Study on CTWs' Distribution and Online Marketing Effects*

中国旅游网站空间分布与网络营销效应研究

Shaowen Cheng[a]; Jie Zhang[a]; Dorothy Fox[b]; Feifei Xu[b]

[a]School of Geographic and Oceanographic Sciences at Nanjing University, Nanjing, P. R. China 210093 [b] School of Services Management at Bournemouth University, Bournemouth, UK BH12 5BB

Abstract: As a platform and carrier of tourism information, tourism websites (TWs) and online tourism marketing have deeply affected the tourism industry. The authors adopt a geographical perspective to analyze the distribution of Chinese tourism websites (CTWs), and statistical analysis with SPSS16.0 was conducted to explore the online marketing effects of CTWs, and some meaningful results has been produced: 1) The number of CTWs generally decreases from eastern China to central and western China, and are especially dominant in tourism developed provinces. 2) The number of tourists has strong statistical correlation with the number of CTWs. 3) The strongest correlation for inbound tourists is with hotel websites, and the highest correlation coefficient is 0.807 between the number of domestic tourist and resort websites. Both inbound and domestic tourists have a low

Biographies: Shaowen Cheng (corresponding author) is a PhD student in School of Geographic and Oceanographic Sciences at Nanjing University, Nanjing, P. R. China 210093 (E-mail:shaowen_cheng@163.com). Jie Zhang is a professor in School of Geographic and Oceanographic Sciences at Nanjing University, Nanjing, P. R. China 210093 (E-mail: jiezhang@nju.edu.cn). Dorothy Fox is a lecturer in School of Services Management at Bournemouth University, Bournemouth, UK BH12 5BB (E-mail: dfox@bournemouth.ac.uk); Feifei Xu is a lecturer in School of Services Management at Bournemouth University, Bournemouth, UK BH12 5BB (E-mail: fxu@bournemouth.ac.uk).
***Foundation Item:** The National Natural Science Foundation of China (No. 40371030-D0106)

correlation coefficient with travel agency websites (TA). 4) There exist some statistical models between tourist numbers and different kinds of CTWs. The results clearly unveil the marketing effects and correlation of CTWs and is helpful for further online marketing strategies.

Key words: Chinese tourism websites, distribution, online marketing effects

摘要：作为旅游信息的一种平台和载体，旅游网站及网络营销深深地影响着旅游业。文章从旅游地理的角度，分析了中国旅游网站的分布，并利用 SPSS16.0 软件统计分析了中国旅游网站的网络营销效应，并得出如下结论： 1) 中国旅游网站在数量上基本上是从华东到华中再到华西逐渐减少，旅游发达省份最多。2)游客数量与旅游网站的数量存在着强烈的秩相关性。3) 入境旅游者总人次与宾馆饭店旅游网站数量间存在强烈的秩相关性；而国内旅游者总人次则与景区旅游网站数量间存在着最强烈的秩相关性(0.807) 。两者与旅行社网站数量的相关性最低。4)这些要素之间存在着数学模型关系。分析的结论清楚地揭示了旅游网站的营销效应和相关性,有助于制定未来的旅游网络营销战略。

关键词：中国旅游网站，分布，网络营销效应

Introduction

Tourism is an information-intensive business, and information is the blood in the supply chain of tourism (UNCTAD, 2001). The growth of information communication technologies (ICT), especially the internet, has had a great impact on the tourism industry. It fundamentally affects how travel is offered, distributed, sold and consumed on the one hand;

and affects the travellers' decision-making processes on the other (Liu *et al*, 2008). The internet has proved to be a widespread medium and an integral part of the habits of millions of users. Effective online marketing is now considered a key element to achieve a competitive advantage in the market to satisfy actual and potential tourists' information needs in a highly competitive way and to acquire new clients (Baggio, 2003). According to the report of the WTO (2008), the current estimate of the global number of internet users is over 1.2 billion. There has been substantial growth in all world regions, particularly in Asia and the Pacific, which, over seven years, has moved from third position (with about 100 million users), to top position with over 400 million. In order to obtain market and managment advantages, governments together with stakeholders have established Destination Management Organization (DMO) websites to promote their service/products globally (Buhalis, 2003).

