Research on the Difference of Perception Image of Tourists of Tongjing Hot Spring-- Comparative Analysis based on Big Data of Texts from three Network Platforms

Qin Yu[1a*]

[1]Department of Civil Engineering, Ningbo University, Ningbo 315211, China School of Tourism, Leshan Normal University, Leshan, 614000, China
[a*]869753197@qq.com

Abstract

Text comparative analysis of different online platforms has become a new means to study the differences in tourism image. Based on the tourist comments collected by meituan.com, Tongcheng and Ctrip, The tourist images difference perceived by contrastive analysis of tourists on different network platforms using text analysis method. The results show that tourists from the three platforms have a certain difference in their cognitive image of Tongjing Hot Spring, which is relatively consistent, mainly in the cognition of "hot spring", "service" and "environment". The emotional images showed a high degree of consistency, and were mainly positive emotions. The social network structure charts all show core-sub-core-peripheral layer structure, which is mainly manifested in the multi-core circle layer as the core of service and environment, and presents a certain scale of peripheral layer. There are obvious differences in the degree of tightness of structure, from strong to weak, Meituan, Tongcheng, Ctrip.

Keywords: *Network text; big data; Image difference; Contrastive analysis; Tongjing hot spring*

1.Introduction

In the era of big data, network text data analysis can avoid the limitations of traditional questionnaire [1], enhance the scientificity and persuasibility of research [2]. Scholars at home and abroad have carried out a large number of studies on tourism image with the help of network text data, but most of which focus on the centralized summary and analysis of data from one or some network platforms [3-7]. In general, consumers have different subjective preferences, which will lead them to choose different network platforms [8].

However, few scholars have conducted comparative analysis on the differences of tourism image reflected by different network platforms. Therefore, based on the previous research results, taking Tongjing hot spring as an example, this paper obtains the research data from the three network platforms included Meituan, Tongcheng and Ctrip, and compares and explores the differences of Tongjing hot spring tourism image reflected by the data of the three network platforms, so as to provide a new method and basis for the research of

tourism destination image perception in the future.

2. Method data and data sources

This study is based on the "cognition-emotion" model proposed by Baloglu et al. [9], and uses the ROST Content Mining6 (hereinafter referred to as ROST CM6) text analysis software as the carrier for research and analysis. This paper collect relevant online reviews from well-known domestic websites of Meituan, Tongcheng and Ctrip to establish a basic information database. Search for comments related to "Tongjing Hot Spring (Scenic Spot)" on Meituan, Tongcheng and Ctrip, and screen the data of the three platforms separately. There were 3,609 comments on Meituan, and 2,590 on Tongcheng and 1,456 on Ctrip.

3. Analysis of the image difference of tourist destination of Tongjing Hot Spring

3.1. Cognitive image differences of Tongjing hot spring

High-frequency word analysis has become an important method to reveal tourism cognitive image [10,11]. From the comparison data of the three websites, it can be seen that the occurrence frequency of high-frequency words on Meituan is higher than Tongcheng, and that on Tongcheng is higher than that on Ctrip (Tab.1), which may be closely related to the number of online comments captured. It can be seen that tourists are more willing to comment on Tongjing Wenquan Scenic Spot on Meituan, which has a larger comment group. Therefore, more attention should be paid to the information reflected in meituan's tourist review data.

The top three high-frequency words on Meituan are hot spring, environment and service, with frequency of 978, 963 and 856, respectively. And on Tongcheng are hot spring, service and environment with frequency of 919, 681 and 409 respectively. And on Ctrip are hot spring, service and environment with frequency of 705, 260 and 257 respectively (Tab.1). It can be seen that hot

spring, service and environment are the top three high-frequency words on the three platforms (Tab.1), but slight differences among, these indicated that tourists on the three platforms pay special attention to hot spring, service and environment. Hot spring, service and environmental quality are the key points in the development and construction of Tongjing Hot spring Scenic area.

From rank 4 of high-frequency words, the high-frequency words began to show obvious differences. the high-frequency words of Meituan website ranked 4 to 10 are pool, facilities, surfing, water quality, attitude, clean and comfortable; of Tongcheng website are surfing, scenic spot, next time, convenience, attitude, pool and happiness；and of Ctrip website ranked are the pool, surfing, water quality, comfort, next time, place and happiness. Different high-frequency words on different platforms provide different directions for the development of Tongjing Hot Spring.

To sum up, there are some differences in the cognitive image of tourists on the three platforms, but they generally focus on "hot spring", "service" and "environment". The common concerns of tourists focus on hot spring activities, service attitude, facilities and equipment, and the evaluation mainly focuses on positive emotions.

