Web Text Analysis of Image Perception of Tourist Destinations

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Abstracts

This study aims to analyze tourist perceptions of Jinan, China, as a travel destination using text analysis to create tourism products that attract visitors. In the context of the evolving social economy, tourism image plays a crucial role in market competitiveness. Leveraging the internet era, this research collects and analyzes tourist evaluation data from online platforms. Focused on Jinan City, the study employs a "cognitive-emotional" model to analyze online text, exploring tourists' cognitive, emotional, and overall perceptions of Jinan's tourism image. Findings reveal that Daming Lake and Baotu are key cognitive images, with tourists expressing high satisfaction with tourism resources, environment, and activities, reflecting positive emotions overall. The study identifies Jinan's overall image perception as "Spring City," characterized by positive sentiments. By clarifying the gap between tourists' perceptions and Jinan's tourism image positioning as "spring water + culture," the study offers strategies to enhance Jinan's tourism image and contribute to sustainable tourism development.
Keyword: Web Text, Tourist Destination, Jinan, Image Perception

Introduction

From a policy perspective, as early as 2016, the State Council of the People's Republic of China issued the Notice on the 13th Five-Year Plan for Tourism Development. The plan clearly points out that the tourism industry has been fully integrated into the national strategic system and become a strategic pillar industry of China's national economy, which provides policy support for the development of tourism. Tourism has been fully incorporated into the national strategic system, and the number of outbound tourists and tourism consumption in China rank first in the world. This shows that the era of mass tourism in China has arrived, and tourism has become an important part of people's daily life (Chen et al., 2021).

Tourism is a resource-saving and environment-friendly industry. In the development of tourism, with low resource consumption, low environmental cost, and generally no direct hard consumption of resources and the environment, this is exactly in line with the current "two-

carbon strategy" proposed by China.

However, while the tourism industry is booming, it is also bound to face a series of competition and challenges. If every tourist destination or tourist city wants to stand out in the fierce market competition, it will try its best to carry out tourism marketing, and the first problem of tourism marketing is to create a good tourism image of a region. The tourism image of a region has a significant impact on the choice of tourists to travel (Hsu et al., 2004).

Literature Review
Research on Tourism Destination Image
First introduced the concept of Tourism Destination Image TDI (Tourism Destination Image) and understood the impression of non-residence from the perspective of individuals and groups (Chu et al., 2022). Trang et al (2023) believe that destination image is a key determinant of tourist destination choice and loyalty formation. Marković et al (2022) believe that abstract destination image affects the decision-making process of tourists, influencing their intention to visit, revisit and recommend. Therefore, positive destination image is considered as one of the key factors for destination success. Chu et al (2022) believe that destination image influences tourists' perception and view of the destination and plays a crucial role in tourist behavior and travel purchase decisions.

Cho et al (2022) believe that with the rapid increase in the use of social networking services in our daily lives, social networking service data plays a vital role in identifying attraction areas and analyzing the image of tourist destinations. Soonsan et al (2022) showed that destination image influences the functional, social, emotional and economic values of a destination, but does not directly affect tourist satisfaction. Moreover, social and emotional values mediated significantly between destination image on satisfaction and revisit intention.

Maghrifani et al (2022) showed that for potential visitors, travel motivation only indirectly affects travel intention through destination image and tourist image congruence, while for repeat visitors, travel motivation directly and indirectly affects revisit intention. By comparing the motivation-image-intention relationship between potential visitors and repeat visitors, it was found that the interaction-seeking motivation, destination image, and visitor image congruence of repeat visitors had a greater direct effect on intention than that of potential visitors, while the novelty-seeking motivation and reassurance-seeking motivation of potential visitors had a greater effect on destination image than that of repeat visitors.

Wang et al (2022) showed that the consistency between tourist's perception of the destination and the public's evaluation of the destination's perception is the basis of destination image construction. Tourists' destination image perception is an important antecedent variable of tourists' behavioral intention, and perceived value and place attachment are two important mediating variables. From the perspective of the overall effect of tourists' behavioral intentions, the effect of tourists' destination image perception is the largest, perceived value is the second largest, and place attachment is the smallest. Pavesi et al (2022) study explored what role social interaction plays in the process of destination image formation in group vacation tourism situations. The study found that intra-group social interactions during the visit influenced the cognitive and affective components of individual destination image.

Chen et al (2021) and others argued that destination image perception aims to portray the image of urban tourism from the perspective of tourists' perceptions, which provides a new way of thinking about the development and innovation of urban tourism. Azeez et al (2021) argued that destination image is considered as one of the elements that influence tourists in choosing tourist locations that satisfy their wishes and desires in a way that corresponds to their expectations of such locations. Destination image influences tourist behavior by stimulating their desire to travel and engage in tourism activities, and influences tourist behavior during the decision-making process before, during, and after the trip. Destination image is also linked to tourists' evaluation of their travel experience and the extent to which this experience meets or approaches their satisfaction with their earlier expectations. Weru et al (2021) examined the impact of commercial event experiences on international tourists' perceived destination image. The study showed that commercial event experience affects the cognitive image and overall image of the destination. The cognitive image of the destination influences the emotional and overall image of the destination, while the emotional image of the destination influences the overall image. Tavitiyaman et al (2021) argued that the more time a tourist spends on information search, the more the relationship between perceived destination image and behavioral intention is enhanced.

