Journal of Tourism and Hospitality Management
June 2020, Vol. 8, No. 1, pp. 36-50
ISSN: 2372-5125 (Print), 2372-5133 (Online)
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Published by American Research Institute for Policy Development
DOI: 10.15640/jthm.v8n1a4
URL: https://doi.org/10.15640/jthm.v8n1a4

One Destination Two Images: A Social Media Text Analytics Approach to Uncovering Tourist Perceptions of Beijing

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Abstract

With the development of digital technology, there has been an exponential growth of traveler generated content, which forms part of big data essential for the development of smart tourism destination. Yet there is limited research using the latest analytical tools to evaluate destination image from the freely available data in social media. This study aims to fill this gap by applying a machine learning based text analytical tool, CKIP (Chinese Knowledge and Information Processing) to uncover tourist perceptions of Beijing. Textual data extracted from major online travel blogs were examined to compare the similarities and differences of image as perceived between mainland Chinese and Taiwanese tourists. The results indicated that the two groups shared great interests in sightseeing and dining, yet surprisingly Taiwanese showed stronger positive affection towards Beijing. This study also demonstrates that CKIP can be an useful tool to support tourism researchers from western languages background when analyzing the Chinese textual data that are increasingly present in popular social media for interesting insights in destination management and marketing.

Keywords: Social media analytics; Big data; Opinion mining; Text analysis; Sentiment analysis; Destination image.

• Introduction

Information technologies have transformed travel and tourism industries (Gretzel, 2011) and smart tourism destination has been a buzzword for tourism practitioners and academics alike in recent years (Gretzel, 2006; Sigala, et al., 2015). Smart tourism system is expected to support tourism managers and tourists by harnessing big data made available through a variety of sources to optimize the provision and utilization of tourism resources (Huang et al., 2017; Li et al., 2017). One of the most valuable data for smart tourism is user generated content on social media (Xiang et al., 2017). Tourism organizations have increasingly used social media data such as online traveler blogs to generate insights for innovations, while reduces the costs of market research, development and communications (Li et al., 2018).

Social media offers self-reported consumer comments that are free from biases presented in traditional market research methods, and offers new, real-time, and accurate ways to understand consumer behavior (Li et al., 2018; Xiang et al., 2015). Moreover, there is a high penetration rate of users from different backgrounds in social media, providing a diversity of thoughts from different groups of consumers, which are particularly conducive to tourism innovations. The collective information from social media often represented objective thoughts with the prevailing advantage of undergoing research without disturbing the consumer behavior of the social group (Babbie, 2005; Hausmann, et al., 2018). However, one of the biggest challenge of using social media data for the development of smart tourism systems is big data analytics (Marine-Roig and Clavé, 2016). Social media data are unstructured and exist in different forms such as texts, audio, images and videos, which require different analytics approaches. Analyzing the textual data extracted or "mined" from social media is particularly challenging, because of their complex and unstructured nature (Li et al., 2018; Xiang et al., 2015). The critical challenge of textual data is to distill knowledge from the data's linguistic and semantic features, as well as the sentiments expressed with the texts (Xiang et al., 2017).

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The aim of this study is to take the challenge of analyzing both the opinions and emotions as expressed on social media to obtain tourist perception of destination image, from two different groups of tourists. Specifically, we adopted a machine learning-based text analytics technique to analyze data extracted from online travel blogs. We organized the unstructured texts available in travel blogs into six dimensions of destination image, i.e. dining, lodging, transportation, sightseeing, shopping, and entertainment (Ma and Chen, 2003). We selected Beijing as the tourism destination for our study, and evaluated its image as perceived by two major groups of consumers in the Chinese societies, i.e. tourists from mainland China (hereafter mainland Chinese) and tourists from Taiwan Island (hereafter Taiwanese). Both similarities and dissimilarities are expected between mainland Chinese and Taiwanese in terms of history, culture and political systems (Lu, Cooper, Kao, and Zhou, 2003). Lu, Kao, Chang, Wu, and Jin (2008) stated that the subculture analysis between mainland Chinese and Taiwanese was valuable because they possess different political, economic, social, and historical institutions, yet share many common heritages.

This study makes several contributions to the tourism management literature. It is among the first few studies to adopt an advanced text analytics tool for evaluating tourism destination image through social media data mining. This novel, meaningful semantic compositions used in this study can generate prediction of tourist expectations and contributing to the development of smart tourism ecosystems. Moreover, the study shows that social media text analytics approach helps uncover the structure and emotions of tourist experiences. Specifically, the study reveals both commonalities and surprising differences between the two major tourist groups from the Chinese societies, with regard to their perceptions of Beijing. Finally, specific to textual data in Chinese language, this study shows that CKIP can be a useful tool to support tourism researchers from western languages background when analyzing the Chinese textual data that are increasingly present in popular social media generated by outbound Chinese tourists.

