

Article

A Study on the Audience Psychological Effects of “Cloud Tourism” Based on Webcast: A New Mechanism for Sustainable Development in the Tourism

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Abstract: In recent years, “cloud tourism” has developed rapidly and has gained a wide audience, gradually becoming a new operation form of sustainable development in tourism. However, research on the audience perception, psychological needs, and behavior in this area is still in its infancy. Taking the tourism webcast on the Chinese Weibo platform as an example, this paper constructs a cognitive-emotional model of Chinese tourists’ “cloud tourism” and explores the impact mechanism of “cloud tourism” on audience behavioral willingness by drawing on the “cognitive-emotional” theory combined with text analysis and grounded theory. The findings suggest that “cloud tourism” can satisfy the audience’s cognitive needs to a certain extent, but the experiential nature of tourism is far from sufficient, and it is difficult to realize the essence of tourism. In the future, “cloud tourism” still needs to continuously exert positive effects, becoming a visual presentation of traditional tourism and a novel operation form of sustainable development.

Keywords: cloud tourism; sustainable tourism development; audience psychological analysis; webcast



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1. Introduction

“Cloud tourism” has become a new operation form invented by the Chinese tourism industry during the COVID-19 pandemic, and the time that audiences spend watching travel images, text, and webcasts has continued to increase. With the continuous development of big data, new media, and information technology, “cloud tourism” has evolved from the initial navigation platform to a diversified form of digital tourism. Major internet platforms are leveraging technology and platform advantages, whereas various scenic spots have successively opened up video monitoring and aerial photography, bringing a new perspective and experience of tourism. Webcast tourism activities are emerging endlessly, and marketing channels and promotional activities are continuously expanding. “Cloud tourism” has aroused enthusiastic public response. However, in the post-pandemic era, as a specific form and development trend in intelligent tourism, it not only promotes the transformation and upgrading of the tourism industry but also gradually triggers contemplation in the field of audience psychological needs. This is a process that concerns the operation form of tourism and the coupling of audience cognition and emotion, which can also be seen as a sustainable development issue for traditional tourism and requires in-depth exploration.

Scholars have focused their research on the connotations and development of “cloud tourism” while lacking attention to audience behavior and psychological studies. Current research has yet to explore the audience’s cognitive and emotional perceptions, as well

as behavioral intentions towards “cloud tourism”, from the perspective of audience commentary behavior. Therefore, the authors innovatively apply Grounded Theory, utilizing comment data from live streaming of “cloud tourism” as the starting point. Through textual content analysis and conceptual model construction, the study explores the cognitive and emotional perceptions of Chinese audiences towards “cloud tourism” and constructs an audience “cognitive-affective” model of “cloud tourism”. This research bridges the theoretical gap in the study of comment behavior, examines the developmental issues of “cloud tourism” from the perspective of audience experience, and aims to provide insights for the future sustainable development direction of the tourism industry.

2. Previous Studies and Theoretical Background

The concept of “cloud tourism” originated from the use of Google Earth’s online maps and panoramic images. However, due to immature technology at that time, the user experience was poor, and it did not attract much attention from the public. It was not until 2011 that scholars began to pay attention to this field. Relevant research has focused on the sharing of tourism information and resources and has tended to provide a series of auxiliary services for offline tourism.

Wei Yu (2011) was the first to propose the concept of “cloud tourism” in the field of audience cognition. He believed that “cloud tourism” is the combination of online and offline tourism; thus, it is virtuality and reality, achieved by “cloud computing”. According to him, “cloud tourism” integrates the whole pipeline of tourism services and creates the most dynamic interactive operation platform based on massive tourism information from cloud, thereby providing audiences in the Internet era with all-round leisure vacation and entertainment services anytime and anywhere [1]. Today, with the rapid development of Internet technology, “cloud tourism” is gradually regarded as a trend in tourism digitalization, realizing the integration of tourism resources and services throughout the process online and offline.

Through the operation platform, “cloud tourism” provides audiences with breakthrough space–time tourism information [2]. Therefore, “cloud tourism” is not only a service function for offline tourism but also a means of communication. Through new technologies such as 5G, VR, AR, AI, drones, etc., information about tourist destinations can be presented in various forms such as pictures, panoramas, short videos, webcasts, etc., allowing audiences to experience online tours. Among them, “cloud Webcasts” are the most common form of “cloud tourism” today, as they are the product of the convergence of various network technologies and industries [3].

Scholars today have shown great interest in the concept, development strategies, marketing communication models, and future trends in “cloud tourism”. The perspective of “cloud tourism” and digital communication has gradually become one of the research focuses, and the research content mainly focuses on the communication forms, audience effects, development paths, and mode exploration of “cloud tourism”, as well as the integration field with offline tourism. Related research mostly starts with case studies, such as conducting research on the development of “cloud tourism” in Hefei, Anhui Province, China and proposing three paths for the development of “cloud tourism” in Hefei from the perspective of smart tourism: upgrading the smart tourism platform to achieve cross-border integration; creating characteristic products; and supporting funds and policies (Luo Chengkui et al., 2021) [4]. Another study was conducted on the integrated development of “cloud tourism” and offline tourism in Wuhan against the background of the digital economy, and it was found that there were problems such as an uneven level of digitalization of tourism enterprises, weak digital service capabilities, and lack of composite talents in Wuhan’s “cloud tourism” (Li Cuijun et al., 2021) [5]. On this basis, scholars have pointed out that there are generally problems in the online tourism industry, such as low degrees of product differentiation, lack of precision in marketing, and insufficient after-sales service (Guo Chao, 2021) [6]. The main problems lie in the aspects of technology application, market governance, policy implementation, tourist cognition, and

talent shortage. Therefore, it is necessary to conduct a comprehensive value evaluation of the current situation and trend in “cloud tourism” from the perspectives of social value and economic value (Li Shanshan, 2021) [7] and to improve the audience communication effect of “cloud tourism” from five development paths, namely, the innovation path with the aim of improving tourist experience, the coordinated path to promote the development of overall tourism, the green development path, the open path to explore domestic and foreign markets, and the shared path to share the development results with the whole people (Wu Jing et al., 2021) [8].