Al-Gasawneh et al (2020) showed that there is a positive link between travelers' intentions and their image of the destination. The study also determined that the image of the destination is influenced by the use of social media, leading to an increase in the likelihood of travelers choosing to visit the area. Hallmann et al (2015) used structural equation modeling to construct an image analysis model for winter sports destinations and conducted an empirical study of winter destinations in Germany and Austria. Martín-Santana et al (2017) used questionnaire data to comparatively study changes in tourists' perceptions of the destination's image before and after the tour activity, and proposed its influencing factors. Moon & Han (2019) centered on the moderating role of the image of tourism destinations and studied the relationship between tourism experience, satisfaction, and loyalty.

Wang et al (2018) established a model of the cognitive process of the elements of the image of a tourist destination by adopting the theory of rootedness, and adopted a statistical method to analyze the dimensions of the cognitive process of the elements of the image of a tourist destination, and the relationship between tourism experience, satisfaction, and loyalty. destination image elements cognitive process of the dimensional differences to study.

Application of Web Text Analysis in Tourism Research
Li et al (2021) investigated Chinese tourists' perceptions of North Korea's tourism image using text mining and semantic web analysis methods. Changes in high-frequency words indicate that Chinese tourists' interest in North Korean history has weakened in recent years and their interest in attractions and tourism products has increased. This study makes an empirical case for the study of tourists' perception of North Korea's tourism image and provides targeted suggestions for the sustainable development of North Korea's tourism industry.

Gholamhosseinzadeh et al (2023) studied the use of weblogs to better understand this impact on the formation of destination image. A weblog approach to identifying destination image attributes through social media communication is provided, along with theoretical and managerial insights in tourism promotion and digital marketing. Guo et al (2016) applied gray

correlation analysis to the rating evaluation of tourism destinations in Taiwan, China. The results of the study showed that GRA can still be successfully used for tourism destination evaluation although the same scale is small and the data distribution is unknown.

Danmei (2019) used a combination of ROST Content Mining 6 software and content analysis to characterize the reviews of tourists after staying in Xitang B&Bs, with a view to understanding the core demand tendencies of tourists for Xitang B&Bs. The study found that both positive and negative reviews, tourists were most concerned about the facilities of the room, the location and the service attitude of the landlord. Zhong et al (2022) took Zhanjiang "Scammoniac Island", which is in the beginning stage of tourism development, as an example, and explored tourists' cognitive and affective images of "Scammoniac Island" through online text analysis. The study found that the characteristic scenic spots and special food are the key elements to create a differentiated image.

Cho et al (2022) argued that with the rapid increase in the use of social network services in our daily lives, social network service data plays a crucial role in identifying attraction areas and analyzing the image of tourist destinations. Saltos et al (2021) analyzed the presence and management of social networks in 78 tourist destinations, and through descriptive analysis, correlation analysis and analysis of variance concluded that, despite the significant presence of tourist destinations on the Internet and social networks, their management is not sufficient to contribute to the development of sustainable tourist destinations. Studies have shown that there is a direct relationship between the number of tourists in a destination and its presence on social networks. Shin et al (2021) considered network text analysis as a commonly used method to analyze research trends by forming networks based on the article's title data, i.e., keywords.

Literature Gaps

Through the combing of the above experts and scholars about the literature on the image of tourism destinations, it can be seen that although the history of research in this field is long, but with the development of time there are still new results, and there is no lack of highlights, which can be said to be time-honored. However, there is still a lack of researchers through the network text analysis method of tourism destination image perception of the research results are relatively weak.

This study in the summary of the above relevant literature on the basis of the development of the times, and try to use python language tools, literature analysis method as the basis of the research method.

The network text analysis method, spatial analysis as the main research method, and other research areas combined with psychology, sociology, history and other disciplines as research perspectives, taking Jinan City as the research area, both the destination image dimension of previous research. But also for the specific characteristics of tourism image in Jinan City to carry out a special analysis, research on the cognitive image of tourists, the emotional image, the overall image, the official definition of the image as well as the spatial differences in tourism image, to fill in the analysis of the image perception of tourism destinations through the network text of the research results.

In addition, it can also be seen that there are more research results on tourism image with Beijing, Dalian, Sanya, Harbin and other first-tier cities in China as the research field, but the research results on tourism image with Jinan as the research field are vacant, and this study fills the gap in the research on tourism image perception in Jinan. It is expected that the research of this paper will make a modest contribution to the shaping of the tourism image of Jinan City.

