

Exploring tourists' attitudes towards Macao: a semantic network analysis of micro-blogs

W. Li

*Faculty of International Tourism and Management,
City University of Macao, Macao*

Abstract

User-generated-content (UGC) on social media are considered as reliable form of electronic word-of-mouth (e-WOM). The tourism industry is an information-intensive industry. Tourists often share their experience, evaluations and thoughts in the social media. Potential tourists depend on such information to guide their trip. The positive and negative information would further affect tourists' perception of the destination and destination selection. Considering the importance of UGCs, it is imperative to understand the contents and the themes of UGCs of a particular destination. This research has employed semantic network analysis (SNA) to analyse UGCs in micro-blogs and explore tourists' attitudes towards the destination. The themes of the contents were explored and a semantic network map was eventually drawn out. The results indicated that the themes of the reviews are diversified. Tourists mostly visited casinos, world heritage sites and enjoyed local foods in Macao. Micro cultural markets also coexist and interact. Destination marketing organizations at all levels should be concerned that e-WOM can foster niche markets to benefit Macao from building a world travel and leisure centre. Further, the renewed spread of e-WOM can make a contribution to the destination image formation.

Keywords: world heritage, semantic network analysis, niche markets, micro-blogs, destination image formation, e-WOM, UGC.

1 Introduction

User-generated-content (UGC) and electronic word-of-mouth (e-WOM) have increased the prominence both in marketing and communicating aspects. The



advancement of technology has facilitated the communication over the Internet. Earning positive e-WOM from consumers is one of the goals in the marketing for the impact of e-WOM is substantial in tourism industry. Internet has become a basic tool to help users make decisions [1]. Consumers today find e-WOM is more credible than conventional advertising produced by business and organization [2]. Reports have shown that increased users have relied on online opinions from other experienced consumers for destinations [3]. E-WOM could be positive, negative and neutral. Users' final decision about a product or service is based on information searching, comparison and evaluations [2, 3]. Researchers have considered that e-WOM is more powerful than more traditional advertising tools [4]. Tourists tend to share their opinions, feelings and experience of pre or post consumption in cyberspace. The online information could affect travel plans and decisions to travel [5]. It has been validated that the passive, negative, and unfavourable e-WOM has a very strong negative impact on a destination's image [6]. UGCs as credible word-of-mouth have shown the impact from marketing perspective. With the help of social media, knowledge and experience obtained in tourism is more easily to be communicated to the public [7]. Shared words and photographs are the reflections of tourists' real evaluations, opinions and experience in the destination. UGCs also have worked as information source for tourists who are searching information about a particular destination [8]. The information would further shape perceived destination image and would influence other users' decision-making process [1, 2]. E-WOM played an important role as a destination image formation agent [8]. The variations in the perceived destination image affects tourist destination choice and their loyalty to the destination [9]. Analysis of UGCs can generate useful information to help understand tourist evaluations, opinions and experience of the destination and predict the subsequent behaviors.

Macao is intended to be a world tourism and leisure center. To avoid heavily depending on the gaming industry, Macao has to diversify tourism and leisure activities. The rationale behind the proposition is the abundant tourism resources in Macao, such as gaming industry, world heritage sites, sports events and International festivals [10]. It is necessary for destination tourism operators and government officers to understand the authentic tourist attitudes toward the destination before they take measures to modify the situation. This study tries to explore tourist opinions of Macao through Sina micro-blogs. Tourists adopt social media as a communication channel where they can elaborate and present their thoughts, opinions and experience [11]. Among the many kinds of social media, micro-blogs are distinct for its short descriptiveness, responsiveness, promptness and mobile-based convenience. The shared contents online are user generated contents which are effective in persuading others and shaping perceived destination image [12]. Reviewers regard them as credible and trustworthy than traditional marketing communication and rely on the UGCs as a supportive tool for their travel decisions [12, 13]. Applying semantic network analysis of texts and content analysis of the images on Sina micro-blogs has revealed more useful information about the real tourist experience in the destination.