The audience behavior and psychological research on “cloud tourism” is currently in the exploratory stage. According to cognitive psychology, cognition is the psychological process of individual information acquisition, storage, extraction, and application [9]. Information stimuli directly affect the senses, and people understand the attributes of things and their own conditions through sensation [10]. Mischel (1999), building upon existing theoretical frameworks through continual integration, critique, and reconciliation, formulated the “Cognitive-Affective Processing System” (CAPS) theory. This theory posits that individuals’ encounters with events interact with complex cognitive-affective units (CAUs) within their personality system, ultimately determining their behavior [11]. On this basis, some scholars have proposed the important theoretical model of the cognitive psychology field—the CAC model (Cognitive-Affective-Conative Model), which believes that cognition and emotion are the two determinants of behavior intention [12]. Emotion is a subjective experience that arises from an individual’s assessment of whether objective phenomena align with their personal needs. It represents a stable experience that is intricately intertwined with long-term social needs. Additionally, behavior intention is the behavioral tendency that individuals decide based on cognition and emotion [12]. In addition, Baloglu et al. (1999) applied the “cognitive-affective” theory to the tourism industry and proposed the “cognitive-affective” model of destination image perception, which believes that the destination image perception is composed of three parts: cognitive image, affective image, and overall image [13]. Tourists form cognitive and affective images of the tourist destination during the tourism process. Cognitive image is the overall cognition of tourists on the destination, whereas affective image is the emotional attitude of tourists on the destination. These two images interact with each other and form an overall image, which then affects tourists’ behavior and intention.

Based on the above theories, some scholars have conducted audience perception studies on “cloud tourism”. For example, Buoniconti et al. (2017) believed that mobile information technology brought positive tourism experiences to tourists, which could stimulate tourism consumption [14]. Yan et al. (2021) used frequency analysis and binomial logistic regression models based on online survey data to investigate the preferences and influencing factors of consumers participating in “forest cloud tourism” [15]. Chen et al. (2022) conducted a questionnaire survey to investigate the factors affecting the satisfaction of “cloud tourism” audiences [16]. Cheng et al. (2022) used the standard paradigm of grounded theory to investigate the influencing factors and generation paths of audience perceived value of the Beijing Palace Museum’s cloud tourism [17]. Ge et al. (2022) designed a survey questionnaire including five aspects of tourist perceptions to analyze the perceptions of college students towards “cloud tourism” [18]. These studies can be viewed as some beneficial attempts to explore the psychological mechanisms of “cloud tourism” on audiences. However, existing literature has provided relatively limited investigations into the cognitive and affective factors of audience perception while lacking exploration of tourist behavioral intentions, thus failing to establish a comprehensive theoretical model.

3. Objectives and Significance of the Study

Currently, research on the cognitive psychology basis of “cloud tourism”, the essential attributes of tourism, and the psychological and behavioral aspects of tourism media product audiences is still lacking. Most studies are still focused on the marketing models and development paths of “cloud tourism”, with relatively little attention paid

to audience perception and psychological needs. Additionally, previous studies have not deeply explored the psychological mechanism of “cloud tourism” from the perspective of the essential attributes of tourism that affect audience psychology. The investigation of audience perception and behavioral intentions is relatively limited and does not involve sustainable development issues in traditional tourism format. This paper aims to explore the influence mechanism of “cloud tourism” on Chinese audience behavioral intentions from the perspective of audience psychology through conducting sentiment analysis on the content of webcasts comments to investigate audience attitudes towards “cloud tourism”. Through this research, we aim to enrich the relevant research system on “cloud tourism”.

The global COVID-19 pandemic has not only dealt a significant blow to tourism enterprises and markets but also had a profound impact on tourists’ psychological and behavioral aspects of tourism [19]. “Cloud tourism”, as a new breakthrough in the tourism industry, has integrated business formats, innovated consumer–profit models, and has considerable research value. Furthermore, cloud tourism has a wide audience, promoting the normalization and popularization of tourism, whereas the diversified demands of tourists have placed higher requirements on the development of cloud tourism. By exploring the mechanism of cloud tourism’s impact on Chinese tourists’ behavioral intentions, this article aims to gain a deeper understanding of cloud tourism audiences’ physical and emotional experiences and provides reference for content review, the service optimization of “cloud tourism”, as well as the promoting of positive behavioral intentions among audiences, enhancing the sustainable development of tourism.

