Analysis and Implications of Travel Experience and Perception in Border Ethnic Areas Based on Online Text Mining——A Case Study of Xishuangbanna in Yunnan Province

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Abstract. The virtual online community has become an important platform for tourists to share their experience and perception of the tourist spots. Due to the originality without artistic processing, the content generated by internet users makes the information relatively more authentic and trustworthy. By taking Xishuangbanna as a typical area of border ethnic areas for case studies, the paper crawls tourists comments from Ctrip.com, through text mining, and quantitatively analyzes the high-frequency words regarding tourists’ experience and their perception in Xishuangbanna, covering such aspects as semantics, time series, value dimension, multi-dimensional scale, in order to understand the travel experience demand and market development trend in border ethnic areas. It is found that tourists have a relatively good perception of their travel experience in Xishuangbanna, and the overall evaluation of travel experience and perception is mainly positive; the product perception diversity is obvious; there are significant differences in various types of tourism elements perception, and tourists have formed clear and typical perception groups in terms of their travel experience in Xishuangbanna. Accordingly, this paper suggests that three ‘trump cards’ should be played for the future development of tourism in Xishuangbanna. Specifically, consumers for night tourism should be nurtured. The tourism elements system should be optimized, and the quality of tourism service facilities be improved. Meanwhile, market supervision should be strengthened and the level of travelling convenience be enhanced so as to optimize the tourists’ experience and perception of border tourism.

1. Introduction
Due to its special geographical location and a large number of ethnic minorities, China's border areas have unique landscape resources, rich cultural heritage and distinctive ethnic characteristics. In particular, the southwest border region of China, represented by Yunnan, has become an important border tourism destination because of its good internal and external development opportunities such as the border tourism resource endowment, national policy integration and institutional innovation drive. Most of the border ethnic tourism destinations are surrounded by their advantages in terms of border areas and ethnic culture, creating a more diversified and perfect tourism product system and mature market tourism image. However, from the perspective of modern tourism development under the
background of the integration of culture and tourism, the characteristics of individual tourists in the market and generalized resources are more prominent, tourists will pay more attention to in-depth experience. In the past, the traditional supply-side market model for defining tourism products has been subverted by the demand value orientation. How to better grasp the market demand in the traditional border ethnic areas will be the key to its future development. In addition, with the development and maturity of tourism network platform, online travel notes have become an important channel for tourists to obtain tourism information and express their experience and feelings. Relevant tourism enterprises and destination government departments can also use the analysis of online travel notes to better understand the market demand, so as to optimize the supply of tourism products. This paper takes Xishuangbanna, a typical border ethnic tourism destination in Yunnan province, as the research object.

Based on the excavation of the network text content, objectively analyzes the perceived value of tourists’ experience, and explores the characteristics of their tourism consumption behavior, in order to provide experience reference and research examples for the development of border tourism.

2. Literature review

With the advent of the experience economy era, experience has been introduced into the field of tourism research as a behavioral concept and has become a hot spot in tourism research. Xie Yanjun (2011) believes that the travel experience is a short-term leisure experience that individuals use their free time to seek for pleasure in a different place [1]. After decades of development, domestic and foreign studies on the concepts of travel experience, motivation of travel experience, quality and authenticity of travel experience, construction of travel experience model, satisfaction and influence factors have reached a certain breadth and depth [2-9], and gradually built a more mature travel experience theories [10], such as hierarchy theory, ‘smooth’ theory, purposeful behavior theory, multi-type theory of travel experience and ‘insider – outsider’ theory, formed a theoretical perspective and research method for travel experience research from the perspectives of phenomenology, semiotics, situational science and system dynamics [11].

The value of experience is also called the value of customer experience. Holbrook (1982) argues that the consumption experience will cause value such as pleasure or beauty. This is the earliest description of the concept of experience value [12], and the division of experience value is the key area of research. Schmitt (1999) divides the customer experience into five aspects: ‘sensory experience, emotional experience, thinking experience, action experience and connected experience’ to construct the theoretical framework of experiential marketing [13]. Lia Zarantonello (2010) holds that there are various types of experience, such as consumption experience, product experience, service experience, shopping experience, customer experience, which can be divided according to sensory (visual), emotional, cognitive and behavioral dimensions [14]. Li Qigeng (2011) divides the brand experience value based on four dimensions: sensory, emotion, society and knowledge [15]. Zheng Ruihong (2016) believes that regional experience value can be measured in terms of functional value, emotional value, cognitive value, and social value [16].

