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RESEARCH ARTICLE

Mediating Effect of Cognitive Image and Emotional Image on Tourism Live-Streaming of Users

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ABSTRACT

Tourism live-streaming presents real-time video content showcasing destinations, attractions, and activities via digital platforms, attracting tourists and promoting tourism products. While prior research emphasizes live-streaming impact on consumer decision-making, its influence on tourism intentions remains under explored. This study constructs a theoretical model based on SOR theory, Source Characteristics Theory, and Destination Image Theory, focusing on four dimensions of information source characteristics (anchor professionalism, credibility, interactivity, and attractiveness) as external stimuli, cognitive and affective destination images as mediating variables, and tourism intention as the response variable. Using data collected via a Chinese online survey platform and analyzed with SPSS 26 and AMOS 24, the study finds:(1) All four dimensions of information source characteristics positively influence tourism intention.(2) These characteristics also positively impact cognitive and affective destination images.(3) Destination images mediate the relationship between information source characteristics and tourism intention.The findings offer actionable insights for platforms and anchors to enhance tourism live-streaming strategies and effectively influence tourism intentions.

INTRODUCTION

1.1 Research background

Since the outbreak of the COVID-19 pandemic in 2019, the global tourism industry has faced significant challenges, including a sharp decline in population mobility and a downturn in the tourism market, which has placed considerable pressure on the industry's survival. By the end of 2022, with the gradual easing of pandemic control measures, the tourism sector began to recover. In 2023, the number of domestic tourists in China increased significantly. According to data from the Ministry of Culture and Tourism, the total number of tourists in China reached 3.674 billion in the first three quarters of 2023, representing a year-on-year growth of 75.5% [1].

In response, local tourism authorities actively implemented measures such as discounted tickets, innovative product offerings, and service upgrades to stimulate market recovery. Simultaneously, the "live-streaming + tourism" model emerged rapidly, leveraging digital tools to meet consumers' personalized demands. According to the 2023 Tourism Industry Insight Report, 60% of users preferred obtaining travel information through short video platforms. From November to December 2022, Douyin Live and Douyin Life Channel jointly launched the "Explore China: Ice and Snow Season" campaign, showcasing China's winter landscapes and cultural heritage through short videos

and live streaming. This campaign attracted 46.92 million viewers [2][3], creating new growth opportunities for the tourism industry.

1.2 Problem statement

Compared to traditional media, live streaming exhibits distinct characteristics. Wei et al. (2021) noted that live streaming platforms, characterized by openness, real-time interactivity, and authenticity, actively attract users while enhancing communication and interaction between media and audiences[4]. Tourism destination live streaming is a novel approach where streamers showcase the scenery and travel experiences of destinations to viewers through live streaming platforms, engaging in real-time interactions with their audience [5]. Tourism e-commerce live streaming, with its inherent advantages, promotes tourism industry marketing, taps into tourists' online consumption potential, and facilitates the coordinated development of online and offline tourism [6][7] . Although tourism live streaming is gaining popularity, academic research has primarily focused on its effects on user consumption and purchase intention, with limited attention to its impact on tourism intention [8][9].

Most existing studies on factors influencing tourism intention are rooted in perceived value and social presence perspectives [10][11][12] . For example, Yi et al., using celebrity Weibo accounts as a research context, demonstrated that perceived value and positive emotions significantly and positively influence public tourism intention [10]. Fang et al., in an empirical study on rural tourism, found that tourists' perceived value of a destination plays a critical role [11]. Similarly, Hu, based on the S-O-R theoretical model, explored the impact of user perceptions of Douyin tourism short videos on tourism intention. The results showed that users' immersive experiences and sense of presence significantly enhance their trust, which in turn strengthens their tourism intentions [12].

However, streamers, as the information sources in tourism live streaming, are often regarded as external factors influencing user behavior [13], and their characteristics play a crucial role in determining the effectiveness of live streaming. Existing literature has rarely focused on the characteristics of information sources as a research perspective. In this context, this study aims to examine the characteristics of information sources as a starting point, using the S-O-R theoretical model to analyze how various dimensions of information source characteristics influence tourism intention. This research seeks to fill the gap in tourism live streaming studies and provide additional insights into this emerging field.

2. LITERATURE REVIEW

2.1 SOR theoretical model

The SOR theoretical framework (Stimulus-Organism-Response) builds upon the traditional stimulus-response model by incorporating an intermediate variable, the organism (O), to explain internal human activities [14]. It suggests that external stimuli (S) influence individuals' cognition and emotions (O), which in turn trigger behavioral responses (R). A limited number of studies have applied the SOR model to examine consumer behavior in e-commerce live streaming. For instance, Xu et al. (2020) employed the SOR framework to investigate how situational and environmental stimuli in e-commerce live streaming influence viewers' cognitive and emotional states, as well as their subsequent responses [15]. Similarly, Guo et al. (2021) utilized the SOR framework to validate the relationships among external stimuli, consumers' internal psychological states, and their purchase intentions or behaviors. Given these findings, it is necessary to extend the application of the SOR model to the context of tourism e-commerce live streaming and consumer psychology to further explore this emerging research area [16].