4. Research Methods and Data Sources

Webcasts have become a popular method of “cloud tourism”, and the comments data generated by the audience during various webcasts can directly reflect their cognition and emotion. Sina Weibo, as the largest and most valuable microblog platform in China, has a strong social attribute that naturally fits with travel topics. Furthermore, the combination of new technology and new gameplay has made it the preferred platform for the tourism industry in terms of content consumption and marketing. In addition, Sina Weibo’s user group is very extensive, covering media, government, and non-governmental organizations, the entertainment industry, the cultural sector, the technology industry, the medical and health field, the business world, as well as the general public, and it allows users to comment. The diversity and adequacy of audience opinions can ensure the validity of the sample. People’s Daily, as a representative of mainstream media, has an official Sina Weibo account with 150 million followers and over 3.3 billion likes, shares, and comments, which has high attention and communication power. The number of live broadcast views and comments posted by People’s Daily is relatively high, and all comments are open. Therefore, this article chooses the “cloud tourism” live broadcast comments on People’s Daily’s official Sina Weibo account as the research content and combines text analysis and grounded theory methods to analyze and explore the audience’s cognition and emotion towards “cloud tourism”.

4.1. Research Methods

4.1.1. Text Analysis

The authors first collected the target text data and used the ROST Content Mining 6 software’s custom dictionary, filter dictionary, Chinese word segmentation, and Chinese word frequency statistics functions to process the text content, generating a high-frequency feature word table. From this, the high-frequency word topics were induced to initially explore the degree of audience exposure and understanding of “cloud tourism” at the cognitive level.

4.1.2. Grounded Theory

Grounded Theory is a qualitative research methodology pioneered by American sociologists Glaser and Strauss [20]. It asserts that problems naturally emerge from the context,

and models and theories are ultimately derived through a process of continuous abstraction and conceptualization of raw data pertaining to a specific issue or phenomenon [20]. It is particularly suitable for fields where the existing theoretical framework is incomplete, requiring explanation and prediction [21], making it a suitable fit for the exploratory research in this study. Moreover, although Grounded Theory possesses theoretical depth, its method relies on coding at the micro-level, making it challenging to conduct comprehensive analyses of macro-level phenomena. On the other hand, the CAPS theory exhibits strong construct validity at the macro-level. In this study, the CAPS theoretical framework was adopted and complemented by Grounded Theory, thereby providing the “cloud tourism” cognitive-affective model with both theoretical depth and a solid theoretical foundation.

As shown in Figure 1, the research process involved organizing and summarizing the collected text data and then using Nvivo12 qualitative software to perform actual coding operations: open coding for analyzing and classifying raw data to form concepts and initial categories, axial coding for induction of initial categories, and selective coding for establishing core categories [22]. If theoretical saturation was achieved, conclusions and recommendations were proposed. If theoretical saturation was not reached, additional data were collected, and re-coding was performed.

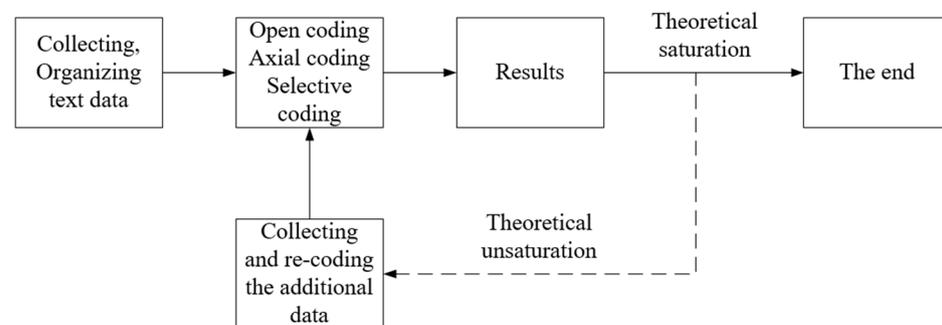


Figure 1. This is the flow chart of research method based on grounded theory in this paper.

4.2. Data Sources and Processing

In the first half of 2022, the COVID-19 epidemic had a resurgence in several provinces and cities in China. This study selected 26 “cloud tourism” webcasts published by People’s Daily on the Sina Weibo platform from January to June 2022 (see Table 1). The audience comments data were collected using Octoparse web scraper. To ensure the validity of the original data, the collected comments were screened and organized. After removing irrelevant and valueless comments, repetitive comments, English letters, and emoticons, a total of 5776 valid comments were retained, totaling 49,373 words.

Table 1. The condition of the selected sample.

Number	Date	Webcast Topic	Number of Views	Duration	Number of Comments
1	1.22	Webcast of Snow in the Forbidden City	481,000	01:32:23	369
2	2.15	Chang’an, a City that Never Sleeps: Touring, Eating, and Having Fun at the Tang Paradise	1,513,000	01:14:59	292
3	2.15	Moon Appreciation and Lantern Festival Celebrations Across Multiple Cities	5,109,000	134:05:48	644
4	3.08	Watching Stars from the Great Wall: Enjoying the Spring Night Sky	2,416,000	01:46:11	134

Table 1. Cont.

