer opinion leader you follow is very humorous and interesting.							

**Table A2** Consumer purchase intention (GY)

	1	2	3	4	5	6	7
GY1: There is a high possibility that you will consider buying the products recommended by the consumer opinion leaders during live streaming.							
GY2: You are willing to buy the products recommended by the consumer opinion leaders during live streaming.							
GY3: You will recommend the products recommended by the consumer opinion leaders during live streaming to others.							

**Table A3** Consumer flow experience (XT)

	1	2	3	4	5	6	7
XT1: You often focus on the broadcast of opinion leaders and forget other things.							
XT2: You will feel that time flies during the opinion leader's live broadcast.							
XT3: You will have a sense of concentration during the opinion leader's live streaming.							
XT4: You really enjoy the opinion leader's live streaming.							