The value of travel experience and perception refers to the overall feeling and evaluation of many interactive tourism elements in the process of tourism products, experience tourism services and participation in tourism activities [17]. Throughout recent studies, it has been found that nowadays scholars tend to use unstructured data such as web texts to identify and analyze the value of tourists’ experience through the value dimension. Wu Heng (2017) evaluated the value of tourists’ experience or service regarding honeymoon travel through text analysis of Ctrip’s honeymoon travel notes [18]. Li Yang et al. (2019) selected a typical significance vacation industry complex, using content analysis and subject analysis to examine the tourists’ experience in the complex [19].

3. Research design

3.1 Research method

Content Analysis is a research method that refines internet texts into a readable conceptual system to
examine their structural patterns and essence of content \[19\]. Its biggest advantage is that it can transform the unsystematic and communicative symbolic contents such as pictures and texts into systematic quantitative data, so as to realize content mining and knowledge processing, and thus analyze some potential features \[17\]. Through the text data mining of online travel notes, on the basis of character frequency analysis, word frequency analysis, semantic network analysis, sentiment analysis, cluster analysis, etc., to achieve deep mining of information content embedded in internet texts \[20\]. With the more emphasis on the subjective initiative of internet users in the web2.0 era, a large amount of user-generated content by tourists exists in the internet, which makes the content analysis method has obvious advantages in behavioral research and is widely used in tourism destination image, tourism motivation, satisfaction and other related fields \[21\]. In this study, ROST CM6 data mining and analysis software was used to capture and analyze internet texts.

3.2 Research approach

3.2.1 Identify the case location
The border areas of Yunnan Province include 25 cities in 8 counties. The article selects Xishuangbanna as a representative case study object, mainly based on the following reasons: Firstly, Xishuangbanna is located at the southern end of Yunnan, and the border line is 966 kilometers long, adjacent to Myanmar and Laos. There are 13 ethnic minorities live here, including Dai, Hani, Lahu, Kino and Brown, which account for 74% of the population of the whole state. It is the most typical border ethnic area in Yunnan Province; Secondly, Xishuangbanna has a unique natural tourism resources and a gorgeous cultural tourism landscape. It is known as the ‘Animal Kingdom’, ‘Plant Kingdom’ and ‘Emerald on the Tropic of Cancer’, and it has a high overall tourism resource endowment; Thirdly, Xishuangbanna Prefecture has maintained a good tourism development trend in the past few years, and has formed a good market reputation and tourism reception conditions, gradually giving rise to cultural tourism integration.

3.2.2 Website text acquisition
According to the website's popularity and the richness of online travel notes, this paper finally chooses Ctrip as the target website to crawl online content. First of all, the time range of screening and retrieval was determined as follows: from January 1, 2013 to April 1, 2019. Houyi collector was further used through searching ‘Xishuangbanna’ and other relevant keywords, and 4156 related travel notes were finally collected from Ctrip. Then, the preliminary screening of the travel notes was conducted according to the following principles: first, the travel notes with obvious advertising nature were removed; second, the travel notes that only mentioned Xishuangbanna but had no specific content were removed; in the end, 489 articles were removed and 3,667 effective travel notes were obtained, generating a total of 9297559 words of research texts.

3.2.3 Semantic and value dimension analysis
First, the high-frequency words in the research texts were extracted and transformed into visual graphs to analyze the overall semantic connection of the texts. Next, the diachronic analysis of high-frequency words and the perception of tourism experience were carried out. On this basis, the multi-dimensional scale analysis of semantic relations was carried out to further explore the group associations among various high-frequency words.

4. Empirical analysis of the value of experience and perception

4.1 Statistical analysis of high-frequency feature words
The selected travel notes mentioned above were reprocessed, using such as high-frequency word synonymous conversion. For example, similar high-frequency words such as ‘Banna’ and ‘Xishuangbanna’ were unified into ‘Xishuangbanna’, and ‘aircraft’ and ‘flight’ were unified into ‘Aircraft’, etc., and finally saved in txt. document format for further analysis.
In this paper, word frequency statistics were carried out for all text contents, and high-frequency words were sorted from high to low, according to their occurrence frequency (Figure 1). It can be found that when high-frequency words are around the 60th, the word frequency curve basically flattens, that is, the word frequency of subsequent feature words is relatively close, and the feature discrimination degree begins to weaken. Therefore, the article selects the top 60 high-frequency words. At the same time, the words and vocabulary that were not enough to be analyzed were excluded, and 55 words expressing objective existence, behavioral characteristics and emotional expression were retained. According to the general rule of word frequency analysis, the higher the frequency of occurrence, the higher the degree of attention expressed by tourists on the content of the word, and the higher the cognitive degree of its attributes, which is easier to reflect to the tourists’ value judgment and perception tendency.