- **Literature Review**
- *Big data and text analytics*

The central component of smart tourism destination is big data, which are collected, integrated, and processed from sensors, internet of things, transaction routes, as well as social media (Khan and Vorley, 2017). Big data help to accurately predict tourist needs and forecast tourism demand, and open up new avenues for innovation and collaboration across various organizations at the destination (Buonincontri and Micera, 2016; Xiang and Fesenmaier, 2017). Big data has five main characteristics, the so called "5Vs": volume, velocity, variety, veracity, and value (Zhou et al., 2017): the quantity of data is large (volume), the speed of data generation is high (velocity), the data are in various formats (variety), the data are reliable (veracity) and provide insights for applications (value). Data analytics is required to fully harness the value of insights from the diverse, high volume, raw data. Given the variety of data formats, there are corresponding analytics available, such as, text analytics, audio and speech analytics, and video analytics.

The rapid growth of online social media in the form of collaboratively created content presents new potentials to both practitioners and consumers of information sharing. The feedback agility from big data analytics facilitate the efficient product development from extracting the on-line customer reviews on the product performance (Zhou, et al., 2018). Supported by integrated information and data technologies, content mining enables new value creation opportunities for both tourists and tourism organizations (Gretzel, 2006; Sigala, et al., 2015). With interconnected data devices between tourists and destination service providers, tourists can access to intelligent and meaningful experiences while the tourism service providers can optimize their resources for meeting tourist needs at reduced costs (Gretzel, Werthner, et al., 2015; Li et al., 2017; Molz, 2012; Zhang, Li, and Liu, 2012).

Text analytics provide a systematic way for the vast amount of data processing and information extraction (Kock, Josiassen and Assaf, 2016). Other than data mining, text mining is focused on finding meaningful patterns from unstructured textual data (Abdous and He, 2011; Chiang, Lin, and Chen, 2011; Lin, Hsieh, and Chuang, 2009). Practical text mining has been applied to the analysis on text files, text content of social media, chat messages and emails mainly in the language of English (He, Zha and Li, 2013; Corley, Cook, Mikler, and Singh, 2010). China is the world second largest economic system since 2010, being able to do textual mining through Chinese language becomes an effective channel to understand the Chinese market and consumer behaviour. Liu et al., (2011) applied the analytics to identify Chinese characters visually and phonologically. Lin, Hsieh, and Chuang (2009) explored the on-line tread through Chinese textual mining. The CKIP system has been applied to train the machine learning system and extract Chinese text information from all different kinds of online resources (Zhang, Wang and Tian, 2006; Hong, Chen and Chiu, 2009; Chang, Liu and Mishra, 2015).

- *Social media big data*

The importance of social media data for identifying value creation opportunities in a "smart" way has been highlighted by several scholars, such as Brandt, Bendler, and Neumann (2017), and Buhalis and Amaranggana (2015). Social media is traditionally considered as a marketing tool and their value for smart tourism development has been recognized only recently (Leung et al., 2013). Social media produce various forms of consumer-generated content such as blogs, virtual communities, wikis, social networks, collaborative tagging, and media files shared on sites like YouTube and Flickr (Gretzel, 2006; Pan, MacLaurin, and Crotts, 2007). Consumers are playing increasingly active roles in co-creating marketing content with companies and their respective brands. The practitioners recognized the urge to be active in social media, yet, they do not truly know the way of effective communication and the performance indicators (Hanna, Rohm, and Crittenden, 2011).

User generated contents are often presented with the emotional description. Therefore, it has stronger power of initiating the emotional resonance than plain context from some official tourism websites. Woodside, Cruickshank and Dehuang (2007) pointed out that the articles on the blog were actually the story describing an individual's destination experience. Furthermore, Kim and Yoon (2003) suggested that the affective image had more impact on building destination image than the cognitive image did. With the increasing involvement of participants with the social media platform, a better strategy can be developed by monitoring, understanding, and responding to different social media activities (Technorati, 2009; Kietzmann, Hermkens, McCarthy, and Silvestre, 2011; Xiang and Gretzel, 2010; Banyai and Glover, 2012).

Compared with other social media, travel blogs can accept long articles with text and graphs. Social media such as Facebooks, Line, Wechat and Instagram cannot be searched by classifying topics and often being covered by new posts. Though the recent researches focus on these media, these media couldn't form deep impression for loyal visitors. Very importantly, articles with specific topic in Blogs can easily be found by Google search engine with the keyword search. The way for sorting content of travel blogs can be used for improving and monitoring the integrity of destination images (Pan, MacLaurin and Crotts, 2007). In addition, the accumulated articles can form a certain image for the destination. That is why travel blogs as posted through online sites such as "TravelBlog.org" and "TravelPost.com" continued to grow in their popularity. It was recognized that they facilitated powerful discussions leading to consumer decisions and forming destination images (Banyai and Glover, 2012; Wenger, 2008; Xiang and Gretzel, 2010). The process of image formation is intricately entwined with the destination selection process (Gartner, 1994). Social media disseminates word of mouth electronically, unlike traditional word of mouth. Electronic word of mouth has free and powerful source-receiver relationships, channel variety and presentation of contents. Therefore, it creates opportunities for information solicitation, message retention capabilities, and content provider motivations for disclosure (Tham, Croy, and Mair, 2013).Since the image formation is a dynamic process, adoption of social media channels and their activities on the channels is important for understanding the relationship between the social media and the strategy for image formation (Yang, and Wang, 2015). In terms of in-depth analysis, evaluating travel blog can help greater understanding on the destination image as perceived by tourists.