2.2 Source credibility theory

Source credibility is defined as the perceived trustworthiness of information by the information receiver, playing a critical role in the persuasiveness of the message[17]. Ohanian (1990) synthesized the theory of source credibility and categorized it into three dimensions: attractiveness, expertise, and trustworthiness [18]. Professionalism is defined as "the degree to which a communicator is perceived as a source of valid assertions." The expertise of a streamer represents their ability to recommend products based on their knowledge and experience[19].Trustworthiness refers to "the confidence in the communicator's intent to convey the most effective assertions." Streamer

trustworthiness reflects the extent to which people perceive the streamer as honest, reliable, and trustworthy [20].Attractiveness generally implies physical characteristics, and a streamer's attractiveness is reflected in their personal traits, such as appearance and style [19].Additionally, studies have confirmed that streamers and audiences collectively contribute to enhancing user engagement in live streaming of tourism destinations [21]. Based on these findings, streamer-related factors are categorized into four dimensions: the streamer's professional competence, attractiveness, trustworthiness, and interactivity.

2.3 Destination image theory

The concept of destination image was first introduced by Hunt in 1971, describing people's perceptions and impressions of non-residential places. Essentially, this image represents a personalized mental map formed through the processing and interpretation of external information in an individual's mind [22]. Baloglu et al. further expanded this definition, suggesting that the destination image encompasses multiple dimensions, including tourists' cognitive perceptions, emotional responses, and overall impressions of a destination, forming a comprehensive and holistic image. They categorized destination image into two components: cognitive image and emotional image [23]. Specifically, cognitive image refers to tourists' understanding and knowledge of the characteristics of a destination, while affective image focuses on the emotional experiences and feelings that a destination evokes in tourists [24].

3. RESEARCH MODELS AND HYPOTHESES

3.1 Research model

Based on the SOR theory and source credibility theory, this study identifies four dimensions of streamer characteristics—streamer trustworthiness, professionalism, attractiveness, and interactivity—as the external stimulus factors (S) in the proposed model. In the context of tourism live streaming, viewers' exposure to these source characteristics enhances their understanding of the destination image, forming an initial perception and impression of the destination in their minds. Consequently, destination image is positioned as the "organism" (O) in the theoretical model, with cognitive image and emotional image representing the internal changes within the "organism." Cognitive image pertains to tourists' understanding and information processing of the destination, while affective image reflects their emotional and sentimental responses to the destination [24].

Tourism intention is the approach behavior exhibited by viewers in response to the stimulus of information source characteristics, mediated through the internal affective and cognitive images. Thus, this study positions users' tourism intention as the "response" (R) component in the model. Figure 1 illustrates the proposed conceptual framework.

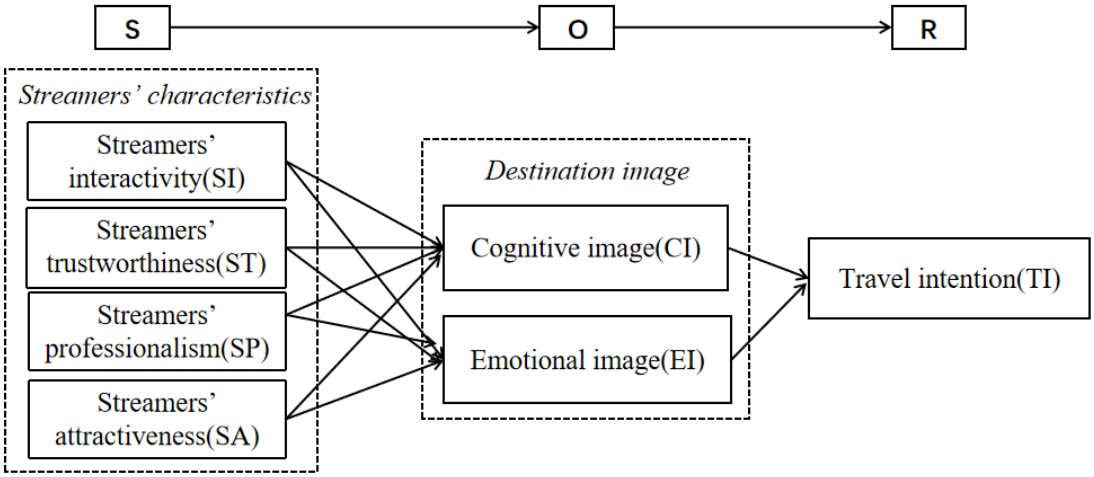

Figure 1: Conceptual framework

Notes: SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention

3.2 Research hypotheses

3.2.1 Hypotheses on the relationship between source characteristics and destination image

Streamer interactivity refers to the real-time interaction between streamers and viewers, where viewers often raise various questions in the live-streaming session. Streamers with high interactivity tend to provide users with more positive perceptions. Sun Kai, in analyzing the reasons behind impulsive purchase intentions in e-commerce live streaming, found that streamer interactivity enhances consumers' perceived enjoyment and arousal [25]. Similarly, Fan Xiaojun explored the mechanism of interactivity on users' continuous usage intention from a psychological cognition perspective, discovering that the interactivity of mobile video live streaming increases users' sense of social presence, which subsequently impacts user satisfaction and continuous usage intention [26].