![Figure 1 Online text words frequency chart](image)

There are 41 nouns, mainly reflecting the itinerary, location, resources, activities, accounting for 74%, and occupying a very high proportion of all high-frequency words; there are 5 verbs, mainly reflecting the behavior and the details of the travel process, accounting for 10%; there are 9 adjectives, mainly reflecting the tourism features of Xishuangbanna and the feeling of travel itinerary, accounting for 16%.

In general, as a typical border ethnic area, Xishuangbanna has a prominent tourism image in the experience of tourists and their perception. This is mainly reflected in the high frequency of words highlighting the natural landscape of rain forest, Dai culture and other typical elements; natural resources can clearly reflect the name of the scenic spot, such as: Botanical Garden, Wangtianshu (Parashorea Cathayensis) Rainforest, etc., while cultural resources are mostly reflected in the image of elements, such as Buddhist temple, Dai nationality, port, ethnic groups, performances, etc., without pointing out specific tourism products. In contrast, the perceived image of natural resources is more accurate and clear; the high-frequency words of perceived emotions account for 20%, further indicating that tourists have a clear and deep impression on the overall travel perception of Xishuangbanna.

| Ranking | High-frequency words | Frequency | Ranking | High-frequency words | Frequency | Ranking | High-frequency words | Frequency | Ranking | High-frequency words | Frequency |
|---------|----------------------|-----------|---------|----------------------|-----------|---------|----------------------|-----------|---------|----------------------|-----------|
| 1       | Xishuangbanna        | 29137     | 16      | comfort              | 5946      | 31      | on the road          | 4240      | 46      | scenery              | 3233      |
| 2       | hotel                | 11782     | 17      | Jinghong             | 5664      | 32      | feature              | 4234      | 47      | beautiful            | 3110      |
| 3       | Lijiang              | 11230     | 18      | night                | 5554      | 33      | afternoon            | 4063      | 48      | all kinds of         | 3104      |
| 4       | Kunming              | 10474     | 19      | local                | 5438      | 34      | scenic spot          | 4026      | 49      | taste                | 2992      |
| 5       | park                 | 10011     | 20      | tourism              | 5214      | 35      | plant                | 4006      | 50      | place                | 2982      |
| 6       | time                 | 9631      | 21      | tropic               | 5083      | 36      | original             | 3978      | 51      | peacock              | 2906      |
4.2 Semantic network graph construction

The semantic network graph displays the co-occurrence relation between high frequency words, and then reflects the overall semantic connection of texts, thus providing an overall and intuitive guidance for text analysis. By dividing the sentences and words into independent units, and adding some necessary relational words, the relational results are visualized, and a semantic network diagram is generated (Figure 2). Among them, the nodes represent the associated high-frequency words, and the arcs are used to represent the semantic connections between the nodes. The denser the arc, the greater the mediating effects of words in the perception of the entire tourists and the stronger the relevance [20].

Through observation and analysis, the semantic network diagram shows the following obvious features: Firstly, ‘Xishuangbanna’ and ‘comfort’ are the first-level high-frequency core words. Xishuangbanna is a perceptual space of tourist destination for tourists, most of the tourists’ experience and perception is mainly based on this space. At the same time, it can be seen that the overall perception of Xishuangbanna is good, and ‘comfort’ becomes the most frequently used word of travel experience and perception. A group of words in the category of products, facilities, and perception are related to ‘comfort’, including hotel, airplane, itinerary, attraction, ethnic group, friend, choice, feeling, and other product category, facility category, culture category, perception category words.