- *Destination image*

It has been well recognized in the tourism literature that destination image is the crucial determinant during the process of travelers' decision making (Baloglu and McCleary, 1999; Chen and Kerstetter, 1999; Goodrich, 1978; Hunt, 1975; Milman and Pizan, 1995; Pearce, 1982; Woodside and Lysonsky, 1989). Lawson and Baud-Bovy (1977) defined destination image as "the expression of all objective knowledge, impressions, prejudices, imaginations, and emotional thoughts with which a person or group judges a particular object or place". In a more precise way, Crompton (1979) defined destination image as the sum of beliefs, ideas, and impressions that a person has of a destination. Kock, Josiassen and Assaf (2016) pointed out that destination affection is a significant component of destination image. Since image was the result of the destination information digested and interpreted by the tourists, it was suggested that destination image has to go through the process of mental construction by either potential or existing tourists (Fakeye and Crompton, 1991; Kotler et al., 1994). Tourist destination image was an important domain on tourism research because it affected the individual's subjective perception and consequent behavior on destination choice (Chon, 1992; Echtner and Ritchie, 1991; Telisman-Kosuta, 1989). Gartner (1992) indicated that destination images were developed by three hierarchically interrelated components: cognitive, affective, and conative. Therefore, even Chinese and Hong Kong people were from the same mainland long time ago, will had different perception on Hong Kong due to the way they digested the image information based on their culture background (Law and Cheung, 2010).

The multi-faucets of this domain from perspectives such as marketing, consumer behavior, geography, as well as environment, economic and social culture background had to be explored for comprehensive understanding (Gallarza, Saura and Garcia, 2002). The destination image posted on social media websites such as blogs, Facebook and Flickr

have gained massive popularity due to the heavy use of on-line search engines for travel information collection (Walle, 1996). Furthermore, the destination image was in a dynamic state being influenced by the motivation, experiences and personal characteristics (Beerli and Martín, 2004). Perez-Vega, Taheri, Farrington and O'Gorman (2018) stated that social media platform of a destination could be influenced by human-like characteristics such as social interactive value. Furthermore, visitors with different nationality backgrounds can perceive the value of the same destination differently. For instance, mainland Chinese independent tourists perceived Taiwan's unique image higher than the Japanese tourists (Lin and Kuo, 2018).

Destination image could be formed differently due to the different cultural backgrounds (i.e. various nationalities) and knowledge (i.e. previous visits and other types of information) in terms of image perception of a distant destination (Prebensen, 2007). Social media has played an increasingly important role on formation of the knowledge. Marine-Roig and Ferrer-Rosell (2018) suggested that autonomous sources of the tourism destination adjust better to the tourists' real preference. Despite the background of destination perception formation, it can be characterized into different categories. Echtner and Ritchie (1991) used "cuisine", "accommodation", "infrastructure/transportation", "scenery", "shopping", and "night life/ entertainment" to express the destination image. Page (1995) and Jansen-Verbeke (1986) looked at destination image from the aspects of "hotel and catering", "accessibility", "culture/sports", "culture facilities", and "amusement facilities". Beerli and Martin (2004) added culture into the consideration. Similar to the definition from Echtner and Ritchie (1991), Law and Cheung (2010) merged "scenery" into a broader category "sightseeing". Pan et al. (2013) considered culture as a diffusing factor affecting every faces of the destination image and therefore concluded it into six dimensions: "meals", "accommodation", "transportation", "sightseeing", "shopping", and "entertainment". These six distinct dimensions comprehensively cover all the human experience as a tourist. Beijing is the chosen destination due to the well-known image since 2008 Olympic (Gibson and Zhang, 2008) and the high volume and frequency of inbound tourists. Beijing has established its reputation as an international modern city, with the essence of Chinese culture in cuisine, architecture, and living style (Xie and Lee, 2013). Yet, the cognition of a city is also based on the visitors' expectation, which is formed by a mix of their culture background, demographic factor, and life style (Baloglu and McCleary,1999; Beerli and Martin, 2004)

- **Methodology**

This study collected travel blogs from the main searching engine "Google" using the keywords such as "Beijing image", "Beijing travel", and "Beijing trip…etc. Travel blogs that contained dimensions including "dining", "accommodation", "transportation", "sightseeing", "shopping", and "entertainment" were considered as an effective article and collected in this study. The collected 200 articles including 100 articles of Taiwanese commenting on Beijing and 100 articles of mainland Chinese comments on Beijing, excluding the comment from Beijing local residents.