Therefore, the following hypotheses are proposed:

H1: Streamer interactivity positively influences cognitive image.

H2: Streamer interactivity positively influences affective image.

Streamer trustworthiness is generally regarded as a reflection of users' trust in the streamer. When the information source possesses high credibility, it is likely to significantly influence users' perceptions, attitudes, and emotions. In exploring how Douyin live streaming impacts college students' purchasing behavior, researchers have found that the trustworthiness of the streamer can substantially reduce consumers' perceived risks, thereby enhancing their purchase intentions [27].

This suggests that during tourism live streaming, information conveyed by a highly trustworthy streamer fosters a sense of familiarity and trust among users, making the information more readily accepted and adopted by the audience.

Based on the above analysis, the following research hypotheses are proposed:

H3: Streamer trustworthiness positively influences cognitive image.

H4: Streamer trustworthiness positively influences affective image.

Considering that the general public often has limited knowledge about tourist attractions, users may experience hesitation when planning to visit a destination. Streamers, by demonstrating their professionalism—such as providing in-depth explanations and sharing firsthand experiences of tourist attractions—can effectively reduce users' uncertainty about travel, thereby enhancing their perception of destination information. Zhao emphasized that e-commerce streamers, leveraging their expertise and extensive knowledge, can enhance customers' perception of product quality, effectively driving their purchase intentions [28]. Similarly, Luo investigated key factors influencing consumers' purchase intentions in live streaming environments and found a significant relationship between streamers' promotional skills and cognitive and emotional changes [29].

Based on the above analysis, the following hypotheses are proposed:

H5: Streamer professionalism positively influences cognitive image.

H6: Streamer professionalism positively influences affective image.

Streamer attractiveness refers to the personal charm of the streamer, which manifests during tourism live streaming through aspects such as appearance, speaking style, approachability, and likability. Scholars have analyzed the information processing of e-commerce live-streaming audiences from cognitive and emotional response perspectives, finding that streamer attractiveness significantly influences users' perceived usefulness of information and emotional attitudes [30]. Similar to the context of "internet celebrities" promoting products, higher streamer attractiveness increases users' "stickiness" and interactive behaviors. This stickiness makes users more likely to be drawn to the destinations recommended by the streamer and develop an interest in them [16].

Streamer attractiveness not only serves as a mechanism for guiding user attention during live streaming but also plays a crucial role in shaping users' cognitive perceptions and emotional attitudes toward tourism information.

Based on the above analysis, the following research hypotheses are proposed:

H7: Streamer attractiveness positively influences cognitive image.

H8: Streamer attractiveness positively influences affective image.

3.2.2 Hypotheses on the relationship between destination image and tourism intention

Destination image plays a critical role in influencing tourists' travel decisions. Li Ping demonstrated through research that destination image is positively correlated with travel intention [31]. Deng Xiujun explored the mechanism behind mobile short video users' tourism intention and found that both cognitive and emotional dimensions of destination image significantly impact users' tourism intentions [32]. Additionally, Lan Xiao and colleagues, using Kunming as a case study, found that the perceived sources of destination image information significantly influence tourists' behavioral intentions [33].

Based on the above analysis, the following hypotheses are proposed:

H9: Cognitive image positively influences tourism intention.

H10: Emotional image positively influences tourism intention.

3.2.3 Hypotheses on the relationship between source characteristics and tourism intention

Research indicates that higher streamer professionalism leads to stronger consumer purchase intentions [28]. Professional explanations enhance users' understanding of products and stimulate their desire to purchase. Additionally, scholars have found that streamer attractiveness often positively impacts consumer purchase intentions [34], as streamers with appealing appearances and humor are more likely to gain customer favor and drive consumption. Furthermore, the trustworthiness of a destination influences tourists' travel intentions [35]. With the rapid development of information technology, users increasingly value the authenticity and reliability of the information they receive. Lastly, during live streaming of hedonic products, highly interactive virtual streamers can boost consumers' purchase intentions [36]. College students, as a major force in tourism consumption, are particularly susceptible to the emotional atmosphere in live-streaming sessions, leading them to make travel choices.

Based on the above analysis, the following hypotheses are proposed:

H11: Streamer interactivity positively influences tourism intention.

H12: Streamer trustworthiness positively influences tourism intention.

H13: Streamer professionalism positively influences tourism intention.