Tab.1: Analysis results of high-frequency words in Tongjing Hot Spring

The Meituan website		The Tongcheng website		The Ctrip website	
High frequency words	Frequency	High frequency words	Frequency	High frequency words	Frequency
hot Spring	978	hot Spring	919	hot Spring	705
environment	963	service	681	services	260
services	856	environment	409	environment	257
pool	525	surf	266	pool	201
facilities	389	scenic spots	236	surf	167
surf	386	next time	231	water quality	130
water quality	302	convenient	224	comfortable	110
attitude	302	attitude	203	next time	107
clean	272	pool	202	place	98
comfortable	237	happy	195	happy	91
next	223	water quality	178	deserve	91
places	192	Fun	166	scenic spots	90
read	169	places	163	clean	86
people	159	comfortable	160	fun	86
towels	156	deserve	149	convenient	81
satisfied	148	Satisfied	130	people	80
waiter	144	friend	113	Attitude	79
happy	142	scenery	111	Chongqing	79
fun	137	tickets	110	facilities	79
convenient	123	free	108	total	72
bath towel	116	time	107	scenery	65
deserve	115	people	105	fit	65

complete	114	fruit	97	experience	64
attentive	114	cost effective	97	friends	60
children	106	karst cave	90	play	59
water temperature	104	decoration	88	children	56
weekend	103	play	87	towel	55
friends	102	facilities	87	various	50
play	96	cheap	86	temperature	48
temperature	90	this time	85	winter	46

The high-frequency words of Tongjing hot spring tourism image of Meituan, Tongcheng and Ctrip are visualized in the form of Word cloud map by Word Art software, so as to feel the tourism image of Tongjing hot spring more intuitively (Fig.1). In the word cloud picture of Tongjing Hot Spring, the font of hot spring, service and environment is the largest and the image is the most prominent.

3.2. The emotional image difference of Tongjing hot spring

By using the emotion analysis function of ROST CM6, this paper analyzed the online comments of the three sites (Tab.2). It was found that the proportion of positive emotions of tourists on the three platforms was the highest, which were 76.75%, 81.35% and 81.87%, respectively. The proportion of negative emotion was 14.21%, 10.77% and 9.48%, respectively. Neutral emotion accounted for the least (Tab.2). It shows that tourists give good feedback to the tourism image of Tongjing Hot Spring, which is unanimously recognized by tourists. After visiting Tongjing Hot Spring tourist destination, tourists mainly show positive emotions, which is consistent with the conclusion that positive adjectives mainly appear in high-frequency words on the three platforms mentioned above. The three platforms have the least proportion of neutral emotions, but they are still an important part. Therefore, Tongjing Hot Spring should not ignore these tourists with neutral emotions in the development process, and actively guide them to positive emotions.

(a)   (b)

(c)
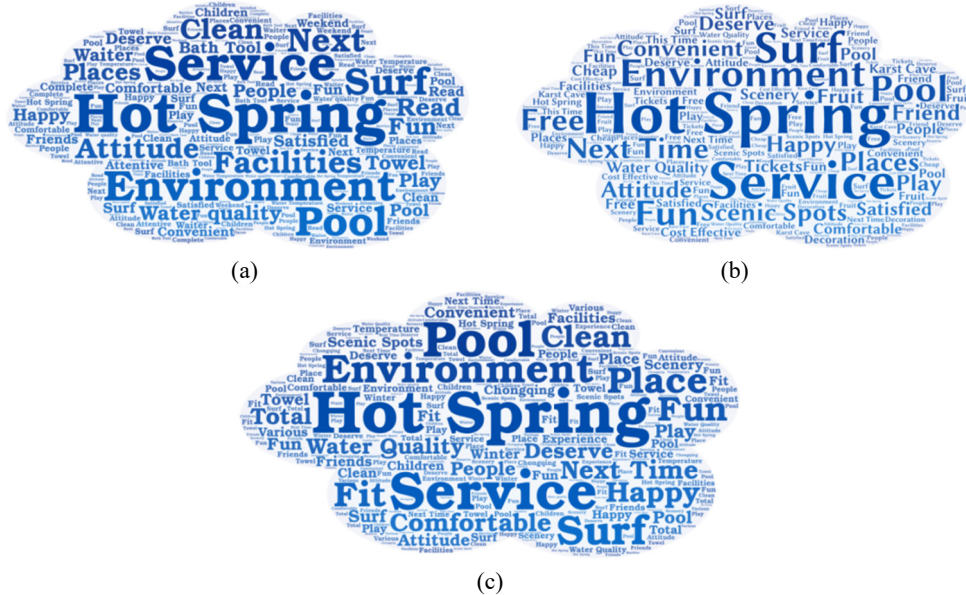
Fig.1 high-frequency feature word cloud map of Meituan(a), Tongcheng(b) and Ctrip(c)

Tab.2: Sentiment analysis of online reviews on Tongjing Hot Spring of Meituan,Tongcheng and Ctrip

platform	emotion	Quantity（bar）	proportion (%)
Meituan	Positive	2770	76.75
	Neutral	326	9.03
	Negative	513	14.21
Tongcheng	Positive	2107	81.35
	Neutral	204	7.88
	Negative	279	10.77
Ctrip	Positive	1192	81.87

Neutral	126	8.65
Negative	138	9.48

Negative emotions accounted for a certain proportion of online comments on the three platforms, mainly in the aspects of low management level of scenic spots, professional service level and service attitude of service personnel, poor water quality of hot springs, outdated facilities and equipment, poor experience, inconvenient transportation, not obvious features of karst caves and canyons, etc. These problems should arouse the attention of relevant developers and managers, and improve them actively, so as to continuously improve the satisfaction of tourists.