Beijing was selected as the tourist destination for our study because of its significance in receiving tourists all around the world. Beijing was ranked as the top one for the 10 most popular tourist destination in China. It has become a modern city merging the ancient historic sites and the modernist characteristics accounted for a tourism growth of more than 10% annually. Beijing being the capital of China for more than six ancient dynasties, it encompasses abundant culture, historical relics, and architecture attractions. The visitors to the tourist attractions in Beijing were mainly from 3 categories: inbound tourists, domestic tourists, and the local Beijing citizens (Beijing Municipal Commission of Tourism Development, 2013). Such a huge tourism market consisted of 90.1 million local citizens and five million inbound tourists, among which there were 0.27 million Taiwanese visitors accounted for 5.5% of the total travelers to Beijing.

Besides being the capital, Beijing has its significant status for mainland Chinese as well as Taiwanese because it accumulated the old empire heritage and the culture of the trendy living as the capital city for centuries. It might have the same culture meaning for the foreigners, yet the mainland Chinese and Taiwanese may not perceive the city the same way. For the past 60 years, people in Taiwan and mainland China have been separated as different regimes and governed by different political systems. Therefore, they developed different value on evaluating things for the people from both sides. In addition, the long period of separation and curiosity stimulated the rapid growth of cross-strait tourism for both sides.

There were about 4 million visitors to China from Taiwan in 2018, accounted for the growth of 5.95%. Beijing was the top one destination for Taiwanese to visit due to the emotional and historical reasons (China National Tourism Administration, 2017). It was worth exploring on the opinion of both sides in order to better serve the different tourism segmentations from these two regions. Despite their share of common cultural heritage, mainland China is a socialist society undergoing transition towards a massive market growth and fast economic and technology advancement, while Taiwan is a new democracy continuing its rapid industrialization.

The text analysis was conducted with counting of word frequency and emotion expression analysis for exploring the culture perception on Beijing. The tool employed was Chinese Knowledge Information Processing (CKIP) System. This tool systematically processed the Chinese language texts through the establishment of the infrastructure of part-of-speech tagged corpora, treebank, Chinese lexical databases, Chinese grammar, word identification systems, and sentence parsers. In CKIP system, the linguistic and domain knowledge from various corpora and texts on the Web can be extracted to enhance current global knowledge databases. The various databases are then inter-connected to form a "ConceptNet", for language processing and logical inference. As Chinese becomes a more important language in the world, information extracted from Chinese websites and related texts is in high demand for the comprehensiveness of information search. Moreover, the complexity of Chinese characteristics makes it more difficult to interpret the core perception from those social media content written in Chinese. Yet, understanding the thoughts of the huge population is in great need for exploring the most fast growing market in the world. The CKIP system has been applied to train the machine learning system and extract Chinese text information from all different kinds of online resources (Zhang, Wang and Tian, 2006; Hong, Chen and Chiu, 2009; Chang, Liu and Mishra, 2015).

The list of word frequency was categorized into the six dimensions from the destination travel blogs based on the theory of content analysis. The travel blogs containing at least three out of the six dimensions mentioned above were retained in the database for analysis to make the final database of 200 articles with 100 blogs written by Taiwanese and 100 blogs written by mainland Chinese bloggers, excluded those from the local Beijing residents. The analysis was conducted following the procedure developed by Pan et al. (2013) as shown in Figure 1 using the analysis procedure of CKIP system (Ma and Chen, 2003) that separated the texts into terms and tagged them with a proper part of paragraph enclosed within the parentheses. The frequencies of the keywords were also ranked and compared between Taiwanese and mainland Chinese blogs.