Methodology

The objective of this research is to delve into online content produced by tourists and grasp their perspectives on the destination image (DI), particularly for destination marketing organizations in Jinan city, China. The method of choice for this investigation is text mining. This selection is based on the premise that text mining can effectively uncover valuable insights into tourists' perceptions of the DI within the extensive pool of information stemming from tourists' reviews (Kim and Kang, 2018; He et al., 2013). Text mining is a subset of data mining that extracts significant patterns or information from extensive, unstructured documents, enabling the summarization and categorization of textual data across diverse domains. The statistical model underpinning text mining relies on statistical estimates utilizing word frequencies and ratios (Kim and Kang, 2018). The study employs the case study approach as a qualitative research method, drawing parallels to how numerous industrial reports and trend analyses have widely embraced text mining, utilizing word frequencies and ratios, to elucidate and expound upon cases in various domains, such as business (Ingvaldsen and Gulla, 2012; He et al., 2013; Kim and Kang, 2018), health science (Li et al., 2012), and education (Abdous and He, 2011; Hung, 2012). For instance, Witten et al. (2003) harnessed text-mining techniques to extract metadata from digital library documents and enhance user experience by annotating pertinent elements within the text. Abdous and He (2011) similarly applied text-mining methods to scrutinize queries posted by video-streaming students, unveiling multiple patterns related to learning and technology matters. Consequently, this study zeroes in on frequency analysis, a technique commonly embraced in both industrial and case study reports, as opposed to more intricate text mining procedures. Through frequency analysis, this study aims to paint a comprehensible and insightful picture of Jinan.

Content Analysis Method

Content analysis method is a qualitative method, by refining the content of the text, to produce data that can be analyzed, and ultimately to draw some essential characteristics of the object of study, and based on this conclusion to propose appropriate recommendations and countermeasures. The content analysis method has been widely used in the study of tourism since the millennium. Especially in recent years, with the help of the characteristics of the network such as openness, plurality and sharing, the network analysis in the content analysis method has become a very important research method in tourism research.

The network text analysis method used in this paper is a kind of content analysis method, which is mainly characterized by extracting content from the network for related research. In this paper, through the Python programming crawler program, data crawling of tourists' travelogue data about Jinan is carried out from the Chinese mainstream tourism portals, such as Ctrip.com, DonkeyMom.com, and GoWhere.com. Then through the Python language, the crawled text content is processed.

Python language can realize the processing of word segmentation, word frequency statistics, clustering, sentiment analysis, social network analysis and other processing of network text content, so as to realize the "quantitative" processing of text data. In recent years, domestic scholars have begun to try to use this computer language for tourism destination image research. Therefore, in this paper, we use Python to quantitatively analyze the travelogue data published by tourists in Jinan City, extract the high-frequency words and their frequency counts in the travelogue by using the word frequency analysis function, and refine the overall image of Jinan City as perceived by the tourists; we obtain the social network diagram of the travelogue content through the co-occurrence analysis, and further analyze the interrelationships between the high-frequency words; and finally, we use the sentiment analysis function to study the tourists' affective tendencies.

Theoretical Basis

The "cognitive-emotion" theory in psychology points out that people first come into contact with things and behaviors in a specific environment, and then generate corresponding emotions. Cognition is the source of emotion, the basis and premise of emotion generation. Emotion is an extension of cognitive concepts. Kozan et al. (2019) proposed a "cognitive-emotion" model of tourist destination image perception at the end of the 20th century, and pointed out that image perception is characterized by persistence and complexity, and divided "perceived image" into cognitive image, emotional image and overall image. The formation of tourist destination image perception is a process of tourists' psychological participation and a process of repeated integration of tourists' cognitive image, emotional image and overall image of the tourist destination (Figure 1). It is the coordination and continuous integration of the three that promotes the establishment and consolidation of the composite image of the tourist destination, so as to promote the smooth completion of the tourist perception process.
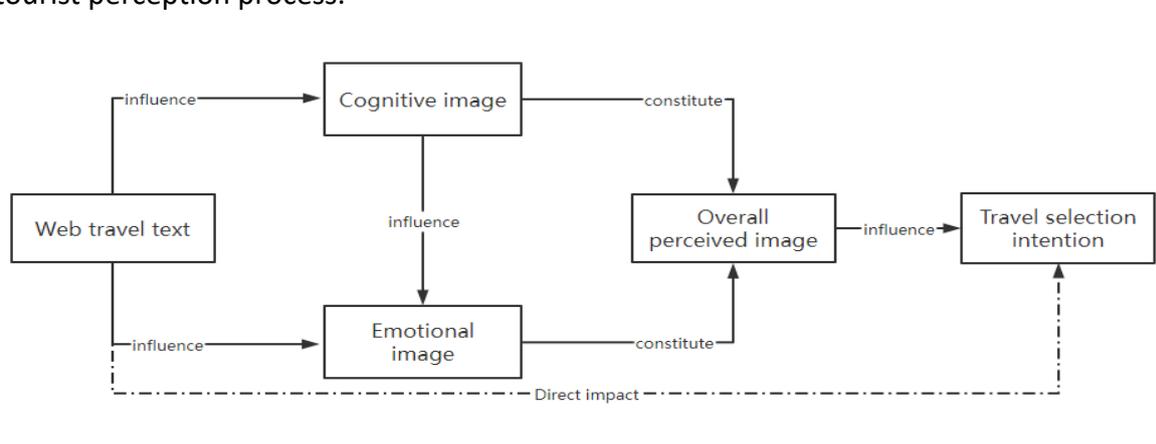

Figure 1. The mechanism of the cognition-emotion model

The destination image is expected to have a strong relationship with tourists' decision making. When choosing a destination, potential tourists will comprehensively compare and analyze the tourism image of the destination. Due to the unique characteristics of tourism products such as immobility and intangibility, before deciding the final destination, potential consumers have no understanding of local tourism products and cannot experience tourism products or activities in advance, which leads to greater unknown risks. Therefore, the image of tourist destination obtained in advance by potential tourists from online travel notes can avoid risks brought by unknown tourist destinations to some extent and bridge the gap

between pre-trip expectation and travel experience. Tourists experience two spatial transformations in the process of travel, and their perceptual processes also change with the spatial transformations.

