Research on Food Experience Perception Based on Data Mining Technology: Taking Guiyang Qingyun Market as an Example

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Abstract: In the era of self-media, a considerable proportion of tourists have the habit of browsing and using food strategies, and the interaction between tourists and food networks is frequent. At the same time, the catering industry cluster is an important means for cities to optimize social catering management, build urban specialty food brands and promote regional economic development. Guiyang is one of the typical gathering places of tourism retired immigrants in China. This paper takes Guiyang Qingyun Market as an example, focuses on the food network review text, uses specific computer algorithms, data mining technology and content analysis method, and uses KH Coder and ROST CM6 software to analyze the data text of a total of 426189 words. The following results are obtained. The purpose of this paper is to explore the food experience value of Qingyun Market from the perspective of customer perception. Based on the customer's experience value evaluation of each dimension of the case, this paper analyzes the shortcomings of Qingyun Market in construction planning, atmosphere creation and food quality, and puts forward targeted countermeasures and suggestions for the operation and management of Qingyun Market.

Keywords: Data Mining Technology; Gastronomic Tourism; Experience Perception; Web Comment Text

1. Introduction

Human beings have entered the era of Internet of Everything. The integration and development of big data, cloud computing, AI and other technologies have made the fourth scientific research paradigm of "data-intensive scientific discovery" widely accepted. The research of "experience perception" based on data text mining has also become one of the new active fields of humanities and social science research.

Retired immigrants have become a phenomenon of time and space flow under the background of globalization [1]. Guiyang, Kunming, Sanya and other places are typical gathering places of tourism retired immigrants in China. In these places, food is one of the most concerned factors for retired immigrants in the tourism context. Under the background of the integration of culture and tourism, there is an inseparable relationship between food and tourism. In recent years, by showing the unique multi-ethnic diet culture of Guizhou, documentaries such as "In Search of Guizhou" have promoted local cooking and eating habits from the perspective of cuisine, providing an important window for tourists and retired immigrants to taste local specialties and understand local food customs. This kind of travel to tourist destinations to experience local unique eating habits is called 'gourmet tourism'.

Guiyang City is located in the central part of Guizhou Province and is the capital city of Guizhou Province. In recent years, the development of tourism economy in Guiyang has made remarkable achievements, but the research on the development of food tourism resources is relatively lacking. As a key element between cultural life and place, diet is a cultural phenomenon with local characteristics. As an important leisure tourism experience and retired immigrant lifestyle, food tourism combines multi-ethnic food

culture with tourism, which is of great significance to the development of Guiyang's food tourism economy and even the integration of culture and tourism [2].

QingYun Market is located at No.83 Qingyun Road, Nanming District, Guiyang City, Guizhou Province, near the famous landmarks of Guiyang such as Jiaxiu Building, Zhucheng Square and Riverside Park. As a characteristic commercial district and night-time economic demonstration district of Guiyang City, Qingyun Market is aimed at creating a prosperous cultural district that integrates various elements such as culture, art, entertainment and commercial shopping. In 2020, Qingyun Road Night Market successfully retained the unique urban style and cultural heritage of the region through the transformation of "retreating into the room," and skillfully integrated into the new fashion format. Since the opening of Qingyun market, WeChat, Douyin, Xiaohongshu and other network platforms have become its main marketing positions. QingYun Market has gathered many Guizhou specialty foods, such as silk dolls, pots, sausage noodles, crispy ducks and rolls. These foods have become an important factor in attracting customers. In addition, the unique decoration style of Qingyun Market not only provides consumers with a place to punch in, attracting a large amount of traffic, but also has certain tourism functions. In short, the Qingyun market set combines cuisine, tourism and culture to become Guiyang's "gourmet tourism card". As a representative gourmet street, it has important research value.

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2. Literature Review

The concept and connotation of food tourism. Cyprus held an international conference in 2000 to discuss local food and tourism issues, which pioneered the study of culinary tourism. Many experts and scholars recommend unique cuisine as a tourist attraction. Wolf (2002) first proposed the term gourmet tourism, he pointed out that gourmet tourism is to find and enjoy a special and impressive food experience. In 2003, Hall CM proposed the concept of food tourism, which is defined as a way to travel to local food production places or places of origin, participate in food festivals, visit food blocks or restaurants [3]. In 2006, Kivela considered that food tourism is a specific form of cultural tourism, and its main motivation is to taste different foods, even the only motivation [4]. Wolf points out that gourmet tourism is a travel behavior to taste the taste of a place in order to obtain a sense of place. In China, Cailie Zhang's "Chinese cuisine characteristic tourism" is the earliest book on cuisine tourism in China [5]. After that, more and more scholars began to study cuisine tourism in depth, but so far, the academic community has not reached a consensus on the definition of "cuisine tourism".

The structural dimension of customer experience perception. Stheth et al. believe that functional value, conditional value, social value, emotional value and cognitive value constitute the customer experience value model [6]. Holbrook reviewed the literature on consumer experience, and summarized that consumer experience is composed of four dimensions, namely entertainment, experience,

delivery pleasure, and expressiveness, which are called 4Es [7]. After combing the structural dimensions of experience value in the existing literature, it can be seen that most scholars have mentioned functional value and emotional value [8]. This paper agrees with and draws lessons from this point of view, and divides the customer experience perception image of Qingyun Market into product and service perception, cultural sense and atmosphere perception, infrastructure perception, and analyzes the customer experience perception of Qingyun Market from three dimensions.