Number	Date	Webcast Topic	Number of Views	Duration	Number of Comments
5	3.14	Slow Webcast of Blossoms Appreciation at the Jiming Temple in Nanjing	5,975,000	149:46:25	567
6	3.15	Slow Webcast of Blossoms Appreciation at the East Lake in Wuhan	5,106,000	09:52:51	733
7	3.17	Slow Webcast of Canola Flower Fields: Welcoming Spring Together	5,849,000	99:15:36	338
8	3.18	Joining the Spring Date: Slow Webcast of Sakura at Wuhan University	4,117,000	03:26:05	765
9	3.18	When Spring Meets Snow: Webcast of the Summer Palace	2,514,000	51:18	258
10	3.20	Slow Webcast of the Spring Equinox Day: Twelve Two-hour Periods	6,774,000	12:17:54	1326
11	4.2	With Qingming Festival Approaching: Check-in at Beijing's Romantic Flower Sea	4,636,000	04:19:19	694
12	4.3	Slow Webcast of the Beautiful Spring Scenery in the Qingming Season	9,246,000	205:01:09	468
13	4.20	Webcast of Lake Namtso in Tibet	6,158,000	12:14:03	1350
14	4.20	Cherish the rest days of Spring: Slow Webcast of the Beautiful Late Spring Scenery	4,642,000	85:33:46	266
15	4.26	Slow Webcast of the Dreamy Blue Tears on Pingtan Island, Fujian	3,586,000	03:11:09	354
16	5.1	Slow Webcast of Peach Blossoms Valley and Basom Lake in Linzhi	4,487,000	04:46:57	246
17	5.3	Cool and Refreshing Summer: Slow Webcast of Watching Water on the Start of Summer	5,630,000	83:30:53	324
18	5.4	Jiuzhaigou Under the Starry Sky	5,131,000	03:57:58	646
19	5.16	Slow Webcast of Moon Appreciation in Chongqing	4,074,000	03:03:44	493
20	5.17	Museum Night Slow Webcast	3,941,000	02:39:27	246
21	5.18	Look here! Webcast Tour of Sanxingdui Museum	3,460,000	01:26:52	395
22	5.18	Visit Chengjiang Natural History Museum	2,515,000	49:50	354
23	5.18	Wonderful Night at the Museum Webcast	3,682,000	02:29:30	220
24	5.18	Direct Shot of the Night at the Museum: Yangtze River Theme Light Show	4,174,000	01:26:03	229
25	6.13	Chongqing Fireflies Reflect Like a Galaxy	3,320,000	01:43:10	541
26	6.22	Slowly Watch the Simultaneous Appearance of the Big Dipper Live	4,022,000	03:16:33	384

5. Analysis of Online Textual Content

After collecting and processing the comment texts, content analysis was performed on the textual data using ROST Content Mining 6 software. The analysis included word frequency analysis and thematic classification to conduct a preliminary analysis of the audience's understanding of "cloud tourism". Subsequently, the NVivo12 qualitative analysis tool was used to apply coding techniques based on Grounded Theory to the comments to classify and extract concepts in order to construct the "Audience Cognitive-Affective Model of 'Cloud Tourism'".

5.1. High-Frequency Word Analysis

Using ROST Content Mining6 software, we conducted a word frequency analysis on the text data and summarized the top 50 high-frequency words to generate a corresponding high-frequency word table (Table 2). The higher the word frequency, the more profound and attentive the tourists' understanding of the image elements, which preliminarily extracted the audience's cognition of "cloud tourism". The high-frequency word table showed that the main high-frequency words in the comment text were "happiness", "Lantern Festival", "spring", "beautiful", "epidemic", "sakura", "nice", "wonderful", "good", and "museum", among others, with "happiness" being the most frequently mentioned word by tourists. We classified the high-frequency words and described the audience's perception from three aspects: audience experience, webcast content, and related associations.

Table 2. The table of high-frequency words.

Rank	High-Frequency Words	Word Frequency	Rank	High-Frequency Words	Word Frequency
1	Happiness	358	26	Cold and refreshing	43
2	Lantern Festival	280	27	Summer	42
3	Spring	278	28	Travel	42
4	Beautiful	271	29	Romantic	42
5	Epidemic	252	30	Jiming	41
6	Sakura	206	31	Sanxing	41
7	Nice	161	32	Seven stars	40
8	Wonderful	83	33	Nanjing	40
9	Good	79	34	Magnificent	39
10	Museum	79	35	Forbidden City	37
11	Sweet dumplings	74	36	Rape blossom	35
12	Wish	70	37	Qingming	33
13	Beijing	59	38	China	33
14	Before	58	39	Appreciation	32
15	Wuhan	57	40	Chongqing	32
16	Enjoy	55	41	Watch the moon	31
17	Moon	54	42	Stars	31
18	Webcast	54	43	Scenery	30
19	Starry sky	53	44	This year	29
20	Spring flowers	50	45	Peach blossom	29
21	Cloud Tourism	48	46	Magical	28
22	Spring equinox	47	47	Mortal world	27
23	Going out	46	48	Everything	27
24	Ahhh	46	49	Last year	27
25	Cool and refreshing	43	50	Xi'an	27

In terms of audience experience, high-frequency words such as "happiness", "beautiful", "wonderful", "wish", "romantic", "magnificent", "appreciation", "scenery", and "magical" were used by the audience to express their viewing experience, with a lot of description about the webcast theme and scenery. The webcast content was positively affirmed by most of the audience, and they had much praise for the natural landscapes and cultural attractions they viewed through the webcast, which brought them joy and pleasure.