2 Literature review

2.1 E-WOM in Sina micro-blogs

The rise of the new media has provided users many opportunities to communicate their thoughts and opinions in different channels (e.g. online discussion forums, consumer review sites, weblogs, social network sites, etc.) [2, 3]. E-WOM is defined as “all informal communications directed at consumers through Internet-based technology related to the usage or characteristics of particular goods and services, or their sellers” [7]. Users engage in research have validated a range of motives for engaging in e-WOM and the motivation could be linked to the contents of a message [14]. The adoption of the e-WOM and future purchase intention depend on both the features of the e-WOM and the receivers *per se*. The quality of e-WOM, source characteristics, information characteristics, relevance, and completeness are major factors influencing the adoption of e-WOM. Micro-blogs is one of the most popular social media tool due to its short descriptions, immediacy and effective communications. It is featured by the limitation to 140 characters in addition to the maximums of nine pictures [13]. Sina micro-blog has enjoyed the most widely users in China and worked as an outlet where tourists share their travel experience. Users tend to send their thoughts and comments through micro-blogs and they are able to share the information within controlled groups [13]. The micro-blogs are the reflection of the travel experience but also the information source for potential tourists. Posted tourism experience encompasses textual or narratives practices and audio or visual information [15]. Further, other users rely on the information to plan the trip [16].

Photographs generated by the tourists are different from commercial images. Commercial images tend to embellish the destination, building aesthetic and mystique feelings to stimulate the curiosity and attract tourists [17]. What tourists have read from commercial photos are usually the works from professional photographers [18]. Amplified virtues and shrunken commonplace may present an appealing destination image to the tourists. These commercial images are usually generated by destination marketing organizations [19]. However, user generated photographs are usually have no connections with destination promoters [13]. User-generated photographs are suggested organic in nature and can affect the reviewer’s perceptions [20]. The analysis of photographs includes manifest contents (face value) and the latent contents (meanings beyond appearances). Manifest contents are observables features of the images and can be recorded with a high degree of reliability [21]. They are invariant to who reads the images. Latent contents are implicated and interpretive in nature [19, 21]. The understanding of the latent contents requires reading between lines and depends on the cognitive deduction ability of the viewer’s [15, 17]. Content analysis can compare the photographs according to the categories, such as attraction, locations, panoramic/close-up distinction, etc., but may fail to grasp the connection between the message and the senders [21]. The texts information in the micro-blogs has replenished the content analysis of the manifest dimension. The words are statements, random thoughts, opinions/complaints and information sharing [13,



17]. Users also include special emotion expressions in the text space to indicate their moods at that moment. The positive words differ in the vividness, pleasantness and novelty [22]. The rational and emotional aspects of the message affect the persuasiveness [23]. The cognitive and affective characteristics of the messages are examined to be associated with subsequent attitudes and behaviors of the reviewers [22, 24, 25]. Cognitive features refer to rational parts of the message and concern about the product attributes such as performance, response to problems, and price-value perceptions. Affective characteristics discuss the distinctness, magnitude of the message and the depth of the theme conveyed in the message. Cognitive or affective characteristics can be found separately or simultaneously in the e-WOM.

2.2 Study background and research objectives

First the decline of the gaming revenue came to Macao in 2014. Casino revenue in Macao fell 2.6% in 2014 to HK\$332.7 billion [26]. A continuous decline in 2015 has been forecasted. The new normal situation requires Macao to broaden its economy beyond gaming. Indicated by the Lonely Planet, Macao is keeping its position in the top regions to visit in 2015 [10]. Lonely Planet has also suggested that “do not let the casino culture belie Macao’s true charms”. The second phase of Galaxy Macao would offer world-class hotels, qualified restaurants, bars and lounges, outlets from high-street brands and flagship stores. Studio City is intended to provide The Golden Eye, DC Comics’ Batman Dark Flight and Family Entertainment Center. Apart from the modern and luxurious tourism attractions, adventure tourism and world heritage tourism is also available in Macao. Portuguese cuisine is the combination of European, African, Indian and Chinese elements. Thematic events and festivals are held all the year around. To exhibit the outstanding value and authenticity of the history in Macao, Macao government tourism office has suggested tours to promote the experience of Macao. The tours encompass the World Heritage Sites where western cultural and eastern have peacefully coexisted.