They are pre-trip impression, travel experience and post-trip perception, and their perceptual content is different. In the pre-tour impression stage, tourists' psychological expectation is influenced by the online word of mouth of the destination, their personal needs, previous experience and external publicity, and they have the initial feeling of the destination city. To some extent, tourists' psychological expectation will compare the first impression when they enter the destination city, and affect their emotional cognition. Thus affecting the tourism experience of the image of the tourist destination. During tourism experience in the destination city, the attributes of tourism perception image include tourism resources, tourism environment, tourism infrastructure and supporting services, and tourism activities, which together constitute the cognitive image generated by tourists in the tourism experience and the emotional image generated based on cognition.

After leaving the destination city, tourists will have a post-trip perception of the city's tourism image, which is mainly a comprehensive evaluation of the city's tourism image, including the city image, the difference between the pre-trip impression and the tourism experience, etc. The post-trip perception will determine the tourists' willingness to revisit and recommend to a certain extent. Thus affecting the improvement and promotion of the city's tourism image.

Research Design
The process of data collection is as follows: determine the data collection website -- obtain the web text -- preprocess the data sample -- analyze and mine the data sample.

Data Collection
The data of this article are gathered from web travel notes and comments, also known as User Generated Content (UGC), or user-generated content or user-original content. In the field of tourism, UGC is the evaluation of travel notes written by tourists after the tour or for a single tourism product (such as a hotel, a single scenic spot) in the whole tourism process. Online travel notes are characterized by the characteristics of strong openness, high freedom, diversity and authenticity, which can better reflect the real information and ideas of tourists rather than the questionnaires. However, network travel notes also have many data miscellaneous, irrelevant data and other problems. This study conducted text analysis on all tourist attractions in the Shandong area. In future studies, if the scope of research is reduced and analyzed, more accurate meanings can be found.

In view of the ranking of travel websites, this paper combines the Alexa ranking of Amazon (Amazon) and Baidu Index (Baidu Index). Alexa is known for its world rankings of professional publishing sites, publishing comprehensive rankings of global websites once every three months. The factors influencing the Alexa rankings are as follows:

    1 Alexa is ranked by the number of visits to each particular site. The higher the visits, the higher the ranking.

2. Access volumes included into the statistics came only from users using the Alexa toolbar (Alexa Toolbar). That means that users should first download the Alexa toolbar and embed it in their browser. In this way, when the user visits a website, its access record is counted as the number of visits to the site being visited.

3. The Alexa toolbar can only work in the Windows operating system and the Internet Explorer (IE) browser, and website visits using other operating systems or browsers will not be logged.

4. Influenced by the language, region, culture and other aspects of users using Alexa toolbar, the visit data of English websites than websites in other languages is more likely to be fully counted by Alexa.

Because most Chinese Internet users (especially the mainland China) did not install A Lexa tool bar and use the proportion of other types of browser is larger, so when they browse the web page, has not been Alexa records, so for Chinese website, Alexa tool bar provides the sample is not representative, its ranking and the website reality access situation is different, so Alexa ranking does not reflect the real traffic of the website, can only be a reference. But most authorities around the world discuss the size of a website by Alexa's ranking.

Therefore, based on the above situation, this paper in the selection of travel website, and a comprehensive reference to the Baidu index (Baidu Index). Baidu index officially launched in November 2007, it is based on Baidu search engine, through the huge amounts of Chinese netizens search behaviour data on the basis of analysis, can obtain including search index, demand map, crowd portrait, a variety of network hot data, for Chinese website ranking, Baidu index has more practical significance than A Lexa. Combining the two rankings, this research selects Ctrip, four mainstream travel portals, Lvmama and Hornet's Nest.

Data Analysis

The data source of the website to determine the site in the travelogue search keywords "Jinan", and the use of "artificial + software" form, the relevant data to capture. Due to the large number of travelogues obtained, the quality varies, in order to better obtain the data for the study of this paper, the text data obtained were screened: first, the quality of the content of the travelogues determines the accuracy of the data, so the advertisements for food and beverage, hotel accommodations, tour guide services, transportation and travel services were deleted, recruitment postings, as well as the website's introduction to the tourist attractions of Jinan City postings; second, in order to ensure that in the subsequent text analysis, the accuracy of the data processing results, the data processing results were deleted, the data processing results were deleted. Third, in order to ensure the accuracy of the data processing results in the subsequent text analysis, if Jinan is only part of the total tourist destinations within the travelogue, it is also eliminated to ensure the absolute accuracy of the data. Third, the style of the travelogues was selected only in the form of narrative, and other forms such as prose and poetry were filtered out to facilitate the subsequent text processing. Fourth, the collection time period was December 2021-December 2022. Summarizing the above conditions, a total of 305 travelogues were filtered out, as shown in the Table 1.