In terms of webcast content, high-frequency words such as “Lantern Festival”, “spring”, “sakura”, “museum”, “Wuhan”, “starry sky”, “spring equinox”, “summer”, “Sanxing”, “seven stars”, “Nanjing”, “Forbidden City”, “Qingming”, “Chongqing”, “moon”, “stars”, “peach blossom”, and “Xi’an” were frequently used, breaking the limitations of time and space and bringing rich and colorful content to the audience. The audience had a high level of interest in the output of “cloud tourism” content. The webcast presented real-time content, which was often related to seasonal festivals, such as the “Wonderful Night at the Museum” webcast before and after the museum’s open day, the “Cloud Tour of the Sanxingdui Museum” webcast, the “Exploring the Chengjiang Shale Natural Museum” webcast, and the “Night at the Museum Light Show on the Yangtze River” webcast. These webcasts met the viewing needs of the audience. Additionally, the audience’s perspectives were diverse, including tourism destination tours and introductions based on hosts and commentators, as well as immersive tourism experiences of landscapes through aerial or direct filming.

In terms of related associations, high-frequency words such as “epidemic”, “webcast”, “going out”, “tourism”, “this year”, and “last year” were used, with “epidemic” being an important high-frequency term in the comments. “Cloud tourism” has enabled people to enjoy virtual tourism experiences from the comfort of their homes, creating a new tourism experience during the epidemic. Its participation and attention have continued to rise. However, when watching the webcast, the audience also expressed their longing for offline tourism experiences that have been restricted due to the epidemic.

5.2. Webcast Text Encoding

Next, the NVivo12 qualitative analysis tool was used, drawing on grounded theory coding techniques. A random selection of 500 comments was retained to test saturation, and 5176 comments were coded. The text content of the comments was encoded through three stages to classify and refine concepts and develop relationships between categories: open coding, axial coding, and selective coding.

5.2.1. Open Coding

Open coding is the process of breaking down, comparing, conceptualizing, and categorizing audience comments. The author used the coding function of NVivo12 to import the sorted comment data into the software and read through them one by one, marking comments that reflected audience perceptions as first-level codes and recording them in the software. A total of 27 free nodes were identified, with a reference point at 4942. On this basis, further thematic induction was carried out, resulting in 11 second-level codes, laying the foundation for axial coding (Table 3).

Table 3. Opening coding.

Category (2nd Level Code)	Concept (1st Level Code)	Original Representative Sentence from Online Texts
Audiovisual Content	Visual Content Sound Content	A round and bright moon Music rhythm and melody
Technical Services	Video webcasting technology Internet technology On-site services	This camera is advanced The 5G signal outside is not good The lighting is too dark; this commentator is very professional
Cloud Travel Costs	Time and Space Costs Price Costs	Enjoy cloud tourism at home; Enjoying Yunnan culture at home; travel now requires no money Traveling now doesn’t cost any money

Table 3. Cont.

Category (2nd Level Code)	Concept (1st Level Code)	Original Representative Sentence from Online Texts
Perception	Viewing Experience	It was just amazing, and I felt unsatisfied after watching the webcast
	Webcast experience	During the pandemic, cloud tourism is also good
Social Interaction	Greetings	Good morning
	Check-in	I'm here
	Appeal	Friends, let's appreciate together!; Let's feel the charm of the museum together
	Discussion and Communication	Could someone explain "Everything in the word grows up at the beginning of Summer (7th solar term)"?; After the start of summer, the sunshine increases gradually, the temperature rises, and thunderstorms become more frequent.
Imagination	Past Memories	I've been there once, also in this season. The most impressive things are the blue-green lake and the white tower on this small island; I remember when I was a child, around the year 2000, lying on a big mushroom stone with a neighbor from my grandmother's house, looking at the sky, also full of stars. Now I can't see the night sky in the city anymore. I think of a line from a drama: "Red walls and white snow, you once said you liked it, and I like it too."; The moon rises over the sea, and we're here together.
	Related Associations	Shanghai now also has a bright moon hanging high. As I'm stuck at home, I express my longing for my hometown in the mountain city under the same bright moon.
Thinking	Suggestions	Can we have more angles when it's in full bloom? It would be even more beautiful to appreciate it up close.
	Provoking Thoughts	I've learned something new; Our ancestors were once fish?; I learned that.
Positive Emotions	Pride	Every time I see cultural relics, I feel proud
	Like	I like Datang Furong City so much!
	Praise	It's so beautiful, like a fairy tale in a dream; It's so beautiful, like a dream
	Exclamation	Wow
Negative Emotions	Regret	The flowers bloom as beautiful as ever, but we can no longer go out to enjoy them.
	Insufficient Content	Indeed, there is not much substance, just like what a tourist said, Datang Lighting City.
Objective Condition Limitations	Pandemic Restrictions	Oh, if it weren't for the pandemic, I would also like to go to Jiuzhaigou to see it with my own eyes. I hope the pandemic will end soon.
	Force Majeure Factors	For those who cannot travel, they can only look forward to it.
Travel Willingness	Offline Travel Willingness	I really want to travel and wander around; I really want to go on a trip
	Destination Expectations	I can't go, but I'm longing for it!; Sanxingdui is so mysterious, looking forward to it!

5.2.2. Axial Coding

Axial coding is built upon the concept and category extraction of open coding, with the preliminary categories forming the axis. Its primary objective is to identify and establish the potential logical connections between categories and develop main categories. The

author extracted 5 main categories from the initial 11 categories, namely, influential factors, audience cognition, audience emotion, external factors, and behavioral intention (Table 4).

Table 4. Axial Coding.