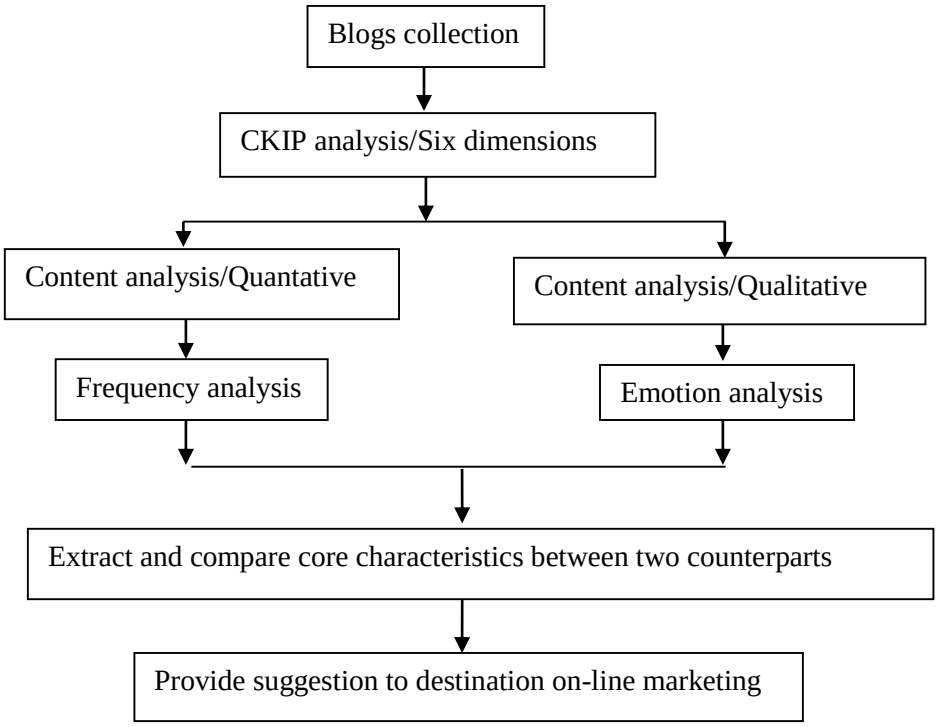


Figure 1. Research Framework and Procedures

Semantic analysis was performed to assign the keywords into the previously defined six dimensions. This technique facilitated the association of the keywords with a certain dimension (Ryan and Bernard, 2003). The coding was performed separately by two coders; a third opinion was applied if necessary until the consensus was reached. The reliability and mutual agreement of the six dimensions among the expert coders was tested and confirmed with a high reliability above 0.9 that Kassarjian (1977) suggested for a valid content analysis.

- **Findings**

- *The destination image of Beijing*

The results in Table 1 show the most frequently mentioned items screening with the top six mentioned keywords for each dimension. From the total count of the content analysis, Taiwanese were more expressive than mainland Chinese from extracting the total keywords 1,645 count and 1,308 count from the same base of 100 blogs, respectively. Among the six dimensions, sightseeing was found to be the most mentioned dimension for both mainland Chinese and Taiwanese. This is in agreement with the general concept of tourist activities being touring and sightseeing. Some of the perceived images of Beijing were consistent from Taiwanese bloggers and mainland Chinese bloggers such as "accommodation", "transportation", "shopping", and "entertainment". Yet, the difference in the weight of frequencies between mainland Chinese and Taiwanese is noteworthy, since it reveals the different perception owing to the different culture background.

Table 1. Frequency of Keywords for describing Beijing by Mainland Chinese and Taiwanese Bloggers

Dimension [a]	Keywords	Mainland Chinese [b]	Taiwanese [b]
Dining 126(9.6%), 371(22.6%)	Roast duck	52	125
	Veal	30	101
	Beer	12	43
	Local delicacies	11	39
	Noodles with soy bean paste	12	34
	Roast meat	9	29
Accommodation 120 (9.2%), 147(8.9%)	International star-rated hotel	61	73
	Regular tourist hotel	59	59
	B and Bs	N/A	9
	Siheyuan (courtyard house)	N/A	6
Transportation 250 (19.1%), 351(21.3%)	Subway	147	152
	Airplane	41	61
	Taxi	22	58
	Bus	21	34
	Motorcycle	N/A	28
	Train	19	18
Sightseeing 601(46.0%), 481(29.2%)	King square/Beijing	70	150
	Old palace	54	88
	Traditional lane alley	68	80
	Forbidden city	20	77
	Tiananmen (square)	260	45
	The great wall	129	41
Shopping 154(11.8%), 221(13.4%)	Ticket	88	123
	Souvenir	8	29
	Hand craft	28	28
	Clothing	11	21
	Quality commodity	13	11
	Gift	6	9
Entertainment 57(4.4%), 74(4.5%)	Performance	8	28
	Department store	21	22
	Ice skating	21	10
	KTV	7	8
	Night market	N/A	6
Total		1308	1645

Note: a. numbers following each dimension represent the frequency for each dimension mentioned by mainland Chinese and Taiwanese bloggers with the ratio of the dimension frequency to the total frequency in parentheses;
b. the frequency for each descriptor from different bloggers.

For example, the descriptors about dining were mentioned in much higher frequency for Taiwanese in the total count from the semantic analysis. It suggests that dining in Beijing attracted more attention from Taiwanese than local Chinese. Among all the delicacies, "roast duck" was the number one mentioned dish and the authentic dish from Beijing, followed by "veal" and "beer". Taiwanese bloggers tended to pay more attention to the dining dimension compared to the mainland Chinese counterpart. This suggests that food is an important component for Taiwanese during travel.Though sightseeing was the most mentioned dimension for both mainland Chinese and Taiwanese, the frequency was much higher for mainland Chinese visitors indicating their deeper indulgence into scenery.

Yet, mainland Chinese visitors were more interested in the historical site such as Tiananmen Square and the Great Wall rather than the Taiwanese were more interested in King square/Beijing, the commercial tourist site.

This suggests that mainland Chinese tourists had greater appreciation on the historical site with a mixed affection on Tiananmen Square that witnessed a series of political events from the early days of the founding the People's Republic. It did bring some impact of Tiananmen Square on China's tourism image (Gartne and Shen, 1992), yet in both positive and negative ways. The diversity on the frequency of mentioned keywords between mainland Chinese and Taiwanese blogs confirms the difference in the perception of this dimension. For example, "King square" and "Tiananmen square" are both the heritages from the ancient dynasty. However, "King square" was highly mentioned by Taiwanese for the shopping activities. Mainland Chinese people might view this cite with a special respect in memory of the past and contemporary history of the People's Republic. In contrast, Taiwanese had less feeling on these elements due to the long geographic separation. The other reason for less mentioned Great Wall might due to the hard to managed accessibility for Taiwanese backpackers.