The number of arrivals in Macao has increased from 28 million in 2011 to 31.5 million in 2014. Chinese visitors has accounted for the majority of the tourists. It is necessary for destination market organizations to know the difference between what has been promoted and what has been perceived. Examine the user generated contents would help us to answer the questions. Sina micro-blog is the most important micro-blog platform in China. It owns monthly 143.8 million active users and the daily active users amount to 66.6 million [13]. UGC in Sina micro-blogs would reveal useful information to illustrate the perceptions of Macao.

Considering the limitation of quantitative methods measuring destination image and the features of Sina micro-blogs, this research applies qualitative methods to analyze the combination of the texts and photographs. Exploring the reflections of tourism experience online will mirror the actuality of the destination. Hence, the specific objectives of the study were to:

1. Establish the linkages between the texts and photographs in each post and investigate the reflected tourism experience in Sina micro-blogs through analyzing the frequencies of the words or phrases associated with the destination component of Macao.
2. Draw a semantic map based on the analysis and compare the comments or thoughts associated with destination components.

3 Methods

3.1 Data collection

In order to identify “what do Chinese tourists post in Sina micro-blogs about Macao”, the sample of micro-blogs was downloaded through an exhaustive search of website. Text data and visual data were retrieved from Sina micro-blog search engine through searching the keywords Macao. After removing the commercial, official posts and non-travel related posts, a total of 628 posts were found from May 12th to 18th. Each post is a sample unit. The textual along with the emoticons, and the photographs were kept for analysis.

3.2 Data analysis

Semantic network analysis (SNA) can profile the structure of the relationship among various entities within the tweets. This method is useful to find out the topics and concepts under discussion as well as the frequency of topic presentation. In most cases, CATPAC was applied to do the text-mining jobs. Considering that the textual data in our research were all Chinese and the software only supports English, this research has adopted manual analysis conducted by two master students, supervised by an assistant professor. In this study, nodes are the most salient words. They have been identified based on the weighted frequencies. Revisions were made according to the repeated work until all the researchers have reached consensus. Links have been explored based on word co-occurrences within a five-word distance. Centrality refers to the importance of a concept in the network and is measured through a node's total amount of links or the aggregation of the frequencies of co-mentions [27]. The degree to which a word is directly connected to other words that are not directly connected to each other is measured by betweenness. The overall influence of a node is represented by the eigenvector. All these operations could be done by UCINET free version. The semantic network map has been finally drawn out upon the node size (scaled by degree) and tie width (frequency of co-occurrence of a pair of words) [28]. SNA is based on the semantic between lines and is free of validity test. The relationship between the texts and photographs was established based on the cognitive and affective components. Additionally, Semantic network analysis is free from reliability test [29]. The visual images were classified into 11 categorizes based on the destination components.



4 Results and discussion

4.1 Frequency analysis

Table 1 illustrated the frequencies of the keywords extracted from a total of 628 posts, as the foundation for further work. Frequencies of the words less than fifty have been excluded for further research. The most frequently occurring words are Venetian (335 occurrences), followed by Ruins of St. Paul's (310 occurrences), Senado Square (285 occurrences) and gaming (279 occurrences). A few tourist attractions of Macao World Heritage have shown similar frequencies. Holy House of Merry (125), "Leal Senado" (123) and Cathedral (105) have nearly the same frequencies. The frequencies of Lilau Square (80), Kuan Tai Temple (78), Mount Fortress (75), Casa Garden (74), St. Dominic's Church (73) and Na Tcha Temple (71) does not vary too much.