Secondly, ‘Yunnan’, ‘park’, ‘port’, ‘night’ and ‘hotel’ are the second-level high-frequency core words. From the external perspective, Xishuangbanna has become an important tourist destination in Yunnan, and it is the first choice for tourists to experience the border ethnic features in Yunnan. In addition, through the association of several tourist destinations such as ‘Xishuangbanna’, ‘Dali’, ‘Lijiang’ and ‘Kunming’, it can be further estimated that the mature tourist routes formed between the famous tourist destinations in Yunnan also makes the ‘trip’ of tourists more ‘comfortable’ and with ‘characteristic’; from the internal perspective, ‘park’ and ‘port’ become important high-frequency words of tourism products, indicating that Xishuangbanna’s natural landscape and border tourism have become important choices for tourists; and ‘night’ becomes the main period of tourists’ experience, which also reflects that Xishuangbanna’s ‘night economy’ is a significant driving engine for tourism development; ‘hotel’ has become a high-frequency word for service facilities, to a large extent, it depends on the scale, branding, internationalization and highly development of hospitality industry in Xishuangbanna.

Lastly, ‘Dai nationality’, ‘nationality’, ‘characteristic’, ‘airplane’, ‘performance’, ‘scenic area’, ‘scenic spot’ are the third-level high-frequency core words. Among them, there is a close relationship between ‘nationality’, ‘Dai nationality’, ‘performance’ and ‘characteristic’, which indicates that ethnic tourism experience products have become an important label of Xishuangbanna tourism, and all kinds of ‘performances’ have further driven the development of ‘night economy’; to a large extent, the word ‘airplane’ reflects the choice of vehicles between the tourist generating region and destinations, and by correlating it with the closely related word ‘hour’, it can be concluded that the improvement of transportation accessibility and comfort is the key to the further development of tourism in border ethnic areas; while the words ‘scenic area’ and ‘scenic spot’ indicate that the tourism development of Xishuangbanna is still based on the traditional resource-oriented model of scenic spot tourism.
4.3 Diachronic analysis of high-frequency words

Based on the traditional statistical analysis of high-frequency words, the article further analyzed the high-frequency words from 2013 to 2018. Referring to Wu Jinfeng (2014)'s classification of tourism image dimensions and attributes, the high-frequency words in the past years were divided into six categories according to natural attractors, cultural attractors, accommodation facilities and services, leisure and entertainment, tourism environment and local atmosphere, and has counted the word frequency ratio of each type of high-frequency words, as shown in Table 2:

Table 2 Diachronic statistics of high-frequency words

| Year | Natural attractors | Cultural attractor | Facilities and services | Leisure and entertainment | Tourism environment | Local atmosphere |
|------|-------------------|--------------------|------------------------|--------------------------|---------------------|-----------------|
| 2013 | 7.91%             | 10.89%             | 32.78%                 | 6.52%                    | 32.24%              | 9.66%           |
| 2014 | 15.52%            | 16.75%             | 27.19%                 | 6.75%                    | 27.48%              | 6.31%           |
| 2015 | 24.72%            | 20.29%             | 22.62%                 | 6.25%                    | 16.98%              | 9.14%           |
| 2016 | 16.33%            | 20.80%             | 29.29%                 | 7.81%                    | 20.88%              | 4.89%           |
| 2017 | 18.92%            | 24.92%             | 22.08%                 | 8.99%                    | 19.86%              | 5.23%           |
| 2018 | 5.14%             | 25.26%             | 27.88%                 | 6.58%                    | 25.16%              | 9.98%           |

Through analysis, it has been found that the words about the tourists’ perception of natural and cultural tourist attractions, facilities and services in Xishuangbanna account for a larger proportion of high-frequency ones, indicating that tourists are still more concerned about core attractions and tourism service facilities. Among them, natural attractions show an inverted U-type feature, and tourists' attention to the traditional natural landscape tourist spots in Xishuangbanna has been rising in the past few years but then began to decline; cultural attractions have been developing steadily, especially the deeper interest in the experience of diversified resources such as colorful border culture and national culture; there is a clear positive correlation between service facilities and the perception of the tourism environment and local atmosphere, both showing W-type development characteristics; in addition, tourists' perception of leisure and entertainment activities is relatively stable.

4.4 Identify the travel experience and perception

According to the theory of hierarchical experience value, the value of experience consists of three aspects: the cognitive, the emotive and the social, while the value of tourists’ experience and their
perception is often influenced by many factors. Based on the high-frequency words and semantic network diagrams, combined with the specific online text, the border ethnic travel experience in Xishuangbanna are further classified and analyzed from three structural dimensions of travel experience cognitive value, emotional value and social value, to identify and refine the realistic text to support the information of the value of experience and perception.