H14: Streamer attractiveness positively influences tourism intention.

3.2.4 Hypotheses on the mediating role of destination image

A review of the literature reveals that the four dimensions of source characteristics influence both the cognitive and emotional dimensions of destination image, as well as tourism intention. Additionally, cognitive and emotional images themselves significantly impact tourism intention.

Based on this analysis, the following hypotheses are proposed:

H15: Cognitive image mediates the relationship between streamer interactivity and tourism intention.
H16: Cognitive image mediates the relationship between streamer trustworthiness and tourism intention.
H17: Cognitive image mediates the relationship between streamer professionalism and tourism intention.
H18: Cognitive image mediates the relationship between streamer attractiveness and tourism intention.
H19: Emotional image mediates the relationship between streamer professionalism and tourism intention.
H20: Emotional image mediates the relationship between streamer attractiveness and tourism intention.
H21: Emotional image mediates the relationship between streamer trustworthiness and tourism intention.
H22: Emotional image mediates the relationship between streamer interactivity and tourism intention.

4. METHODOLOGY AND RESEARCH DESIGN

4.1 Instrument

The measurement items for the constructs were adapted from prior studies and tailored to the context of tourism live-streaming commerce. Specifically, the measurement scales for streamer trustworthiness, professionalism, and attractiveness were derived from the validated scales of Ohanian and Wang [18][37]. The scale for streamer interactivity was primarily adapted from the work of Huang [24]. Destination image, divided into cognitive and emotional image variables, was based on the scales developed by Deng Xiujun and Guan Yue [38]. The scale for tourism intention was adapted from Prayag et al. [39]. All items were measured using a 5-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5).

4.2 Sample and data collection

Based on the preliminary research, this study developed the final questionnaire. As the research target group consists of individuals who have watched tourism live streaming, and such individuals typically use smartphones or other mobile devices to access this content, the questionnaire was distributed via the "Wenjuanxing" platform. A snowball sampling method was employed to collect responses. A total of 368 questionnaires were initially collected. Responses with duplicate entries or indicating no prior experience of watching tourism live streaming were excluded. Additionally, questionnaires with excessively short completion times (less than 60 seconds) were removed. After data cleaning, 335 valid questionnaires were retained, resulting in an effective response rate of 91%.

Table 1 shows that the gender distribution of the collected questionnaires is 44.9% male and 55.1% female. The majority of participants were aged 21–40, accounting for 75.3%, and the predominant education level was college or bachelor's degree, comprising 61.8%. The characteristics of the study sample align with the gender ratio and age distribution of Chinese internet users, ensuring sufficient data volume and representativeness for sample analysis. Among these respondents, the majority reported a monthly after-tax income of 3,000–5,000 RMB (44.8%), and most traveled 1–3 times per year (57.6%).

Table 1: Sample characteristics (N = 335)

Item		Frequency	Percent
Gender	male	149	44.5
	female	186	55.5
Age	＜20	45	13.4
	21 ~ 30	114	34
	31 ~ 40	105	31.3
	41 ~ 50	55	16.4
	>51	16	4.8
Education background	Junior high school and below	32	9.6
	High school, vocational college, or junior college	56	16.7
	College or undergraduate degree	207	61.8
	Graduate students and above	40	11.9
Your monthly after-tax income level	<3000 yuan	65	19.4
	3000 -5000 yuan	150	44.8
	5000 -8000 yuan	96	28.7
	>8000 yuan	24	7.2
Number of trips per year	0	39	11.6
	1-3	193	57.6
	> 3	103	30.7

5. DATA ANALYSIS AND RESULTS

5.1 Reliability testing

SPSS 23 was used to analyze the quality and reliability of the questionnaire data. **Table 2** displays that the Cronbach's α coefficient of the total scale was 0.939, indicating that the reliability of the questionnaire data was very high. The numerical results of Cronbach's α coefficient of each variable

exceeded 0.7, which denoted that the reliability of the data of each variable was also very high and good questionnaire quality.

Table 2: Cronbach's α coefficient of each variable

Items	Cronbach's Alpha Based on Standardized Items	N of Items	Total Cronbach's Alpha
SI	0.863	4	0.939
ST	0.835	3	
SP	0.872	4	
SA	0.859	4	
CI	0.877	4	
EI	0.867	3	
TI	0.852	3	

Notes: SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

5.2 Validity testing

5.2.1 CFA model fit test

Based on the findings, the questionnaire data is imported into AMOS 23.0, the basic model parameters are fitted, and the original model is modified based on the modified index MI value. Furthermore, the residual term is established, thus reducing the Chi-square value and obtaining a better fit index.