3. Data Source and Research Method Selection

Web crawler, also known as Web information collector, can automatically crawl web information and data according to certain rules, and is one of the important tools for current big data research. KH Coder and ROST are popular open source software for unstructured text analysis. According to the research needs, the word frequency analysis, social semantic network analysis and sentiment analysis of KH Coder and ROST are mainly used to process data text materials. The KH Coder word segmentation tool is used for data preprocessing, which is mainly the Java implementation of the part-of-speech tagging method. The process includes sentence segmentation, tagging, removal of stop words, and part-of-speech tagging.

In the era of self-media, a considerable proportion of tourists have the habit of browsing and using food strategies. They are accustomed to reading food-related information, evaluation and recommendation from the food network platform, and the interaction between tourists and the food network is frequent. Based on this, this paper focuses on the food network comment text, with the help of specific computer algorithms, using data mining technology and content analysis method, using KH Coder and ROST CM6 software to analyze the network text information, and from the high frequency words, experience value, social semantic network and emotional tendencies and other aspects of research. First of all, with the help of a specific computer algorithm, the data of the comments of the public comment network is crawled. By retrieving the keywords of the

"Qingyun Market" on the public comment network, 3018 comments are obtained. Further, the computer algorithm is used to complete the screening, and the text errors, duplicate content and untrue comments are deleted. Finally, 2826 valid comments were obtained, with a total of 426189 words; secondly, KH Coder and ROST CM6 software are used to sort out and analyze these comments, extract high-frequency words, and analyze the experience value in the comments based on computer algorithms. Then, the social semantics and sentiment analysis of high-frequency words are carried out through KH Coder and ROST CM6 software and search site. Through the above analysis steps, the preliminary conclusion of Qingyun market tourism experience perception is obtained; finally, a detailed analysis of the Qingyun market customer experience perception effect.

Content analysis is a systematic, objective and quantitative research method, which is used to describe and analyze the content of communication. It enables researchers to effectively measure and classify the information transmitted to the audience, and to gain a deeper understanding and understanding. Network text analysis is a research method that transforms qualitative and unsystematic symbolic content in the network into quantitative and systematic data. After years of development, it has been applied to many fields such as journalism and communication. In recent years, network text analysis has been introduced into tourism research. The use of online comment text as data is significantly different from the questionnaire survey method. Using the Internet to obtain the comment information of the interviewees can effectively avoid the interviewees' fear of personal information leakage and conceal their intuitive views. At the same time, the content analysis method is no longer limited and guided by time, region and questionnaire form. More scholars tend to use content analysis as a research method.

4. Network Comment Text Analysis

4.1 Analysis of High Frequency Words

High-frequency words are the most prominent part of tourists' perception of destination tourism image. They usually reflect the actual perception and evaluation of customers in the

process of participating in the experience. The higher the frequency, the stronger the customer's experience characteristics. In this paper, the collected effective comment samples are sorted out by "removing duplicate items", "eliminating invalid words", etc., and ROST software is used for word segmentation and word frequency statistics, and finally high-frequency feature words and word frequency are obtained. See Fig.1, the results of high-frequency word analysis show that among the high-frequency keywords in the online review text of Qingyun market, the top ten words are Guiyang, snacks, punch card, Qingyun market, Qingyun road, photo, place, food, evening and taste. Among them, Guiyang (372 times) and place (161 times) reflect the representativeness of Qingyun Market as a local tourist spot in Guiyang. Snacks (331 times), punch cards (196 times), taste (110 times), delicious (106 times) and lively (99 times) are all high-frequency words, indicating that food and punch cards are the main factors attracting customers to Qingyun Market. In addition, the frequency of occurrence of barbecue (76 times) and tofu (31 times) showed customers' preference for this type of food. The high-frequency words suitable (97 times), environment (84 times) and atmosphere (32 times) reflect that customers have a higher perception of the tourism experience of Qingyun Market and have higher requirements for its environment and infrastructure. These data show that Qingyun Market not only attracts tourists in terms of food, but also its overall environment and atmosphere have an important impact on the tourist experience.

From this analysis, in terms of customer evaluation, high-frequency words mainly focus on food, environment and other aspects. From the above data, it can be seen that the image evaluation system of Qingyun Food Street as an emerging tourist destination is gradually established and improved. From the perspective of different types of tourists, the observation of tourist destinations will find the implied meaning and value.

4.2 Experience Value Analysis

From the perspective of customer experience value, by analyzing the effective comment texts of Qingyun Market, the types and themes of feature words are finally analyzed, and the customer experience perception image of Qingyun Market is divided into three dimensions: product and service perception, culture and atmosphere perception, and infrastructure perception [9].