Table 1
Statistical Table of Travel Notes in Jinan

Website	URL	Before screening	After screening
Ctrip	https://you.ctrip.com/travels/jinan128.html	2200	1649
Where to go to the net	https://travel.qunar.com/search/gonglue/22-jinan-300150/hot_heat/1.html	800	465
A hornet's nest	http://www.mafengwo.cn/search/q.php?q=%E6%B5%8E%E5%8D%97&t=notes&seid=99503281-9913-4A0B-B694-A16737468F21&mxid=&mid=&mname=&kt=1	301	229
Donkey mother	http://www.lvmama.com/trip/search/?kw=%E6%B5%8E%E5%8D%97	71	54

Since the crawled text content is freely published by netizens on various travel websites, the level of language organization and expression of each travelogue is not consistent, which will lead to a large amount of redundant data and even biased analysis results in the subsequent text analysis. In order to facilitate the subsequent use of Python language for network text analysis, and to improve the efficiency and accuracy of the analysis as much as possible, it is necessary to preprocess the text content without changing the original meaning of the network text. This preprocessing will first get the content, according to the source of the website named "website + travelogue" format files, such as "Ctrip travelogue", "hornet's nest travelogue", "Where to travel", "donkey mom travel" 4 Word documents. ① Delete irrelevant content, manually check all the data, manually eliminate duplicate content, trip introduction, and content unrelated to the trip; ② merge similar items, unify the travelogue within the same terminology, such as "spring", "spring", "spring pool" unified as "spring"; "climbing", "mountaineering" unified as "climbing"; "Catholic Church", "Hongjialou Church", "church" unified as "Hongjialou Church"; "driving" is unified as "self-driving"; "Jinan City" is unified as Jinan"; "tourism", "tour", "sightseeing", "travel"; "tourism"; "tourism"; "tourism"; "tourism"; "tourism"; "tourism"; "tourism"; "tourism"; "tourism". "tourism"; "public transportation" is unified as "bus"; "cheap", "inexpensive", "not expensive", and "not expensive" are unified as "bus"; and "bus" is unified as "bus". "inexpensive", "inexpensive", etc. unified as "cheap"; will be "crowded", "crowded", "queuing", etc. to "crowded", etc.; will be "sneaking" "stroll" unified as "stroll" ③ a small number of travelogues in English and traditional Chinese characters into simplified Chinese ④ delete irrelevant formatting, such as Chinese punctuation, spaces, special symbols, etc.; ④ to establish a customized word list. In order to ensure more accurate word separation and extraction of high-frequency words, and to improve the relevance and rationality of the study, this paper establishes a customized word list containing the vocabulary of popular tourist attractions in Jinan City (Baotu, Thousand Buddha Mountain, Daming Lake, etc.) and different areas (Lixia District, Tianqiao District, Shizhong District, etc.), and unifies the different expressions referring to the same object such as the name of the place and the name of the attraction, so that it can be easier to carry out the frequency statistics of high-frequency feature words. ⑤ Put words not related to the research topic of this paper into the filter word list, such as articles (each, one day), pronouns (here, we), intonation auxiliaries (of), etc. This step will realize the initial filtering of the text content, which greatly reduces the number of irrelevant content. This step will achieve the initial filtering of the text content, greatly reducing the amount of irrelevant content. ⑥ The modified content will be stored as a txt file named "Jinan City Travelogue", to be analyzed in the next step.

Research Findings
Cognitive Image Analysis-High Frequency Feature Words Statistics
Objectively speaking, the higher the frequency of a word, the greater the impact of the word on tourists. The high-frequency feature words about Jinan's tourism image were extracted through python language (**Table 2**), and the words with the top 150 word frequencies were selected for analysis according to the frequency of occurrence from high to low.

Table 2

High-frequency vocabulary of Jinan tourism image

Vocabulary	Word frequency	The characteristic or property of a certain word	Vocabulary	Word frequency	The characteristic or property of a certain word	Vocabulary	Word frequency	The characteristic or property of a certain word	Vocabulary	Word frequency	The characteristic or property of a certain word
Jinan	20431	noun	self-driving	1503	verb	barbecue	460	noun	Hang Lung square	341	noun
Daming Lake	12059	noun	have a rest	981	verb	food street	457	adjective	attract	340	verb
scenic spot	10241	noun	regret	977	adjective	clean	453	adjective	Qianlong	340	noun
Spouting Spring	9327	noun	life	965	noun	music	453	noun	lithoglyph	338	noun
spring water	7582	noun	fosse	961	noun	summer	453	noun	Song Dynasty	338	noun
tour	5801	verb	breakfast	923	noun	Zhangqiu	449	noun	pedestrian mall	338	noun
hotel wineshop	4556	noun	Liberation pavilion	922	noun	Braised Intestines in Brown Sauce	446	noun	mal	335	adjective
park	4425	noun	nature	909	noun	flowing	441	verb	enthusiasm	333	adjective
Spring City	3965	noun	In the generous	839	noun	a place famous for its scenery or historical relics	441	noun	Lao Cai	331	noun
Quancheng square	3894	noun	city proper	787	noun	north	439	noun	nill	322	verb
Shandong	3728	noun	Shandong cuisine	772	noun	sunlight	432	noun	serve	322	verb