4.4.1 The cognitive dimension
The cognitive dimension reflects the customer's thinking and conscious learning in consumption. In the process of tourism, visitors generate a direct feedback to the external tourism environment through their contact with the outside world. It can be seen from the high frequency glossary of travel experience that it mainly comes from the aspects of vision, taste and touch, etc., and is often around the tourism resources, facilities and products of Xishuangbanna. Through the tour of ‘Botanical Garden’, ‘Wangtianshu (Parashorea Cathayensis) Rainforest’, ‘tropical rainforest’, ‘Buddhist temple’ and other tourist attractions, ‘characteristics’, ‘beauty’ and other visual cognitive experience are produced. For example: ‘I experienced the Wangtianshu (Parashorea Cathayensis) Rainforest expansion tour yesterday, visited the millennium big banyan tree, met the exotic tropical rainforest vegetation, really feel the magic and beauty of the tropical rainforest’; by tasting ‘delicious food’ and ‘fruit’, ‘taste’ and ‘delicious’ cognitive experience can be generated. For example: ‘Come to the tropical Botanical Garden, you must try a variety of fresh tropical fruits. The delicious wild papaya tastes really delicious, natural and sweet.’ ‘Comfort’ and other tactile cognitive experience can be generated through consumption activities of ‘hotel’ and other reception facilities. For example: ‘The 42 square meters deluxe room at Doubletree Resort by Hilton Hotel Xishuangbanna has well-equipped modern facilities and the iconic sweet dream bed by Hilton Doubletree, this is a unique sleep experience bed with cozy and comfortable.’

4.4.2 The emotional dimension
The emotional dimension reflects the change of the customer's mood and emotion. During the travel, based on their own experience, tourists process and analyze the perceived information through thinking activities such as association to express their emotional experience in an external way, which is an emotional bond between tourists and destinations. Here, the emotional experience is mainly analyzed by examining the vocabulary of positive emotion and negative emotion (Table 3).

| Emotional classification | Positive emotions | Neutral emotions | Negative emotions | Segmentation statistics of positive emotions | Segmentation statistics of negative emotions |
|--------------------------|-------------------|------------------|-------------------|---------------------------------------------|--------------------------------------------|
|                          | Positive          | Neutral          | Negative          | General Moderate Height                      | General Moderate Height                     |
| Text percentage          | 95.96%            | 1.86%            | 2.17%             | 1.86%                                       | 1.86%                                      |
| Segment                  |                   |                  |                   | 92.24%                                      | 0.93%                                      |
|                          |                   |                  |                   | 0.93%                                       | 0.31%                                      |

4.4.2.1 Positive emotional tendency
The overall tourists’ experience and their perception tends to be positive, indicating that the quality of the travel experience is high. In particular, (Figure 3), there are a total of 20,581 positive emotional words. On the one hand, the words show an objective and positive evaluation of Xishuangbanna's ecological landscape, natural scenery, ethnic customs, animals and plants and other traditional tourism resources, such as ‘comfort (5946)’, ‘beauty (3110)’, ‘delicious (2510)’, ‘magic (1097)’, ‘unique (892)’, ‘vivid (363)’, etc.; on the other hand, they reveal the subjective feelings of Xishuangbanna's social environment and leisure atmosphere, especially for the love of humanity, special food and leisure environment, such as ‘cheap (2473)’, ‘passion (1411)’, ‘enjoy (1256)’, ‘open (786)’, ‘charm (385)’, ‘relaxation (352)’, etc., which are also in line with Xishuangbanna's goal of creating a ‘famous tourism city in the world’.
4.4.2.2 Negative emotional tendency

Figure 4 shows that there are still 2,330 words reflecting the negative emotions and evaluations of tourists in their travel experience. It mainly focuses on the external environment and the tourism market, and the specific reasons underlying the negative responses include the level of tourism service and information publicity, uncomfortable weather, improper market management and security issues, etc.

4.4.2.3 Social dimension

The social dimension explains the customer's life attitude and social status. During the trip, after experiencing cognitive and emotional experiences, tourists will reflect on what they have seen and felt along the way, and they will have opinions on certain things. By sorting out the data, it is observed that a large amount of text information reveals a deep social view of Xishuangbanna by tourists. Among them, the most typical word of ‘commercialization’ appeared 133 times. Many tourists hold an objective attitude towards commercialization, and rationally treat the development of tourism and the changes of
simple and traditional living atmosphere. For example: ‘Xishuangbanna scenic spot has been developed early, so now it is commercialized. Tourism can bring some economic benefits, and commercialization is not entirely negative. At least, it is convenient for people to eat, drink, live, travel and entertain. No one can stand it for a long time if the environment is only original and natural.’