Table 3: CFA model fit test

Fitting index	Recommended value	Actual value
CMIN / DF	1-3 is excellent, 3-5 is good	2.575
RMSEA	< 0.05 is excellent, < 0.08 is good	0.069
IFI	> 0.9 is excellent, > 0.8 is good	0.913
TLI	> 0.9 is excellent, > 0.8 is good	0.900
CFI	> 0.9 is excellent, > 0.8 is good	0.913
GFI	> 0.9 is excellent, > 0.8 is good	0.851

The main fit test indexes of the fit are listed in **Table 3**. CMIN/DF is 2.575, which is between 3-5 and good; RMSEA is 0.069 and under 0.08, which is good; the IFI is 0.913 and over 0.9 is considered excellent; the TLI is 0.900 and more than 0.9 is considered excellent, the CFI is 0.913, and over 0.9 is considered excellent, the GFI is 0851, and over 0.8 is good. Therefore, the scale CFA model fits the data well.

5.2.2 Convergence validity and combinatorial validity test

On the premise that the CFA model of the scale has a good fit, the convergence validity (AVE) and combination reliability (CR) of each dimension of the scale will be further tested, and the standardized factor load of each measurement item in the corresponding dimension will be calculated through the established CFA model in the test process. Then, the convergence validity value and combination reliability value of each dimension are calculated through the calculation formula of AVE and CR.

Table 4: Convergence validity and combination reliability test of each dimension of the scale

Path relation			Estimate	CR	AVE
Q10	<---	SI	0.785	0.863	0.612
Q9	<---	SI	0.757		
Q8	<---	SI	0.773		
Q7	<---	SI	0.813	0.836	0.629
Q13	<---	ST	0.780		
Q12	<---	ST	0.827		
Q11	<---	ST	0.772		
Q17	<---	SP	0.814	0.872	0.630

Q16	<---	SP	0.806		
Q15	<---	SP	0.790		
Q14	<---	SP	0.765		
Q21	<---	SA	0.757		
Q20	<---	SA	0.783		
Q19	<---	SA	0.806	0.860	0.605
Q18	<---	SA	0.765		
Q22	<---	CI	0.810		
Q23	<---	CI	0.773		
Q24	<---	CI	0.817	0.877	0.641
Q25	<---	CI	0.801		
Q28	<---	EI	0.806		
Q27	<---	EI	0.843	0.867	0.685
Q26	<---	EI	0.833		
Q31	<---	TI	0.807		
Q32	<---	TI	0.800	0.852	0.657
Q33	<---	TI	0.825		

Notes: SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

Table 4 indicates that the AVE of each dimension of variables in the scale exceeded 0.5, hence suggesting good convergence validity. The value of CR exceeding 0.7 indicates good internal consistency.

5.2.3 Discriminant validity test

Table 5: Tests the differential validity of each scale

Variable	SI	ST	SP	SA	CI	EI	TI
SI							
ST	0.515						
SP	0.451	0.524					
SA	0.446	0.484	0.604				
CI	0.553	0.552	0.613	0.591			
EI	0.487	0.532	0.513	0.548	0.514		
TI	0.555	0.612	0.586	0.587	0.651	0.587	
Square root of AVE	0.782	0.793	0.794	0.778	0.801	0.828	0.811

Notes: SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

In **Table 5**, the AVE square root value of SI is 0.782, greater than the correlation coefficient between SI and other factors; the AVE square value of ST is 0.793, exceeding the correlation coefficient between ST and other factors; the AVE value of SP is 0.794 greater than the correlation coefficient between SP and other factors, and the AVE value of SA is 0.801, greater than the correlation coefficient between SA and other factors, and the AVE value of CI is 0.801 which is greater than the correlation coefficient between CI and other factors, and the AVE value of EI is 0.828, which is greater than the correlation coefficient between EI and other factors, denoting that the variables in the scale have good discriminate validity.

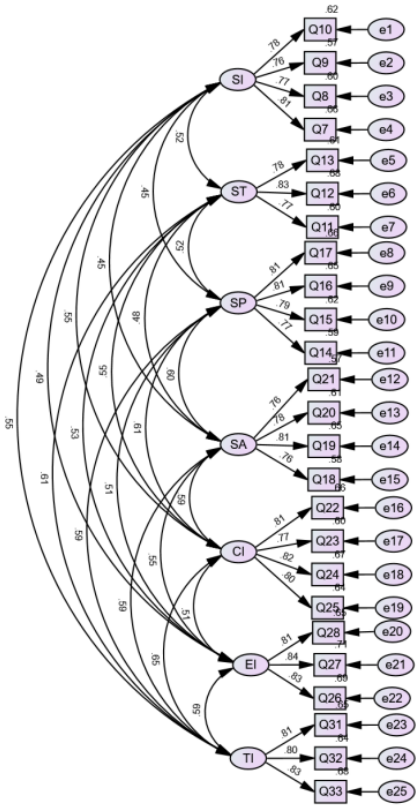

Figure 2: CFA model of scale validation factor analysis

5.3 Descriptive statistics and normality tests

Table 6: Describes the results of normality test of statistics and measurement items for each variable