Table 1: Top 40 most frequently occurring words.

	Word	Frequency		Word	Frequency
1	Venetian	335	21	Mount Fortress	75
2	Ruins of St. Paul's	310	22	Casa Garden	74
3	Senado Square	285	23	St. Dominic's Church	73
4	Gaming	279	24	Pork chop bun	73
5	Casino	210	25	Na Tcha Temple	71
6	A-Ma Temple	186	26	St. Dominic's Church	69
7	Holy House of Merry	125	27	Section of the Old City Walls	68
8	"Leal Senado" Building	123	28	Raining	68
9	Cathedral	105	29	City of Dream	67
10	Visit again	102	30	Too many people	66
11	Tai Lei Loi Kei	96	31	Lotus Square	66
12	Lisabo & Grand Lisabo	96	32	Expensive	65
13	Buggy Jump	96	33	Egg tart (Cafe e Nata Margaret's)	63
14	Galaxy	95	34	Roasting	61
15	St. Augustine's Church	95	35	Portugal cuisine restaurant	57
16	Koi kei	87	36	Yummy	56
17	Skywalk	86	37	Turbojet or Cotai water jet	54
18	Egg tart (Lord Stow's bakery)	85	38	Hot	53
19	Lilau Square	80	39	Higher than other place	52
20	Kuan Tai Temple	78	40	Pastelaria Fong Kei	52

4.2 Semantic network analysis

Figure 1 graphically displays the online Macao network, indicating the important words and the words they are connected to. The darker the node is, the greater the frequency is of the node. Ruins of St. Paul's and Venetian can be regarded as the central placement in the network. Node and the degree of the shade in the

figure have revealed the centrality and frequency of occurrence in the network. For example, Ruins of St. Paul's appears more frequently than Mount Fortress and Egg tart (Cafe e Nata Margaret's), as can be seen by the darker shade of the node, but both words are closely connected to Ruins of St. Paul's. It is also worth attention that interconnectedness is indicated in the figure. For example, Pork Chop Bun is both connected with Lisabo & Grand Lisabo and Ruins of St. Paul's. It is obvious that the occurrence of tourist attraction of Macao World Heritage has shown different importance in the figure. Ruins of St. Paul's, followed by Senado Square. Compared with Ruins of St. Paul's and Senado Square, Holly House of Mercy, St. Dominic's, Cathedral, Dom Pearo V Theatre showed relatively less importance in the network. The occurrence of Macao World Heritage in the micro-blogs is connected with gaming and entertainment activities as well as sensory adjectives, such as hot and roasting.