4.5 Multi-dimensional scaling analysis of semantic relations

4.5.1 Build a co-occurrence matrix

To start with, a co-occurrence matrix is built. The co-occurrence matrix is constructed by the social network and semantic network analysis functions in RCM6. The co-occurrences times from any two keywords in 55 high-frequency words is recorded as a two-dimensional array, and finally a 55*55 symmetric matrix is formed, which is a co-occurrence matrix (Table 4).

| Xishuangbanna | hotel | Lijiang | park | Kunming | Yunnan | port | Dai nationality | airplane | time |
|---------------|-------|---------|------|---------|--------|------|-----------------|---------|------|
| Xishuangbanna | 29137 | 1507    | 1105 | 1621    | 1566   | 1762 | 1643            | 1452    | 1504 | 1888 |
| hotel         | 1507  | 11782   | 0    | 1035    | 1013   | 1028 | 957             | 0       | 1105 | 1210 |
| Lijiang       | 1105  | 11230   | 0    | 0       | 963    | 0    | 0               | 0       | 0    | 0    |
| park          | 1621  | 1035    | 10011| 1023    | 1065   | 1073 | 942             | 1029    | 1178 |
| Kunming       | 1566  | 1013    | 0    | 1023    | 10474  | 1224 | 951             | 0       | 1140 | 1211 |
| Yunnan        | 1762  | 1028    | 963   | 1065    | 1224   | 9912 | 1117            | 917     | 1072 | 1318 |
| port          | 1643  | 957     | 1073  | 951     | 1117   | 9501 | 905             | 918     | 918  | 1162 |
| Dai nationality| 1452  | 0       | 942   | 0       | 917    | 905  | 6268            | 0       | 976  |      |
| airplane      | 1504  | 1105    | 0    | 1029    | 1140   | 1072 | 918             | 0       | 8544 | 1193 |
| time          | 1888  | 1210    | 0    | 1178    | 1211   | 1318 | 1162            | 976     | 1193 | 9631 |

Moreover, Ochiai coefficient is used to transform similarity matrix. First of all, each two-dimensional array in the co-occurrence matrix by the product of the square roots of the two keyword frequencies is divided, and then the correlation matrix is sorted out. Next, 1 is further subtracted from each number in the correlation matrix to obtain the different matrix (table 5). The larger the value in the dissimilar matrix, the longer the distance and the worse the similarity; the smaller the value, the closer the distance and the better the similarity [1].

| Xishuangbanna | hotel | Lijiang | park | Kunming | Yunnan | port | Dai nationality | airplane | time |
|---------------|-------|---------|------|---------|--------|------|-----------------|---------|------|
| Xishuangbanna | 0.9187| 0.9389  | 0.9389| 0.9051  | 0.9104 | 0.8923| 0.9013          | 0.8926  | 0.9047| 0.8873|
| hotel         | 0.9389| 0.9187  | 0.9389| 0.9051  | 0.9104 | 0.8923| 0.9013          | 0.8926  | 0.9047| 0.8873|
| Lijiang       | 0.9051| 0.9047  | 1     | 0       | 0.9001 | 0.881 | 0.881           | 0.8811  | 0.8887| 0.8808|
| park          | 0.9104| 0.9088  | 1     | 0       | 0.9001 | 0.8753| 0.9047          | 1       | 0.8795| 0.8794|
| Kunming       | 0.8923| 0.9012  | 0.9052| 0.8890  | 0.8753 | 0    | 0.8805          | 0.8792  | 0.8790| 0.8599|
| Yunnan        | 0.9013| 0.9095  | 1     | 0.8900  | 0.9047 | 0.8805| 0              | 0.8827  | 0.981 | 0.8785|
| port          | 0.8926| 1       | 1     | 0.8811  | 1      | 0.8792| 0.8827          | 0       | 1    | 0.8744|
| Dai nationality| 0.9047| 0.8899  | 1     | 0.8887  | 0.8795 | 0.8790| 0.8981          | 1       | 0    | 0.8685|
| airplane      | 0.8873| 0.8864  | 1     | 0.8800  | 0.8794 | 0.8599| 0.8785          | 0.8744  | 0    | 0.8685|

4.5.2 Multi-dimensional scale analysis

Multi-dimensional scale analysis is carried out by using Euclidean model. By observing the distance between two-dimensional spaces to reflect the similarity relationship between high-frequency words, we can find the structure of tourists’ perception data in Xishuangbanna (Figure 5).