Main Categories	Sub-Categories	Concepts Included
Influential Factors	Audiovisual Content	Live streaming content, scenery, tourist destinations, events, etc.; background music, commentary, live sound
	Technological Services	Variety of technical means supporting cloud tourism webcast
	Cost of Cloud Tourism	Savings in time, travel expenses, and other tourism costs compared to on-site expenses
Audience Cognition	Sensory Perception	Awareness of individual attributes and characteristics of things. Awareness of the whole and its connections and relationships
	Social Interaction	Interaction with others through comments, exchange of results of cognitive activities, and mental activity
	Imagination	Recollection of past travel or other experiences; association and reflection produced by viewing webcasts
	Thinking	Indirect and abstract knowledge of things using existing knowledge and experience, revealing the essence and inherent connections and laws of things, forming concepts of things, reasoning and judgment
Audience Emotion	Positive Emotion	Praise, admiration, and wonder of webcasts content; pride generated by watching webcasts; love for webcasts content
	Negative Emotion	Regret of being unable to travel offline, poor viewing experience of live streaming
External Factors	Objective Constraints	Inability to travel due to factors such as epidemic, overtime, holidays, and school closures, can only watch webcasts online
Behavioral Intention	Tourism Intention	Intention to travel offline, revisit, and expectation of tourism scenery and future travel in webcasts

5.2.3. Selective Coding

The main task of selective coding is to extract the core categories, which combine all other categories into a fully connected story line. Based on the analysis and sorting of 27 concepts, 11 categories, and 5 main categories, combined with the comparison of the original materials, the authors used the “cognition-affective” theory as the core category. The story line established around the core category in this paper was as follows (Figure 2): the audience watched the webcast and formed a cognitive understanding of “cloud tourism” while also generating positive or negative emotions. Cognitive understanding played an intermediary role in emotion. Under the influence of the epidemic and other uncontrollable factors, it affected the audience’s travel intentions offline.

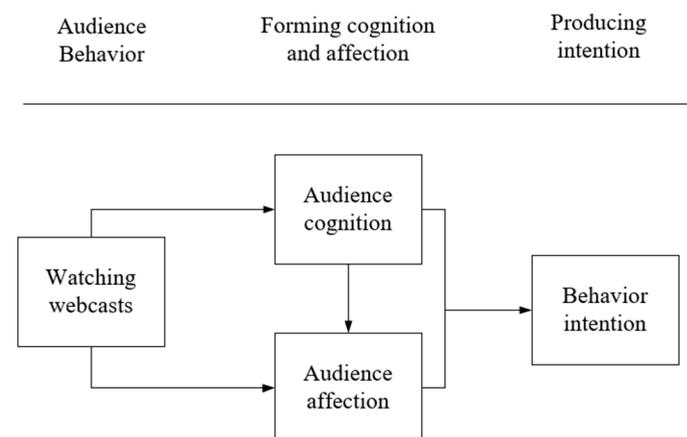


Figure 2. The relationship of the core categories.

6. Model Construction and Analysis

This article used the remaining 500 comments for theoretical saturation testing. No new categories were generated in the retained comments; thus, it was determined that theoretical saturation had been reached. After multiple encoding and sorting, the “cloud tourism” cognition–affection model (Figure 3) was constructed. The audience watched the webcast of cloud tourism, which generated perception, social interaction, imagination, and thinking, forming audience cognition. Additionally, under the influence of cognition, positive and negative emotions were generated, forming audience emotions. Audience cognition, audience emotions, and external factors jointly influenced audience behavioral intentions.

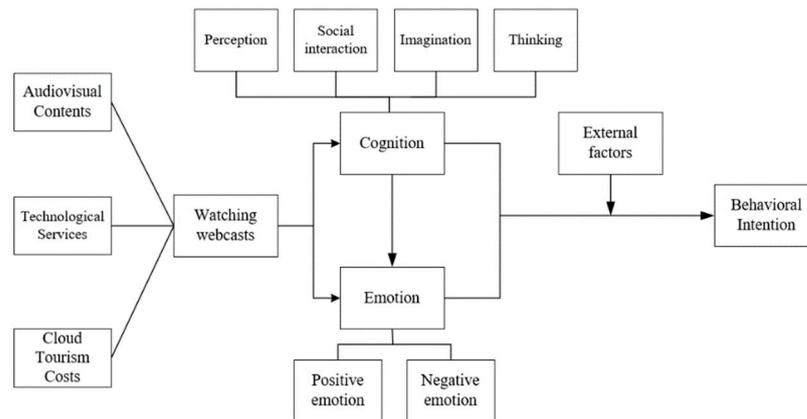


Figure 3. “Cloud Tourism” Cognition–Affection Model.

6.1. Cognitive Status of “Cloud Tourism” Audience

In psychology, cognition refers to the process of recognizing and understanding things through conscious activities, including sensation, perception, memory, thinking, imagination, and language. Tourism webcasts present diverse and colorful tourism scenery to the audience while conveying corresponding on-site sound or background music. The comment function allows the audience to interact with each other online through text and share their viewing experiences. For example, “Is the BGM the same as Moonlight?” or “Sleeping Beauty is awake! Watch the most beautiful moments of Lake Namtso, sunrise, and sunset that you have never seen before”.