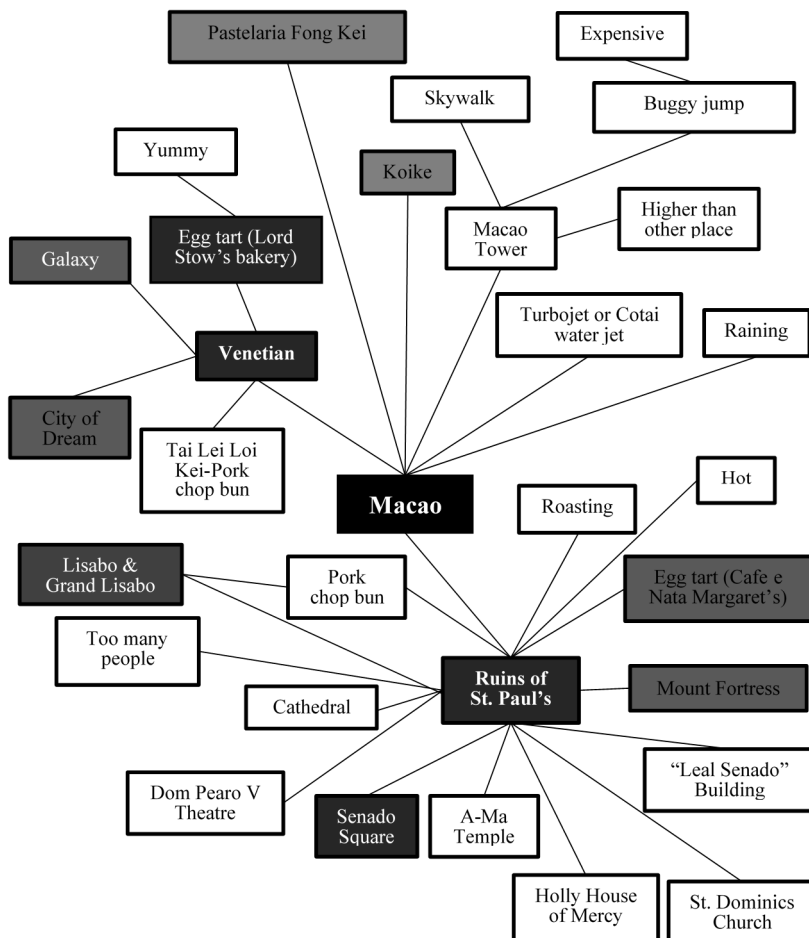


Figure 1: Semantic map of Macao in Sina micro-blogs.

The findings of this study have revealed a condensed network structure of the concepts in the Sina micro-blogs. Based on the frequencies of the words and the connectedness of the accordingly nodes, researchers apply the semantic network analysis to profile the connections and importance of the words. The degree of the shades has indicated the importance of the keywords and the thickness of the line has revealed the prominence of connections. Presented nodes of Macao in the Sina micro-blogs have reflected destination components, from common features to uniqueness, such as gaming, World Heritage Sites, local food, shopping, walking and photographing local community. Tourists enjoy the local food here. Pork chop bun and egg tart would be their must-eat. Tourists are positive with the food taste and the price cost effect. Macao tower is associated with adventure tourism, for instance, skywalk and buggy jump. However, tourist may stop due to the price of the buggy jump as can be seen by the connected node: much too expensive. Macao tower is also connected with chance to have a fabulous overview of Macao. Tourists' comment on the weather of Macao (raining and hot), local transportation and visiting experience of particular attractions could also be found in the figure. Popular attractions include Ruins of St. Paul's, Senado Square, St. Dominic's Church and Venetian. Tourists must see casinos in Macao, such as Lisabo & Grand Lisabo, Venetian and Galaxy. The semantic map can help construct a holistic impression of nodes and the connections related to Macao. Their comments and experience of the local transportation, infrastructure, food and beverage all constitute their perceived destination image. The online information not only reflect the experience in the destination but also further work as tourism information and guide other potential tourists behavior such as destination selection process. Destination marketing organizations should be alert about the usefulness and effect of the user-generated contents online, not only for the concern about tourist experience but also for the communication effect of the information.

5 Research limits and future suggestions

Based on the widely used social media application and the dramatic effect of the social media on users, this research has explored tourist attitudes' toward Macao. However, this research has not taken the factors of users into consideration. The data used in the research are all secondary data from Sina micro-blogs. Considering the wide range of users, the tweets in the research may only represent a relatively small proportion of all Chinese tourists to Macao. Moreover, micro-blog is only one of the social media network in China. Information from information channels has not considered. For instance, Wechat has 549 million active users. However, the function of Wechat has placed the post which could only be shared to the contacts. Due to the accessibility of data analysis software, this research has not generated the figure measuring the network density and the Gini-coefficient indicating the word concentration of a few words. Future researches are suggested to aim at conducting the relationship of the demographic features of the users and generated contents. It would provide information about the links between specific groups of tourists and their travel preferences.



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