From the results of the multi-dimensional scale analysis, the distribution of the first and second quadrants is relatively loose, while the distribution of the three or four quadrants is relatively close, and there are high-frequency word groups in each quadrant. After sorting out the groups formed by high-frequency words in travel notes, the final form includes three traditional groups including landscape...
resources, tourism services and gourmet experiences, and two characteristic groups containing ethnic customs and border culture.

Figure 5 Multi-dimensional scale analysis of online texts

4.5.2.1 Tourism resources
Tourism landscape resources as a major group, including many sub-categories: destinations, natural landscapes, cultural landscapes, etc. Tourists have the most comments on the natural tourism resources of Xishuangbanna, and they have a clear perception of the image characteristics of ‘tropical’ and ‘rainforest’. Moreover, as an internationally renowned tourist destination, Xishuangbanna not only forms a typical tourist circle in the province, but also forms a certain cross-border route to South Asia and Southeast Asia.

4.5.2.2 Tourism services
There are relatively many contents in the tourism service group, which are mainly divided into tourist facilities, tourism services, and travel itineraries. Taken together, tourists are satisfied with the overall travel arrangement, accommodation and other service facilities in Xishuangbanna, especially the perception of its recreation experience at night.

4.5.2.3 Gourmet experience
Delicious food is one of the most important experiences for travel destinations. As one of tourism characteristics in Xishuangbanna, the delicacy experience is not only a part of tourism activities, but also a symbol of destination culture [1]. The evaluation of the food in Xishuangbanna has become an important sensory content for visitors to discover their cuisine culture. Through the clustering analysis of text content, it is found that the food experience has become an important factor affecting tourists’ perception of destinations. Because most positive emotional evaluations are related to the local cuisine.

4.5.2.4 Ethnic customs
The ethnic customs experience is a prominent feature of travel perception in Xishuangbanna, and most tourists go there because of this travel motivation. The text analysis reveals that most tourists can make friends and get to know the traditional folk customs when they experience ethnic customs. In addition,
tourists' understanding of Xishuangbanna national culture is mostly obtained through various performance activities, performing arts culture.

4.5.2.5 Border culture
The border culture experience is a special form of travel experience in Xishuangbanna, so it forms a separate perceptual group. Through the analysis of the text relationship, it can be found that most tourists have a high interest in border culture, such as national gate culture, port sightseeing and exotic customs. Hence Xishuangbanna has become the frontier and model of Yunnan border tourism, which should also become a crucial point of development on the supply side of Xishuangbanna tourism in the future.

5. Conclusion

5.1 Summary and implications

5.1.1 Tourists have a relatively good perception of their travel experience in Xishuangbanna, and the product perception diversity is obvious.
For one thing, ‘comfort’ has become the most frequent word for the perception of travel experience, which fully confirms that overall tourists have a highly positive perception of Xishuangbanna. For another, through the semantic network structure analysis, it has been found that tourists' perception of Xishuangbanna presents the characteristics of ‘core—sub-core—periphery’ echelon structure distribution, and the perception of tourism products shows a trend of diversification. Among them, scenic spots such as Botanical Gardens, original forest park, Wangtianshu (Parashorea Cathayensis) Rainforest, and Dai Nationality Park are still the first choice for tourists' experience and the focus of perceptual evaluation. It can be further inferred that Xishuangbanna's tourism model is still based on traditional resources at present; The border tourism represented by ‘ports’ has become an important way for tourists to understand the border ethnic areas, and has gradually developed into one of the three unique inbound and outbound tourism markets; performing arts tourism products have become a major channel for tourists to intuitively feel the border ethnic culture, and have also become a vital supply means to boost the development of Xishuangbanna's ‘night economy’; the improvement of tourism reception facilities is an significant factor influencing the overall tourists' experience and their perception.