train	3715	noun	fountain	772	noun	figure of the Buddha	427	noun	thin pancake made of millet flour	318	noun
scenery	3545	noun	limpid	727	adjective	Yuquan	424	noun	happiness	317	adjective
Thousand Foshan	3375	noun	Summer rain lotus	721	noun	activity	421	verb	midday meal	316	noun
Lotus street	3214	noun	winter	691	noun	commemorate	417	verb	freedom	314	adjective
fine food	3079	noun	Pearl spring	690	noun	enjoyment	413	verb	student	312	noun
history	2818	noun	fit	687	adjective	the surface of the water	412	noun	arder	311	verb
daytime	2650	noun	straw bag steamed stuffed bun	685	noun	shopping	411	verb	lovable	308	adjective
entrance ticket	2632	noun	cheap	638	adjective	feel happy	408	adjective	theme	305	noun
like	2596	verb	beer	631	noun	animal	407	noun	memorial hall	305	noun
Black tiger spring	2538	noun	weather	626	noun	art	406	noun	flourishing	303	adjective
Five longtan	2441	noun	route	597	noun	spring	400	noun	bus	300	noun
city	2065	noun	eat	580	verb	wharf	399	noun	depot	300	noun
Shandong Provincial Museum	1897	noun	stay	579	verb	outward appearance	396	adjective	supper	299	noun
Hongjialou Church	1866	noun	Divine Rock Temple	578	noun	the sun	396	noun	Qing dynasty	295	noun
building	1858	noun	street	565	noun	Baihuazhou	395	noun	memorial archway	295	noun
correct	1824	adjective	Lao She	555	noun	not a hundred miles from	395	adjective	former residence	294	noun
evening	1820	noun	Red leaf valley	554	noun	lively	394	adjective	east	294	noun
culture	1674	noun	old practice	545	noun	old man or woman	394	pronoun	waterfall	293	noun
bus	1648	noun	be worth	543	verb	a Buddhist temple	391	noun	modelling	292	noun
the best in all the land	1582	adjective	Shandong	541	noun	fine	387	adjective	Ten thousand Buddha hole	292	noun
characteristic	1533	noun	memorial hall	540	be worth	cicerone	383	noun	the light of a lamp	291	noun
lotus	1522	noun	quiet	540	adjective	good-looking	382	adjective	autumn	289	noun

mountain-climbing	1484	verb	environment	533	noun	the flavour or taste of food	376	noun	be pleased	286	adjective
taste	1389	noun	ancient city	524	noun	ghat	375	noun	youth	282	pronoun
visitor	1347	noun	form a line	520	verb	The meat	374	noun	go straight to	281	verb
morning	1341	noun	to buy a ticket	518	verb	menagerie	373	noun	teacher	280	noun
free	1337	adjective	The detached building	516	noun	Mountain color	372	noun	go sightseeing	280	verb
famous	1300	adjective	view and admire	514	verb	garden	370	noun	scale	279	noun
recommend	1260	verb	pleasure-boat	511	noun	cyprinus carpio	370	noun	around the city	278	verb
Qu Shui Ting Street	1209	noun	impression	511	noun	go home	368	verb	Hundred pulse spring	278	noun
Li Qingzhao	1138	noun	the Huanghe River	507	noun	Ming Dynasty	368	noun	Sweet foam	276	noun
Jinan people	1135	noun	university	503	noun	Calendar pavilion	366	noun	train or bus ticket	274	noun
pretty	1114	adjective	put down in writing	496	verb	weekend	364	noun	red autumnal leaves	274	noun
Salix babylonica	1088	noun	saunter	487	verb	southwest	359	noun	Buddhism	273	noun
airdrome	1073	noun	collect fees	466	noun	night scene	356	noun	stone tablet	272	noun
go on foot	1045	verb	driver	466	noun	cable car	351	noun	a plank road built along the face of a cliff	270	noun
Wang Fu pool	1027	noun	The mountain	465	noun	taste	350	verb	times	269	noun
take a taxi	995	verb	style	461	adjective	Quancheng road	346	noun	grand sight	268	adjective
hotel	991	noun	fine	461	verb	miss	341	verb	lunch	268	noun

First of all, from the lexical analysis, according to the high-frequency vocabulary table 4.1 can be seen: 150 Jinan tourism image of high-frequency words, containing 129 nouns, 12 verbs, 9 adjectives, a total of three categories. The largest number of nouns, accounting for 86% of these nouns are mostly attractions, place names, and physical objects seen along the way, such as "Daming Lake", "Baotu", "Springs Square", etc. The second largest number of nouns

is 12 verbs. Second in line are 12 verbs, mostly reflecting the specific behavior of tourists throughout the travel process in Jinan, such as "walking" and so on. This is followed by 9 adjectives, which describe the characteristics and features of Jinan, such as "famous", "the first in the world", and so on.

Then the high-frequency vocabulary table 4.1 to carefully analyze can be seen: Daming Lake, Baotu, Quancheng Square, Furong Street, Thousand Buddha Mountain, Heihuquan and other tourist attractions ranked higher, respectively, ranked 2nd, 4th, 10th, 14th, 16th, and 19th, which indicates that tourists pay more attention to the above attractions. The annual reception of tourists in the above attractions is high, fully reflecting the image positioning of Jinan.