Variales	Items	Mean	SD	Skewness	Kurtosis	Totle Mean	Totle SD
	SI1	3.32	1.06	0.01	-0.76		
	SI2	3.34	1.07	-0.15	-0.72		
	SI3	3.43	1.11	-0.18	-0.94		
SI	SI4	3.45	1.11	-0.14	-1.10	3.38	0.92
	ST1	3.32	1.11	0.02	-1.04		
	ST2	3.23	1.09	0.07	-0.89		
ST	ST3	3.24	1.09	0.03	-0.83	3.26	0.95
	SP1	3.42	1.13	-0.13	-1.03		
	SP2	3.38	1.12	-0.15	-0.93		
	SP3	3.50	1.12	-0.24	-0.90		
SP	SP4	3.49	1.09	-0.31	-0.75	3.26	0.95
	SA1	3.42	1.09	-0.12	-0.95		
	SA2	3.43	1.11	-0.17	-0.97		
	SA3	3.51	1.11	-0.33	-0.81		
SA	SA4	3.49	1.11	-0.22	-0.88	3.26	0.95
	CI1	3.39	1.17	-0.14	-1.06		
	CI2	3.35	1.14	-0.11	-0.93		
	CI3	3.41	1.13	-0.08	-1.05		
CI	CI4	3.33	1.12	-0.04	-0.97	3.37	0.98
EI	EI1	3.38	1.15	-0.16	-1.02	3.37	0.98

	EI2	3.43	1.15	-0.22	-0.92		
	EI3	3.44	1.15	-0.18	-1.01		
	TI1	3.31	1.18	-0.12	-1.02		
	TI2	3.32	1.18	-0.16	-0.93		
TI	TI3	3.31	1.22	-0.17	-1.01	3.37	0.98

Notes: SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

According to the analysis results of descriptive statistics, it can be seen that the mean score of each variable is between 3-4, and the scale scoring method is 1-5 forward scoring. The normality test of each measurement item adopts skewness and kurtosis for testing. According to the standard proposed by Kline(1998), the absolute value of skewness coefficient is less than 3, and the absolute value of kurtosis coefficient is less than 8, then the data can be considered to meet the requirements of approximate normal distribution. As can be seen from the analysis results in **Table 6,** the absolute values of skewness and kurtosis coefficients of each measurement item in this study are within the standard range. Therefore, it can be shown that the data of each measurement item meet the approximate normal distribution.

5.4 Correlation analysis

Table 7: Pearson correlation analysis results of each variable

	SI	**ST**	**SP**	**SA**	**CI**	**EI**	**TI**
SI	1						
ST	.444**	1					
SP	.394**	.454**	1				
SA	.383**	.416**	.526**	1			
CI	.478**	.472**	.532**	.514**	1		
EI	.419**	.454**	.446**	.474**	.447**	1	
TI	.477**	.518**	.507**	.506**	.559**	.505**	1

Notes: ** Correlation is significant at the 0.01 level (2-tailed)； SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

In this analysis, Pearson correlation analysis was used to conduct an exploratory analysis of the correlation between various variables. According to the analysis results, it can be seen that there is a new master correlation between all variables in this analysis. And all were significant at the 99% significance level. According to the results of correlation coefficients, it can be seen that the correlation coefficient r among all variables is greater than o, so it can be concluded that there is a significant positive correlation among all variables in this analysis.

5.5 Hypothesis testing and mediation effects

5.5.1 SEM model fit test

Table 8: SEM Model fit test

Fitting index	**Recommended value**	**Actual value**
CMIN / DF	1-3 is excellent, 3-5 is good	2.500
RMSEA	< 0.05 is excellent, < 0.08 is good	0.067
IFI	> 0.9 is excellent, > 0.8 is good	0.917
TLI	> 0.9 is excellent, > 0.8 is good	0.905
CFI	> 0.9 is excellent, > 0.8 is good	0.917
GFI	> 0.9 is excellent, > 0.8 is good	0.857

The main fit test indexes of the fit are listed in **Table 8**. CMIN/DF is 2.500, which is between 3-5 and good; RMSEA is 0.067 and under 0.08, which is good; the IFI is 0.917 and over 0.9 is considered excellent; the TLI is 0.900 and more than 0.905 is considered excellent, the CFI is 0.917, and over 0.9

is considered excellent, the GFI is 0857, and over 0.8 is good. Therefore, the scale CFA model fits the data well.