5.1.2 There are significant differences in various types of tourism elements perception.
To further examine the trend of diachronic perception of different types of tourism elements, it is observed that: on the one hand, tourists' perceptual attention rate of tourist attractions, facilities and services, and the tourism environment in Xishuangbanna is relatively large, indicating that the quality of core attractions and tourists’ experience of facilities and environment is still a crucial factor affecting the overall perception. On the other hand, the perceptual development trend of natural attractors shows an inverted U-shape, which to some extent points to the weakening of their perceived attraction to tourists. From the perspective of life cycle, the utilization of Xishuangbanna's natural tourism resources should gradually enter the period of adjustment and development; cultural attractors have been developing steadily, which is mainly due to the diversified expansion of resources in Xishuangbanna, continuous in-depth excavation and rational design of its productization and marketization; the perception of facilities and services with tourism environment and local atmosphere shows a W-shape development trend, and presents a significant positive correlation. For one thing, the perception of leisure, entertainment, tourism environment and local atmosphere is greatly affected by facilities and services; besides, in recent years, with the construction of tourism complex and the improvement of tourism factor system in Xishuangbanna, the regulation of tourism market, the travel experience and satisfaction are gradually enhanced. In addition, tourists' perception of leisure and entertainment activities is relatively stable, which is mainly due to the perfect integration of Xishuangbanna's mature nightlife environment with bars, performing arts and other night experience activities, making it
continue to develop steadily.

5.1.3 The overall evaluation of travel experience and perception is mainly positive.
By distinguishing the dimensions of experience and perception of high-frequency words in the texts, we can find that whether the objective evaluation of traditional tourism resources such as ecological landscape, natural scenery, ethnic customs, animals and plants, or it is for subjective feelings of social environment and leisure atmosphere, the general travel experience tends to be positive. Through the aspects of visual, taste and feeling, the objective cognition of tourism resources, facilities and products is integrated with the experience of cultural landscape, special cuisine and leisure environment in Xishuangbanna. At the same time, the negative comments from tourists should not be ignored. Although the negative emotion perception accounts for a small part, the dismal online comments have a significant amplification effect [20]. The natural environment, market promotion, market management politics and security issues are all restricting the image of Xishuangbanna’s online reputation. Therefore, the management of destination should effectively control and manage negative public opinions.

5.1.4 Tourists have formed clear and typical perception groups in terms of their travel experience in Xishuangbanna.
Through multi-dimensional scale analysis, it is find that the classification of perception group has been clearly defined, forming three traditional groups and two major groups. In the future practice of tourism development, scenic spot resources, facilities and services, food and other traditional groups should become the core areas of tourist destination image system building and destination brand building, and should further consider the diversified combination of ‘scenic spot + services + food’ elements; ethnic customs and border culture groups represent the emerging market and niche market of Xishuangbanna, and have realistic conditions for the evolution of core experience products, which can fully satisfy the unique preferences of tourists and enhance the supply richness. Therefore, it is necessary to pay sufficient attention to these product segments in terms of cultural integration, product development, and image design.

5.2 Suggestions

5.2.1 Three ‘trump cards’ should be played for tourism in Xishuangbanna, consumers for night tourism should be nurtured.
On the one hand, attention should be directed to the three ‘trump cards’ regarding ‘gourmet experience’, ‘border culture’ and ‘ethnic customs’ in Xishuangbanna. On the basis of the existing tourism routes with natural scenery, the boutique attractions of border tourism and ethnic tourism should be highlighted, and the boutique projects of gourmet experience should be enriched, so as to realize the resource sharing of tourists for traditional sightseeing tours. On the other hand, the night leisure tourism featuring the ethnic culture, border culture and special food culture should be created through strengthening publicity, and promoting the product of night leisure tourism in a diversified and multi-channel manner.

5.2.2 The tourism elements system should be optimized, and the quality of tourism service facilities be improved.
The balanced development of the entire tourism industry chain should be promoted, especially the connectivity of high-grade road in three counties and cities should be improved. The quality of tourism public facilities and tourist reception facilities should be enhanced, and accommodation, catering, entertainment, shopping services should be created with local ethnic characteristics. With the guidance of ‘one machine tour’, the global smart tourism should be promoted to develop differentiated marketing strategies for different segments of the tourism market, to give full play to the communication role of online social media, and to deliver positive experience through online praise, in order to consolidate the traditional tourism image of Xishuangbanna, and shape its new image of future travel experience.
5.2.3 Market supervision should be strengthened and the level of travelling convenience in border areas be enhanced.

The training and supervision of local tourism employees should be strengthened to avoid the occurrence of bad behaviors in the tourism market. The unrestricted travel between the ports of Mohan and Daluo should be further promoted to facilitate group tours, self-driving travels and to standardize and simplify the approval process for entry and exit procedures.

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