Meanwhile, in terms of tourism feelings, positive adjectives such as like, good, first in the world, recommended, and verbs indicating positive emotions also have a high rank order, which reflects that tourists are more satisfied with the evaluation of Jinan's tourism, and the overall impression of tourism is good; Various types of humanities tourism resources are mature and rich in sources of tourists, and the rich tourism landscape and programs and beautiful natural environment are the main sources of positive emotions perceived by tourists. The main source of negative perceptions is specifically reflected in the scenic spots (points) congestion, commercial color is too heavy, the transportation infrastructure is not perfect and other tourism infrastructure and supporting aspects.

 As for choosing the mode of transportation and travel, the rank order of the words train and airport is prominent, which shows that a large number of tourists chose to take the train, the motorcycle and the plane to Jinan to conduct tourism activities. In terms of transportation choices, the words train and airport stand out, showing that a large number of tourists choose to travel to Jinan by train, train and airplane, so to some extent the convenience and location of Jinan Station, Jinan West Railway Station and Yaowan Airport influence tourists' first impression of Jinan's tourism image; in terms of tourism specialties, the words "gourmet food", "breakfast" and "Lu Cuisine" are more satisfactory than others, In terms of tourism specialties, "food", "breakfast" and "Lu cuisine" are more prominent, which to a certain extent also reflects the tourists' motivation for traveling.

Classification of Tourism Resources

Humanities and history. Strictly speaking, most of the famous tourism resources in Jinan have both natural and humanistic attributes, but with stronger historical and cultural tendencies. In the first one hundred high-frequency words selected humanities and history of the vocabulary, according to the number of words in order of frequency as "Daming Lake", "Baotu", "Thousand Buddha Mountain". Among them, "Daming Lake" appeared 12,059 times, accounting for 28.67% of the humanities and history of tourism resources; "Baotu" has 9,327 times, accounting for 22.17%; "Thousand Buddha Mountain". In Jinan, many spring water tourist attractions in a unique, appearing frequency of 3,375, accounting for 8.02%. And these top three tourist attractions are also the three major historical attractions in Jinan.

Modern City Scenery. As a city combining tradition and modernity, Jinan's tourism resources include not only traditional historical and humanistic landscapes, but also modern cityscape, which is an important tourism resource to attract foreign tourists. Among the high-frequency

words about modern cityscape, Quancheng Square appears 3,894 times, making it the most frequent word. From the perspective of modern cityscape alone, the popularity of Quancheng Square is no less than Baotu and Daming Lake. As the tourists "Ryan" said: "I believe that Quancheng Square is every come to Jinan will have to go to the place, and this is also the center of Jinan, Jinan's most prosperous and most lively attractions are the most concentrated places," tourists "Every day beat the old fat" also wrote in the travelogue, "Jinan's landmark, located in the center of the city, every traveler to Jinan will be in the spring mark below the photo, and the status of Guangzhou's Little Barbarian Waist is about the same. Surprisingly, the second most frequent word is "museum", which refers to the Shandong Provincial Museum, the first provincial geographic museum established after the founding of New China. Visitors rate it very highly, and there are even few negative comments, such as the visitor "D.M.G. Dog" in his travelogue on the Shandong Provincial Museum in a detailed, vivid, positive evaluation: "Shandong Museum interior hall is set with a huge jade jade-colored jade bik above. Jade is one of the traditional ceremonial jade objects in China, basically in all large domestic museums have a collection, but like the Shandong Museum made such a huge top is the first time to see, really shocking. In addition to some famous permanent exhibition, there is also by Kenneth Behring donated animal specimens composed of the African wildlife migration exhibition, the exhibition hall is very well designed, adults will not feel childish, children are also more like

Natural scenery. There are only 2 high-frequency words for pure natural scenery, accounting for a relatively low percentage, namely Red Leaf Valley (554) Yellow River (507). This again reflects that Jinan, as a famous historical and cultural city, has tourism resources that are more biased towards humanistic and historical attributes, while there are fewer tourist attractions that use purely natural scenery as tourism resources. This also points out a clear direction for the future development of Jinan's tourism resources: further tourism development of natural resources such as mountains, water, forests, fields and lakes in the neighboring areas, and further enrichment of the number and quality of Jinan's natural scenery-based tourist attractions.

Food Specialties. In the high-frequency vocabulary about local specialty food, several words appeared, of which Lu Cuisine appeared 772 times. As the first of China's eight official cuisines, Lu Cuisine has a long history and rich culinary skills, and therefore occupies a very important position in tourists' perception of Jinan's tourism image. In addition to "Lu Cuisine", other words about food such as "straw baozi", "beer", "barbecue", "nine-turned large intestine", "nine-turned large intestine" and "nine-turned large intestine" are also used in Jinan's tourism image. In addition to "Lu Cuisine", other words about food, such as "straw buns", "beer", "barbecue", "nine-turned large intestine", "pork", etc., also appeared in the top 150 high-frequency words, which cover a variety of styles of food and drink, such as breakfast, drinks, fast food, and regular meals, reflecting the tourists' high level of awareness of the local specialties of Jinan, and also indicating the richness and diversity of the local culinary culture. the richness and diversity of the local food culture, which has become an important part of Jinan's tourism.