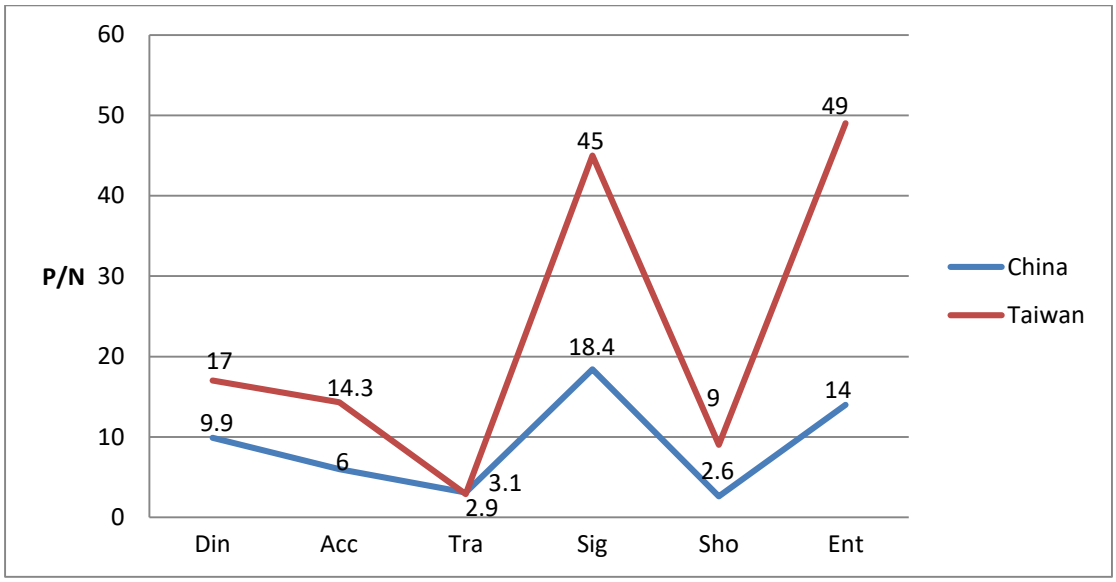
For Transportation, mainland Chinese and Taiwanese considered subway as the most perceived means for transportation, followed by the airplane, indicating the modern public transportation has established the convenient network in this city. However, the utilization of transportation might limit the accessibility to some attractions with fewer visits from Taiwanese than mainland Chinese. Great Wall would be a good example; the blogs were often written by the individual travelers who would have to rely on the local transportation. If the visitors did not trust the local transportation carrier, it often restricted the movability of the visitors.

For the Accommodation dimension, mainland Chinese and Taiwanese paid equal attention on it, but it was not the major role of the travel experience. "International star-rated hotel" and "Regular tourist hotel" were ranked as the top two mentioned accommodation for both mainland Chinese and Taiwanese. Taiwanese bloggers mentioned about "BandBs" and "Siheyuan (courtyard house)", while mainland Chinese did not. "Siheyuan (courtyard house)" is a special way of building the house in a manner of surrounding the courtyard so the families can all meet and chat at the center. This beauty of the traditional architecture style was more appreciated by the Taiwanese bloggers. Compared to Taiwanese, mainland Chinese were found to be individual-oriented (modern) social-oriented (traditional)(Lu, Kao, Chang, Wu, and Jin, 2008). This might explain that the"BandBs" and "Siheyuan (courtyard house)" were preferred over the "international star-rated hotel" for Taiwanese. They tend to enjoy the heritage in a form of daily life rather than epic historic experience.

Traditional lane alley is a unique form of architecture shown only in Beijing. The curved allies reside the colony of many households sharing the same public facilities represent the living culture of the old time Beijing, which serve as the living center and the designated channel to deliver the commodities for the empire in the old time.It was ranked the 3rd for Taiwanese and the 4th important image for mainland Chinese, which indicates its status of representing the living culture in Beijing. With the recognition of this attraction, a short tour on theTricycle-pedicab around the alley with the guide of the cab rider becomes a special and popular way of observing the beauty of the alley.

- *Emotional perception analysis*

This study applied semantic analysis to decode the blog entries upon the six dimensions for the emotion expression. Taiwanese paid attention on the neatness of the environment and the gastronomy. Mainland Chinese focused on the historical background of the attractions and were quite proud of their nation and history.



Note: P/N is a ratio of the frequency of positive responses divided by the frequency of negative responses. It represents the tendency of the opinion.