5.5.2 Test results of the path relation hypothesis of SEM model

Table 9: SEM path relationship test results

Hypothesis	Coefficient	t-value	Supported
H1:SI-->CI	0.303	4.493***	Yes
H3:ST-->CI	0.219	3.188**	Yes
H5:SP-->CI	0.354	4.984***	Yes
H7:SA-->CI	0.307	4.364***	Yes
H2:SI-->EI	0.300	4.538***	Yes
H4:ST-->EI	0.306	4.535***	Yes
H6:SP-->EI	0.273	3.902***	Yes
H8:SA-->EI	0.345	4.775***	Yes
H9:CI-->TI	0.234	3.071**	Yes
H10:EI-->TI	0.184	2.602**	Yes
H11:SI-->TI	0.174	2.433*	Yes
H12:ST-->TI	0.248	3.465***	Yes
H13:SP-->TI	0.156	2.065*	Yes
H14:SA-->TI	0.174	2.291*	Yes

Note: *p < 0.05; **p < 0.01;*** p < 0.001. SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

According to the analysis results in Table 10, it can be seen that in the path hypothesis relation test of this study,SI has a positive and significant impact on CI (β=0.303, p<0.001), so hypothesis H1 is valid. ST positively affected CI significantly (β=0.219, p<0.01), so H3 was assumed to be valid. SP positively and significantly affected CI(β=0.354, p<0.001), so H5 was assumed to be valid. SA positively and significantly affected CI(β=0.307, p<0.001), so the hypothesis H7 was valid. SI positively and significantly affected EI (β=0.300, p<0.001), so H2 was assumed to be valid. ST positively affected EI significantly (β=0.306, p<0.001), so the hypothesis H4 was valid; SP positively and significantly affected EI(β=0.,273, p<0.001), so the hypothesis H6 was valid; SA had a positive and significant effect on EI(β=0.345, p<0.001), so the hypothesis H8 was valid. CI positively and significantly affected TI(β=0.184, P < 0.05), so the hypothesis H9 was valid. EI positively and significantly affected TI(β=0.184, p > 0.001), so the hypothesis H10 was valid; SI positively and significantly affected TI(β=0.174, P < 0.05), so the hypothesis H11 was valid. ST positively affected TI significantly (β=0.248, p < 0.001), so the hypothesis H12 was valid; SP positively and significantly affected TI(β=0.156, P < 0.05), so hypothesis H13 was valid; SA positively and significantly affected TI(β=0.174, p > 0.001, P < 0.05), so the hypothesis H14 was valid.

5.5.2 Test of mediating effect

The intermediary effect is divided into partial effect and complete effect. In this study, process model 4 of Hayes (2013) SPSS plug-in was used to test the mediation effect. The reason for choosing SPSS Process Model 4 is that Process Model 4 is a widely recognized and convenient statistical tool, which can conduct accurate and detailed analysis of the mediating effect, and effectively reveal the mediating role of emotional reaction between anchor characteristics and consumers' purchase intention. Its flexibility and accuracy are highly consistent with the purpose of this study, which helps to deeply understand the mechanism of the influence of anchoring characteristics on consumers' purchase intention, and explain the specific path of this influence through the intermediary variable of emotional response.**Table 10** summarizes the findings for the mediation effect.

Table 10: Results of the mediating effect test

	Total effect		Direct effect		Indirect effect			Support
						Bootstrap 95% CI		
Hypothesis	β	t-value	β	t-value	β	LLCI	ULCI	
H15:SI→CI→TI	0.544	9.894***	0.310	5.475***	0.234	0.159	0.317	Yes

H19:SI→EI→TI	0.544	9.894***	0.367	6.546***	0.177	0.121	0.241	Yes
H16:ST→CI→TI	0.570	11.037***	0.360	6.740***	0.211	0.148	0.279	Yes
H20:ST→EI→TI	0.570	11.037***	0.400	7.365***	0.170	0.111	0.233	Yes
H17:SP→CI→TI	0.560	10.738***	0.323	5.708***	0.237	0.162	0.324	Yes
H21:SP→EI→TI	0.560	10.738***	0.389	7.138***	0.172	0.112	0.239	Yes
H18:SA→CI→TI	0.571	10.713***	0.336	5.894***	0.236	0.163	0.318	Yes
H22:SA→EI→TI	0.571	10.713***	0.389	6.838***	0.183	0.118	0.255	Yes

Note: * represents P＜0.05, ** represents P＜0.01, *** represents P＜0.001.

SI=streamers' interactivity; ST = streamers' trustworthiness; SP = streamers' professionalism; SA = streamers' attractiveness; CI=cognitive image;EI = emotional image; TI = travel intention.