Table 2

Classification and Statistics of High-Frequency Words of Tourism Cognition Image in Jinan City

Level 1 category	Secondary category	Specific high frequency words
Tourist attractions	Cultural and historical landscape	Daming Lake (12059) Baotu Spring (9327), Qianfo Mountain (3375) Furong Street (3214), Black Tiger Spring (2538), Wulongtan (2441) Hongjialou Church (1866) Qushuiting Street (1209), Wangfu Pool (1027) moat (961), Jiefang Pavilion (922), Pearl Spring (690), Lingyan Temple (578), detached Building (516). Baihuazhou (395), Lixia Pavilion (366), Wanfu Cave (292), BaimSpring (278)
	Modern city style	Quancheng Square (3894) Museum (1897) Kuanhouli (839) Zoo (373) Quancheng Road (346) Hang Lung Plaza (341)
	natural scenery	Hongye Valley (554) Yellow River (507)
	delicacy	Lu CAI (772) straw bun steamed stuffed bun (685) Beer (631) Barbecue (460) Nine turn large intestine (446) handle meat (374) Yellow River Carp (370) pancake (318) sweet foam (276)

Conclusions

This paper adopts text analysis, semantic network and sentiment analysis methods, based on the "cognitive-emotional" model of tourism destination image, and explores the tourists' perception of Jinan's tourism destination image from three aspects: cognitive image, emotional image and overall image.

In terms of the cognitive image of Jinan city, Daming Lake, Baotu Spring and Thousand Buddha Mountain are the top three historical sites cognitively perceived attractionsof Jinan city, which shows Jinan city is firstly a historical or cultural destination. Meanwhile, Jinan city is a modern city with Quancheng Square and Shandong Prvincial Museum the prominent landmarks for its modern style. Additionally, there are special foods benefitting the visitors. As for the natural beauty of Jinan city, it is then not greatly perceived by the visitors. Thus, Jinan city is perceived by the visitors as a historical city mixed with some modern characters and authentic foods.

In terms of the emotional aspect of visitors to Jinan city, positive emotions are dominant in their evaluations such as the mature humanityies, rich attractions, qualified environment, etc. while there are still room for the not satisfied ones such as traffic jam, over commercialization, infrastructure, etc. In this way, Jinan's overall image perception can be "spring city" and the overall image perception is overall positive. The findings of the study are basically consistent with the "cognitive-emotional" three-dimensional model of destination image.

Recommendations

Firstly, it is necessary to dig deeper into the cultural connotation of the destination, strengthen the shaping of local cultural IP, and promote the integration of culture and tourism. As a cultural symbol emphasizing uniqueness, IP should reflect the essence of local

culture as much as possible. Therefore, it is necessary to strengthen the excavation and introduction of local customs and people, and tell Jinan's own story: ① For different scenic spots, design and produce cultural creative products, plan cultural creative derivatives, and combine traditional culture with popular elements; meanwhile, the cultural creative image made will be used in Jinan's tourism publicity, which will have an obvious promotion effect on Jinan's tourism image. ②Transmit the value and charm of local culture to tourists through a series of carriers such as scenic sculptures, street architecture, signage, cultural and creative products, folk activities, and so on, to form a unique cultural theme.

Secondly, satisfy tourists' needs, enhance the visiting atmosphere, and optimize the tourist experience. In the previous analysis, it is concluded that the emotional components of tourists visiting Jinan are mainly positive emotions, and although the proportion of negative emotions is relatively low, it should be noted that the negative word of mouth can have a significant adverse impact on the overall image of the scenic area, and thus scenic area managers should pay great attention to the causes of negative emotions and optimize and improve them, so as to continuously satisfy the tourists' demand for tourism experience. Through the analysis of the network text in the previous section, it is found that traffic congestion in the urban area, crowded scenic spots, and too much commercialized atmosphere are the main factors that cause tourists' negative emotional experience. Therefore, first, the surrounding public transportation system and signage system for scientific planning, encourage the development of tourist buses in the peak season directly to the scenic spots, tourism lines, etc., in the line to form a direct access to other important transportation nodes in the city, to facilitate tourists to quickly arrive at the scenic spots; Second, for the "Baotu", Secondly, for the "Baotu", "Daming Lake" and other popular tourist attractions, combined with the layout of the scenic area within the functional area, rational planning of multiple excursion routes, decentralization and diversion of the main tour of the line on the pressure of the crowd. Thirdly, the business activities within the commercial streets such as "Furong Street" and "Kuanhouli" are planned in a unified manner, and reasonable proportions of commercial business and spatial layout are determined. Strict screening of businesses that have already moved into the area will be carried out to avoid homogenization of business in the same area. At the same time, businesses are encouraged to incorporate Jinan's local culture into their product design, storefront decoration, and service processes to create a commercial and leisure atmosphere with strong local characteristics. Finally, continue to promote the digitalization project of Jinan tourism, such as the digitalization of tourism weather services, passenger heat services and visitor safety information and other services, not only to allow tourists to grasp the dynamics of the scenic area in real time before the trip, but also enhance the scenic area on the risk of supervision, early warning.

Thirdly, based on the improvement of cognitive perception and emotional perception, the overall image of Jinan city as as a spring city can then be strenthened. The key fields lie in the further cosolidation of humanities, modern features, special foods, the building of more qualified natural attractions other than Hongyegu, Huanghe river, etc. as well as the satisfied experience of visitors through qulification of traffic building and infrastructure, etc. In this way, the perceived overall image of spring city can have a brighter future and thus visiting intention of visitors will be further accelerated.

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