In addition to directly perceiving specific things, individuals will also use the knowledge and experience they already have in their minds to indirectly recognize things. During the webcast, the audience will have their own thoughts and judgments, such as suggesting improvements to the webcast, “Can we have more perspectives?” or “This area happens to be where the rarest flowers bloom”. They will also produce relevant associations and memories of past experiences, such as the last time they saw Sakura at East Lake in 2016, or “Let’s enjoy the beautiful scenery and nature in spring together!”

According to the comments, the visual content of the webcast received a lot of attention. As a part of the tourists’ sensory experience, the audience received a certain degree of visual stimulation during “cloud tourism”. However, the micro-enlarged webcast screen could only provide limited visual satisfaction. In actual tourism activities, tourists’ perception of the destination involved the participation of various senses, such as vision, touch, hearing, and smell. “Cloud tourism” is limited to visual and auditory experiences, which cannot compare to the “on-site experience” of multi-sensory participation in actual tourism. This also limits the audience’s perception of the tourist destination.

Embodied cognition theory suggests that psychological feelings are based on physiological experiences. The physiological experiences of “cloud tourism” are not sufficient; thus, the resulting psychological feelings are different from those of actual tourism, as mentioned in the comments: “You can only travel with your eyes”, “Hubei is as cold as an ice cellar today”, and “We are not in the mood to enjoy the sakura in Shanghai”. As the audience was not present on site and was still in their own environment, they could not

reach the real tourist environment in terms of the psychological experience. This affected the audience's perception of the tourist destination.

6.2. Audience's Emotional Attitudes towards "Cloud Tourism"

In this article, the audience's emotional attitudes are divided into positive and negative emotions. Judging from the number of comments, the audience's emotions are mainly positive. The positive emotions can be summarized as pride, liking, admiration, and exclamation, mainly derived from the webcast content. Most comments express admiration for the scenic views shown in the webcast, such as "beautiful like a poem", "romantic love in a snowy world", and "so beautiful, so beautiful, so beautiful". "Cloud Tourism" has quickly gained the favor of the audience due to its unique webcast content and advantages in breaking through the limitations of time and space. In the screening of webcast themes, it was found that the selection of tourism webcast themes was in line with the audience's psychological expectations. Some of the webcast contents, such as the simultaneous appearance of the Big Dipper, the heavy snow in the Summer Palace, and the breaking of ice in Lake Namtso, require specific viewing opportunities and are not easily accessible. With the development of information technology, the participation of the subject of "cloud tourism" has expanded, and the content of tourism webcasts has become more and more diverse, arousing positive emotions among the audience.

The audience's negative emotional attitudes mainly stem from the inability to watch tourism webcasts smoothly due to information technology issues and unreasonable arrangements of webcast content, which do not meet the psychological expectations of the audience who regret not being able to be there in person. For example, "The clarity is not very good", "Why is not it moving?", "The timing is not right", "The flower fields are so beautiful, I've always wanted to go there to take pictures, but ever since I got allergic rhinitis, I can only enjoy it through the screen", "Alas, the colorful world has nothing to do with me", "Another season of blue tears has arrived. I really hope the epidemic ends soon. I've missed out on so many years", and "I've been to Chengdu several times, but unfortunately, I have not been to the Sanxingdui Museum. If I have the opportunity, I will definitely go there in person". On the other hand, on-site tourism does not have the same negative emotional problems as webcasts. The development of "Cloud Tourism" continues to move towards realism and continuously strengthens the sense of experience, but the inherent flaws of online webcasts have always existed. "Cloud Tourism" can never replace offline tourism and cannot give tourists the same experiential and emotional depth as real-life tourism.

6.3. Audience Behavior Intention

Audience behavior intention is influenced by their perception and emotional attitude towards webcast tourism. Watching tourism webcasts may decrease tourists' expectations of the destination but may also increase their willingness to travel. Positive comments can elicit potential consumers' positive perception of tourism destinations, increasing their desire to travel offline. For example, "It looks so green, I want to see it with my own eyes", and "It's really beautiful, I want to see it with my own eyes". However, negative comments related to webcast content can cause potential tourists to have a negative perception of tourism destinations. Negative emotions generated by webcast viewing can weaken their travel motivation. For example, "Let's not go to Yuyuantan, there are more people than flowers every year!", "I don't recommend going, it's crowded and unsafe", and "What are you webcasting? I am really speechless. Do not you know this is a phenomenon of ocean pollution, even your official account should know".

However, negative emotions caused by issues such as webcast technology, webcast platform, and limited online viewing can increase consumers' willingness to travel offline. For example, "I don't want to watch online, I want to take photos myself", and "I don't want to watch the live stream, I want to be in the live stream".

Furthermore, audience behavior intention is also influenced by objective factors. According to surveys, after the COVID-19 pandemic, tourists' willingness to travel has increased significantly due to the depression caused by prolonged home isolation, resulting in a peak in tourism. For example, "I want to travel too, but I have to stay at home to prevent the epidemic", "I want to go to Nanjing after the epidemic, and listen to the 'Sounds of Clouds and Hearts'", "I want to visit after the epidemic, it's going to be amazing", and "If there were no epidemic, I would really like to go to on March 3rd in Chinese lunar year".

7. Conclusions and Prospects

Although tourism webcasts and online activities based on the internet have gained a lot of attention and engagement, it does not mean that "virtual tourism" satisfies the travel demands of modern people. With the development of tourism technology, the form and content of virtual tourism are becoming increasingly diverse, which, to some extent, satisfies the cognitive needs of some tourists. However, based on the opinions and negative comments expressed by online audiences, it is difficult to meet the deeper psychological needs of tourists for tourism.