Figure 2. P/N Value Comparison between China and Taiwan

Figure 2 shows the tendency of the tourists' preference on six dimensions including: Sightseeing; Accommodation; Transportation; Dinning; Shopping and Entertainment. P/N is a ratio of the frequency of positive responses divided by the frequency of negative responses. It represents the tendency of the opinion. The greater value means the higher hedonic perception on the destination from the tourists, the smaller value suggests the debating opinion between the positive and negative emotion. Yet, the debating opinion was not necessary a bad thing in social media marketing, which might earn more recognition after the improvement. Taiwanese travelers tended to express a high p/n value on all the attributes than the mainland Chinese. The favored tendency might be drawn from the distanced affection on Beijing culture.

Table 2. Descriptors on the emotional expression of the travel experience in Beijing

Category	Positive emotion	Negative emotion
Dining	Delicious, tasty, authentic, aromatic, flavorful, value for the cost, content	Dislike, too oily, not so good, disappointing, tasteless, inauthentic
Accommodation	Neat, comfortable, value for the cost, tidy	Expensive, price too high, bad quality, bad environment
Transportation	Convenient, inexpensive, comfortable, easy access, efficient	Crowded, too many people, too expensive, traffic jam
Sightseeing	Majestic, fond, pleasure, good mood, happy, deserve the visit, emotion arousing	Disappointing, not attractive, under expectation, dislike, boring
Shopping	Inexpensive, good variety, unique	Expensive, pushy sales
Entertainment	Impressive, fabulous, interesting	Too crowded, not interesting

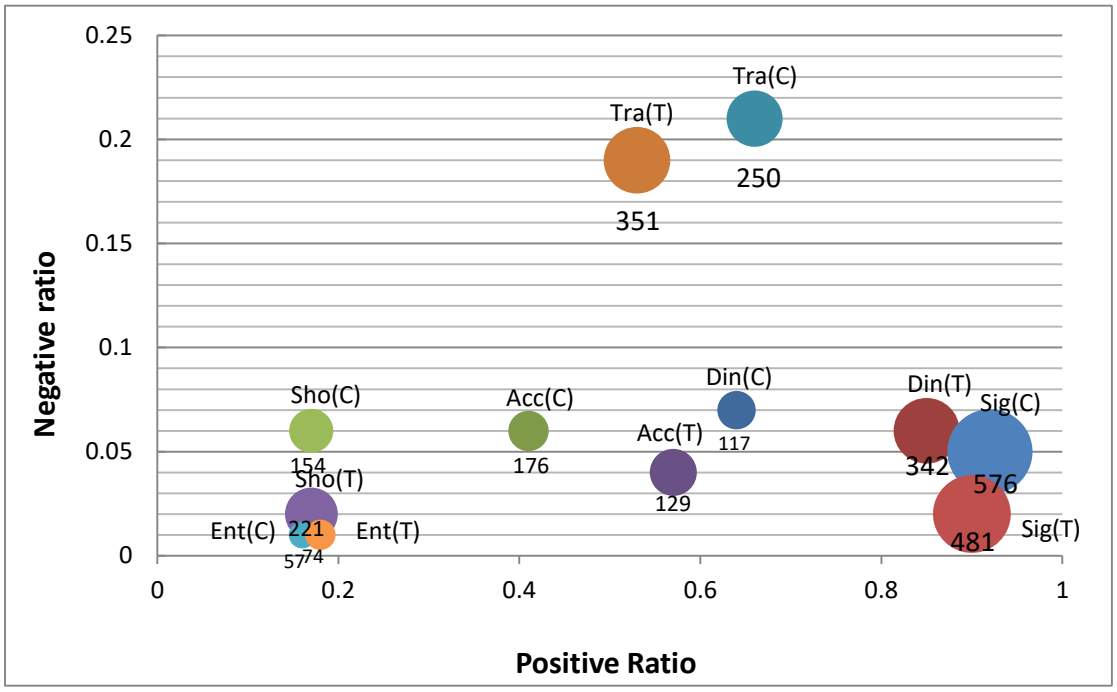
The results in Table 2 indicate that the tendency for emotion expression on the travel experience in Beijing was similar for mainland Chinese and Taiwanese. They expressed more emotion on "Dining", "Sightseeing", and "Transportation", which meant these three dimensions were important for them during a trip. Both "Shopping" and

"Entertainment" did not draw too much attention, for less than 30 out of the 100 blog entries with emotion expressions on these two dimensions.

Comparing the opinions from mainland Chinese and Taiwanese, Taiwanese considered the cuisine was satisfactory with good taste, reasonable price, and authentic, and some minor concern about the cuisine being too greasy compared to some Taiwanese food. Mainland Chinese tourists were more satisfied with the transportation than Taiwanese with more than 60% positive expression on the transportation. Mainland Chinese bloggers expressed more negative feeling on the shopping aspect of tourism activities than Taiwanese, which deserve further investigation. From the detailed description in the blogs, mainland Chinese tourists were more sensitive to the price and viewed the traditional commodities not as special as the Taiwanese tourists did.

- *Bubble Mapping*

The emotion expression can be integrated in a visual mapping for a conclusive image of the perception of each dimension for both sides (Figure 3). The size of the bubble represents the mentioned frequency of that dimension; the larger the bubble indicates the higher interest level of that category, regardless of the positive or negative opinion. The closer distance or the overlapping of the bubbles on the map indicates the dimension receive the similar opinion tendency from the bloggers.