According to the analysis results in **Table 10**, Bootstarp technology was used to test the mediating role of SI→CI→TI in the model. It can be seen that the indirect effect value is 0.234, and the 95% confidence interval [0.159,0.317] does not contain 0, indicating that the indirect effect is valid. So CI plays a significant mediating role between SI and TI in the model， supporting H15.EI partially mediated the relationship between SI and TI, supporting H19. It can be seen that the indirect effect value is 0.177, and the 95% confidence interval [0.121,0.241] does not contain 0, indicating that the indirect effect is valid. CI partially mediated the relationship between ST and TI, supporting H16. It can be seen that the indirect effect value is 0.211, and the 95% confidence interval [0.148,0.279] does not contain 0, indicating that the indirect effect is valid. EI partially mediated the relationship between ST and TI, supporting H20. It can be seen that the indirect effect value is 0.170, and the 95% confidence interval [0.111,0.233] does not contain 0, indicating that the indirect effect is valid. CI partially mediated the relationship between SP and TI, supporting H17. It can be seen that the indirect effect value is 0.211, and the 95% confidence interval [0.148,0.279] does not contain 0, indicating that the indirect effect is valid. EI partially mediated the relationship between SP and TI, supporting H21. It can be seen that the indirect effect value is 0.170, and the 95% confidence interval [0.111,0.233] does not contain 0, indicating that the indirect effect is valid. CI partially mediated the relationship between SA and TI, supporting H18. It can be seen that the indirect effect value is 0.236, and the 95% confidence interval [0.163,0.318] does not contain 0, indicating that the indirect effect is valid. EI partially mediated the relationship between SA and TI, supporting H22. It can be seen that the indirect effect value is 0.183, and the 95% confidence interval [0.118, 0.255] does not contain 0, indicating that the indirect effect is valid.

6. DISCUSSION AND IMPLICATIONS

6.1 Discussion and finding

This study constructs an integrated model based on the SOR theory, Source Credibility Theory, and Destination Image Theory to examine the complex relationships among streamer characteristics, destination image, and tourism intention in the context of tourism live streaming. The findings reveal that streamer interactivity, trustworthiness, professionalism, and attractiveness all have a significant positive impact on tourism intention. This highlights the critical role of streamers as information sources, not only in disseminating products or services but also in shaping viewers' decision-making processes. Particularly, the partial mediating effects of cognitive and emotional images suggest that destination image serves as a vital bridge connecting source characteristics to user behaviors. Furthermore, the study validates the hypothesized paths among variables through empirical analysis and confirms the robustness of the mediating effects using Bootstrap techniques, providing essential theoretical and practical insights for understanding user behavior in the context of tourism live streaming.

6.2 Theoretical contributions

This study makes several theoretical contributions. First, it extends the application of the SOR theory to the context of tourism live streaming, broadening its scope and offering a new analytical

framework for understanding user behavior in live-streaming scenarios. Second, by incorporating Source Credibility Theory, the study examines the effects of four dimensions of streamer characteristics—interactivity, trustworthiness, professionalism, and attractiveness—on users' cognitive and emotional responses, enriching the theoretical understanding of these constructs in the tourism e-commerce domain. Third, the study confirms the dual role of destination image (cognitive and emotional) as a mediating variable, addressing a gap in existing research regarding the mechanisms through which source characteristics influence tourism intention. These contributions enhance the understanding of user behavior mechanisms and provide a foundation for further exploration of information dissemination and decision-making in the context of tourism live streaming.

6.3 Practical implications

This study makes several theoretical contributions. First, it extends the application of the SOR theory to the context of tourism live streaming, broadening its scope and offering a new analytical framework for understanding user behavior in live-streaming scenarios. Second, by incorporating Source Credibility Theory, the study examines the effects of four dimensions of streamer characteristics—interactivity, trustworthiness, professionalism, and attractiveness—on users' cognitive and emotional responses, enriching the theoretical understanding of these constructs in the tourism e-commerce domain. Third, the study confirms the dual role of destination image (cognitive and emotional) as a mediating variable, addressing a gap in existing research regarding the mechanisms through which source characteristics influence tourism intention. These contributions enhance the understanding of user behavior mechanisms and provide a foundation for further exploration of information dissemination and decision-making in the context of tourism live streaming.

6.4 Limitations and future research

Despite its contributions, this study has several limitations. First, the sample primarily consists of Chinese users who have watched tourism live streaming, which may limit the generalizability of the findings across different cultural contexts. Future research could expand the sample to include users from various countries or regions, exploring potential cultural differences in the relationship between streamer characteristics and user behavior. Second, this study employs a cross-sectional design, making it challenging to examine the dynamic changes or long-term effects of streamer characteristics on user behavior. Future research could adopt longitudinal designs to analyze how users' behaviors evolve after multiple live-streaming sessions and uncover long-term decision-making patterns. Additionally, while this study focuses on source characteristics and destination image, factors such as user demographics (e.g., age, gender, cultural background) and platform technological features (e.g., algorithmic recommendations, augmented reality) may also significantly influence user behavior. Incorporating these variables into future research frameworks could further enrich the understanding of tourism live streaming and enhance the explanatory power of theoretical models.

Author contributions

Conceptualization, Norliana Hashim; methodology, Syafila Kamarudin; software, Changhua He; validation, Changhua He, Mengyao Yu and Lijun Shi; formal analysis, Changhua He; investigation, Changhua He, Mengyao Yu and Lijun Shi; resources, Changhua He; data curation, Changhua He; writing—original draft preparation, Changhua He; writing—review and editing,Changhua He; visualization, Changhua He; supervision, Changhua He; project administration, Changhua He. All authors have read and agreed to the published version of the manuscript.

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