Figure 1. The High-frequency Feature Word Cloud Map of the First 50 Perceived by Tourists in Qingyun Market

The results show that in the three dimensions, the high-frequency words of culture and atmosphere perception are the most and the word frequency is the highest, indicating that culture and atmosphere are more important aspects of customer experience value perception, and tourists' perception of culture and atmosphere is more diversified and personalized ; the number of high-frequency words for product and service perception and infrastructure perception is 10, which is relatively small, indicating that tourists' perception dimensions in these two aspects are relatively concentrated [10].

Focusing on the characteristic words, in the product and service perception dimension, the characteristic words are "snacks" "cuisine", "taste" "barbecue", etc., indicating that customers are highly concerned about the cuisine of Qingyun Market, which is an important tourist attraction of Qingyun Market. In the dimension of culture and atmosphere perception, the characteristic words "old Guiyang" "bustling" "night market", etc., indicate that Qingyun Market, as a representative of the cultural image of old Guiyang, is a good place for tourists and locals to taste local cuisine, leaving a deep urban brand in the eyes of customers.

In the dimension of infrastructure perception, the characteristic words "environment" "decoration" "design" and so on show that customers pay more attention to the decoration design and infrastructure of Qingyun market, and also show that there is room for

improvement in improving the construction of public infrastructure. The characteristic word "queuing" reflects the large flow of people and high popularity in QingYun Market, and also causes the phenomenon of long waiting time for customers, which easily leads to the loss of some customers.

4.3 Social Semantic Network Analysis

According to the analysis diagram of the social semantic network structure formed after sorting out, it can be seen that the more number of lines means the higher the word frequency of the entries, and also represents the higher the collinear frequency between the two words, which shows the closer the connection between them. The high-frequency word "Guiyang" also has a higher position in the network, and its number of nodes is the largest, the collinear frequency is the highest, and the number of common points is the largest. Among them, the collinear frequency of "Daka" "Qingyun Market" "cuisine" "snacks" and "place" is second only to "Guiyang", and the correlation between them and "Guiyang" is the highest. It can be seen that the emergence of the concept of "Qingyun Market" makes the cultural image of Guiyang more specific and vivid; "Guiyang" is the background of the formation of the overall image of Qingyun Market, which endows Qingyun Market with characteristics and significance. "Dhaka" "snacks" and "gourmet food" are the biggest tourist attractions that Qingyun Market attracts customers.

4.4 Sentiment Analysis

With the help of ROST software, the customer effective review data captured in the public comment network can be divided into three categories: positive evaluation, neutral evaluation and negative evaluation. On the whole, the number of positive emotions is much higher than that of negative emotions, accounting for 84.8 %, and negative emotions only account for 15.1% (See Table 1). The analysis shows that most customers are very satisfied with the experience perception of Qingyun market, such as "good" "characteristic" "lively" "delicious" "recommended" and other words, indicating that high-quality tourism experience perception can not only promote more positive emotional experience, but also enhance

customers' attachment to tourist destinations, thereby enhancing customers' willingness to re-select and recommend, and attracting more new customers to travel. At the same time, it is necessary to pay attention to the corresponding items of negative evaluation and their causes. The words "bad," "pity," "not enough," "crowded," "give up" and so on, show that from the perspective of customer perception, there are still some problems in the layout and product optimization of Qingyun market. Therefore, we should pay special attention to the negative evaluation of customers, and make optimization and upgrading based on this.

Table 1. The Distribution of Customers' Emotional Tendency to Qingyun Market

Dimension	Perception description vocabulary	Proportion (%)
Positive emotions	Nice, characteristic, lively, delicious, recommended, suitable, like, young, worthy, good-looking, beautiful, clean, convenient, rich, fun, should have everything, famous, fresh, attractive, looking forward to, clean.	84.8
Negative emotions	Bad, pity, not enough, crowded, give up, not as good, disappointed, overcrowded, noisy, not enough, insufficient, garbage, rectification, speechless, disappeared, dirty and messy, unpleasant.	15.1

5. Conclusions and Suggestions

Food is one of the most concerned factors for retired immigrants in the context of tourism. This paper takes Qingyun Market in Guiyang City as the research object, and uses ROST software to analyze the high-frequency words, social semantic network analysis and experience value and emotion analysis based on high-frequency words through manual processing of 482 effective comments from the public. The following conclusions are drawn: high-frequency words show that customers pay more attention to the food, environment and entertainment activities of Qingyun Market; the overall experience perception image can be

divided into three dimensions: product and service perception, culture and atmosphere perception, and infrastructure perception, and it reflects from the side that tourists are more satisfied with culture and atmosphere perception, while infrastructure construction needs to be further improved. The results of social semantic network analysis show that "snack" is the essence of the development of Qingyun market, and ensuring the quality and characteristics of food is the key to the development of Qingyun market tourism.

Based on this, the paper points out that in order to improve the satisfaction perception of tourism retired immigrants and local residents on local characteristic blocks, Qingyun Market should be improved from the following three aspects, including: first, strengthening the construction of basic public facilities and improving the basic supporting services of food tourism ; the second is to combine local characteristics and develop food theme experience activities ; third, increase publicity efforts to highlight local characteristics and brand image.

Acknowledgments

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