Note: Bubbles with three-letter abbreviations indicating the six dimensions: Sightseeing (Sig); Accommodation (Acc); Transportation (Tra); Dinning (Din); Shopping (Sho) and Entertainment (Ent). (C)or (T) refer to the origin of the emotion expression being Taiwan or China.

Figure 3. Bubble Mapping for the Emotion Expression from Taiwanese and Mainland Chinese Visitors

Sightseeing draws as much attention for the Taiwanese and the mainland Chinese for the bubbles in the similar size. The preference tendency of dinning for Taiwanese was much higher than for mainland Chinese. Overall speaking, the personal blogs described the dining in a more detailed manner by the actual name of the cuisine by using all the sensory descriptors with emotion expression. The detailed description can arouse more emotional connection and sensation imagination. This agreed with the study from Magnini and Karande (2010) which suggested sensational descriptors can significantly increase the travel motivation. Taiwanese tourists viewed Beijing as one of the travel destination with many attractions and tasty cuisines.

In contrast, mainland Chinese people see Beijing with a sense of patriotism since it reflected the glories of many past dynasties and renowned historical events happened in the capital city.

- **Discussion and conclusion**

The main objective of this study was to adopt an advanced social media text analytics approach generate new insights into destination image. Data were mined through travel blogs in Chinese languages to uncover the image of Beijing as perceived by mainland Chinese and Taiwanese tourists. Through the analysis of textual format of both opinions and emotions, the study shows commonalities and differences between the two major groups in Chinese societies, reflecting their different historical, cultural and political experiences, with shared common heritage and traditions.

- *Implications for research*

The study provides several important implications for research. First, this study illustrates the utility value of social media text analytics in helping to better understand important tourism issues. This novel, meaningful semantic compositions used in this study can provide appropriate information in prediction of the specific needs. The tourist expectations can be identified from analyzing historical social media big data with the cross-comparison of the culture backgrounds and emotional analysis plotting.

Second, as highlighted by Xiang et al. (2017) that the critical challenges for the effective interpretation of social media data are the data's linguistic and semantic features, as well as the sentiments expressed with the texts. For big data of textual content written in Chinese, the challenge is particular acute, as unlike western languages the Chinese language and requires different analytical technology. In this study we applied the CKIP, and showed that it as an effective tool for analyzing social media textual data. This could be very helpful for the western world to decode the vast amount of textual data written in China on the social media to generate accurate insights for business intelligence.

Third, the emotion analysis by the expression of p/n is an effective way developed by this study to express the tendency of the affection of the travelers. Future study can apply this research protocol as an indicator for ranking the travel destination, which represents the comprehensive opinion on a destination. For example, the massive content in Chinese language on TripAdvisor can be analyzed directly using CKIP instead of analyzing the translations from Chinese content, a process that misses lot of original meanings.

- **Implications for practice**

This study also provides several useful implications for tourism marketing strategy of Beijing. First, the study shows that "Sightseeing" and "Dining" were the top two dimensions with consensus discussed in the blogs from Taiwanese and mainland Chinese, which suggests that the destination management can allocate more resources for these areas. Whereas transportation will need some improvement for easy get around for Taiwanese or even tourists from outside the country.

Second, the comparison of resonance between the positive and negative emotion reveals the in-depth feeling about Beijing. Positive dominated opinion suggested that the destination management has been successful in this city. Taiwanese tend to have more favorite affection on Beijing than expected.

Third, as revealed in this study, emotion expression is important for understanding tourist. Destination tourism service providers could encourage tourists to be more expressive on social media in writing with more emotion expression, which could attract more visitation by touching the heart of the potential visitors.

Finally, the results of the study indicate that in general, after the tourists arriving in Beijing, the directional information will be very helpful for the tourists going around Beijing. If the social network platform such as blogs can not only trigger the travel planning from potential tourists through the positive emotion expression to visit the city, but also provide interactive destination information through the mobile devices as a real time tourist information provider. In addition, their real time feedback on the visit will attract more visitors, which can help the co-creation of tourism values.

- **Limitations and future research**

Like all studies, the current one has certain limitations, but it also provides important directions for future research. First, the data used in this study was limited to the travel articles from travel blogs. Future studies could extend the mining of data to all formats of social media, such as images and videos.

A systematic and multi-format data analysis (Li et al., 2018) could help to understand the visitor's flow of thoughts in the sequence of experience a travel destination. Second, future research could contribute to the development of smart tourism ecosystem by further adopting a more delicate interactive evaluation matric integrating big data from

a variety of sources, including device data, data from Internet of Things, and transaction data. Based on mining the big data, synthesizing different approaches to analytics can provide more individualized marketing strategies destination management organizations. Finally, because of the growing importance and popularity of the Chinese language, the social media data in Chinese language extracted from a variety of sources can be further linked to the industry's internal data in a second language for generating real time improvement recommendations.

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