7.1. Conclusions

"Cloud tourism" is an important component of "digital tourism" and an intuitive display of technology empowerment. It breaks the traditional mode of tourism by utilizing new technological means, and its forms are progressively advancing, aiming to bring audiences a more superior audiovisual experience. In the current context of the epidemic, offline tourism is restricted, and "cloud tourism" has become an important tourism marketing platform. All participating entities continuously explore new methods and unique, differentiated tourism resources that cater to audience demands, further enriching the content of "cloud tourism". Live broadcast cameras span geography and time, building a cloud bridge for audiences to understand the tourism destination and its cultural connotations, which, to some extent, can meet tourists' cognitive needs. However, the essence of tourism is experience, and people still pursue the real-life experience and psychological feelings brought by tourism. Although "cloud tourism" breaks the limitations of time and space, it, ultimately, cannot achieve the full-element experience of offline tourism. In "cloud tourism", the experience is more focused on viewing, and audiences can only view scenery online, passively accepting the set perspective and images of others, unable to touch and feel in person. At the same time, online tourism also faces problems such as rough product images and low production quality.

From the perspective of behavioral philosophy, the essence of tourism is "poetically dwelling" in a place. In the hustle and bustle of life, people escape from "annoyance" and go on a trip to explore a wider world, thereby enhancing their quality of life and happiness, which is the essence of tourism. Tourism is not a short time webcast or a reduced world in the lens. The ultimate goal of tourism is "poetic existence", finding the value and meaning of self-existence in the process of tourism, and this state requires being surrounded by a vast expanse of heaven and earth, experiencing the impact of nature and history and understanding the answers of life. However, in today's world of scientific and technological development, the virtual experience obtained through intelligent means and the scenery observed without leaving home have blurred tourists' genuine feelings about tourism. A superficial video browser cannot stir people's emotions and is not enough to achieve deep spiritual healing and comfort.

The content presented in "webcast tourism" is diverse, covering various themes such as natural landscapes, historical sites, astronomical phenomena, festive activities, and venue introductions. It broadens the audience's understanding and knowledge of tourism destinations, to some extent forming a recommendation for tourism destinations. The high-quality content of webcasts triggers positive audience perception and emotions, sparking tourists' interest and willingness to visit.

In addition, various issues that occur during webcasts, such as blurry images, single camera angles, and buffering, greatly diminish the viewing experience for audiences and become a reason why tourists crave offline travel. Furthermore, another factor that influences audience behavior is the objective situation. With the accelerating pace of social life and the increasing psychological pressure on the public, tourism has gradually become an indispensable part of people's entertainment life. However, the epidemic has become a major factor restricting travel, and many tourists are quarantined at home and can only choose the way of "cloud tourism" to alleviate their negative emotion. This long-term or repeated constraint and suppression make people cherish life more and pay more attention to the quality of life. When audiences watch online travel webcasting, they are stimulated by the content of the live broadcast again, which generates relevant associations and deepens their willingness to travel.

Cloud tourism, a special means during the epidemic period that is exclusively online, has played a positive role in promoting the development of traditional tourism by offering visualized presentation and beneficial supplementation. As China has basically controlled the epidemic and the policies for epidemic prevention and control have been relaxed and adjusted, cloud tourism needs to continuously exert its positive effects for sustainable development. Firstly, as a good marketing channel, cloud tourism deepens the application of information technology by providing online services such as virtual tours, information retrieval, and online ticketing, which saves tourists' preparation costs and time. It also compensates for the problem of insufficient traditional tourism information, providing tourists with better travel experiences. Secondly, cloud tourism has strong publicity effects, which can attract public attention and expand the market. By experiencing virtual tours online, tourists can pre-perceive the real situation of the tourism destination, thereby promoting their acceptance and resonance with the tourism products, further leading consumers from "interaction" to "emotion" to "action". In addition, cloud tourism brings online traffic to offline destinations, and tourists can also provide feedback on their tourism experiences and suggestions online. Tourism enterprises can use big data to grasp tourists' preferences and needs and improve cloud tourism and future offline tourism services based on this information.

7.2. Limitations and Prospects

Regarding the research content of this paper, the data collection was limited to Sina Weibo, which was a single source of data and could not collect personal information of comment users, making it difficult to conduct detailed audience segmentation research. In addition, there were many emoticons in the comments, and the connotations within these emoticons could not be captured when collecting and processing the comments. Furthermore, the research objects in this paper only involved Chinese audiences, and the established model was more adapted to the "cloud tourism" environment in China. Therefore, further research is needed to improve global adaptability.

Audience experience and emotions are dynamic, and different media platforms, research environments, and webcast contents may lead to different types of audiences and emotional experiences. In future research, it is possible to carry out relevant research aimed at different media platforms and audience groups to increase the level of demographic information to make the analysis more comprehensive. The research scope can be expanded to international Internet platforms, further refining the theoretical model to make it more globally adaptable.

In terms of tools, more data mining software and methods can be tried to analyze the multimedia content of websites such as audio, video, and images. In terms of research methods, questionnaire surveys or big data mining can be attempted to conduct more in-depth exploration of audience psychology and behavior, thereby helping to construct a new research paradigm for the sustainable development of traditional tourism format.

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