3.3. Differences in overall perceived image of Tongjing hot springs

The social network graph of Meituan presents multiple cores centered on hot springs, environment, and services, and the network graph of high-frequency words is relatively concentrated in the inner circle, and the relationship between these high-frequency words is similar to that of the other two platforms. The ratio is the closest, and the coupling between them is more; the outer ring layer is more scattered (Fig.2a). The social network graph of Tongcheng of comments presents a core circle centered on hot springs and services, and a secondary circle centered on surfing and the environment (Fig.2b). The social network graph of Ctrip reviews shows the core circle of hot spring centers, and the secondary circles centered on services, environment, and pools, but the connection between high-frequency words is relatively weak (Fig.2c).

Overall, the differences in the social network structure diagrams of the three websites are not obvious, and they all present a core-sub-core-peripheral circle structure, which is mainly manifested as a multi-center circle with hot springs as the core and service and environment as the sub-core. Present a certain scale of the outer circle layer. However, there are obvious differences in the degree of connection between the three website image perception words. The degree of connection from strong to weak is Meituan, Tongcheng, and Ctrip.
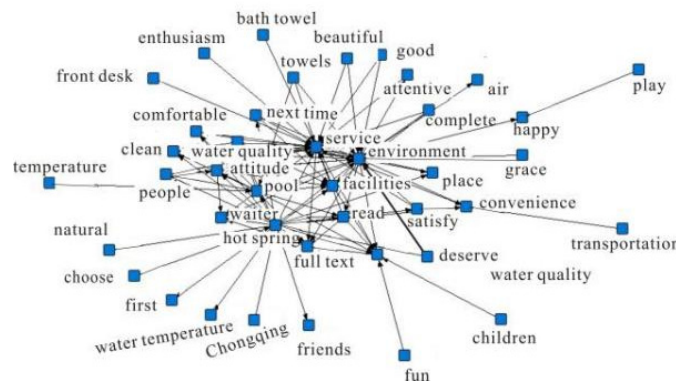

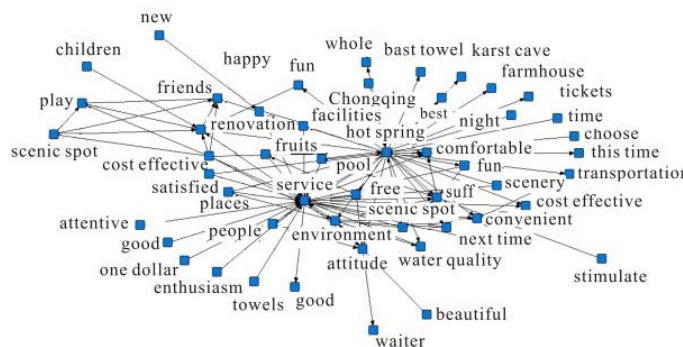**Fig.2a:** The social network diagram of Tongjing Hot Springs of Meituan comments

Fig.2b: Figure.The social network diagram of Tongjing Hot Springs of Tongcheng comments

Fig.2c: The social network diagram of Tongjing Hot Springs of Ctrip comments

4. Conclusion and recommendations

Taking the image perception of Tongjing Hot Spring as an example, this paper analyzes the differences of tourists' cognitive image, emotional image and overall image of Tongjing Hot Spring by using the network text data from Meituan, Tongcheng and Ctrip, and draws the following conclusions.

(1) Tourists on the three platforms have certain differences in their perceptions of Tongjing Hot Spring Scenic Spot, but they generally focus on "hot springs", "services" and "environment", and tourists focus on hot spring activities, service attitudes and facilities equipment.

(2) There is no obvious difference in the analysis of tourists' emotions among the three platforms, which are mainly positive emotions. The factors of negative emotion perception are mainly reflected in the low management level of scenic spots, professional service level and service attitude of service personnel, poor water quality of hot springs, outdated facilities and equipment, poor sense of playing experience, inconvenient transportation, not obvious characteristics of karst caves and canyons, etc.

(3) The differences in the social network structure diagrams of the three websites are also not obvious. They all show a core-sub-core-peripheral circle structure, which is mainly manifested as a multi-center circle with hot springs as the core and service and environment as the sub-cores. Present a certain scale of the outer circle layer.

(4) In order to build a good tourism image of Tongjing Hot Spring Scenic Area, we should pay attention to the online evaluation of the platform and give tourists feedback in a timely manner; pay attention to the data of different platforms, and formulate strategies for target differences; highlight the characteristics and quality of hot springs, and shape the image of medical care and wellness.

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