Web-based approaches and technologies are helping tourism suppliers and agencies reduce service costs and attract customers (Corigliano et al, 2006). For customers, the web is not only for information gathering, but also for ordering services (Liu, 2005). The internet and websites provide much of the necessary data more quickly and at a lower cost than many other sources (Wood, 2001). According to WTO's report (2008), in 2006, 80% of American travel expenditure (leisure/unmanaged business travel) is transacted online and continuing rapid growth in online sales in tourism may be anticipated in Asia and the Pacific, particularly in India and China. With the trend of rapidly growing internet users visiting travel and tourism websites and dealing with their travel-related spending online individually (WTO, 2005), more tourism enterprises have been involving themselves in web-based e-tourism progress and regarding the internet as an essential marketing tool for the purposes of

enhancing competition and surpassing competitors in a globalized game. A website looks to be a major (and, probably/possibly, it will be the only one in the future) tool to conduct business in the tourism field (Corigliano et al, 2006). As more and more consumers worldwide adopt online distribution channels as their preferred way of buying travel products, the new truth for destination marketing organizations is that 'if you are not online then you are not on-sale' within your key markets (WTO, 1999).

Since the internet is so important for the tourism industry, there has been much academic research on tourism websites, their development, classification and evaluation in developed countries. However, there is little literature on TWs in China, the principal developing tourism market, particularly from the perspective of geography. This paper attempts to explore China's TWs development and its spatial distribution from the perspective of geography.bit repetitive In addition, CTW's online marketing effect will also be explored by directly analysing the correlation between numbers of TWs and tourists.

Literature Review

Websites and tourism on-line marketing

According to Liu et al (2008), the tourism-related internet can be seen as a network that is established to serve tourists online and TWs are the nodes in this network. The ongoing rapid increase of internet users has promoted a belief in many business circles, including the tourism industry, that the web represents a huge marketing opportunity (Hoffman, 2000). Early in 1996, Walle (1996) firstly explored the opportunity of internet use in tourism for direct marketing. The next year, Hanna and Millar (1997) suggested promoting tourism on the internet and explored the content design and management of TWs and tourism

e-commerce. Since then, TWs and tourism online marketing have been an ongoing popular theme both in academic and industry fields. At the beginning, much literature focused on technological and economic analysis of TWs' creation, design and management (see Huizingh, 2000; Lu and Yeung, 1998; Palmer, 2002 etc).

Later, many researchers principally investigated TWs' marketing value and their assessment/evaluation, and a number of research frameworks and methods have been provided (see Countryman, 1999; Lau et al, 2001; Burgess et al, 2001; Doolin et al, 2002; Barwise et al, 2002; Pitta & Fowler, 2005 etc). In respect of the performance assessment of TWs, many researchers regard content, interactivity and promotional value as the main performance features for effective tourism websites (Cai and Beldona, 2006). Besides, first impact (FI), design and graphics (DG), structure and navigation (SN), technical management etc (TM) are also thought essential to the development of a successful e-tourism website (Baggio, 2003; Chung and Law, 2003). The UNWTO (2008) put forward a list of criteria for successful e-marketing, which includes accessibility, quality-controlled content, search engine optimization, building identity and trust, customer relationship management and UGC (user-generated content).

With the popularity of consumer-oriented behavioural research, the websites users' behaviour patterns, users' decision-making behaviours and the interaction between TWs and their users have been the research emphasis in this field recently. There is also much literature focused on tourism marketing analysis on the basis of investigations of customers' behaviour pattern of using or visiting tourism websites, such as the relationship between destination website visits and perceptions of destinations (see Reichheld and Schefter, 2000; Anderson

and Srinivasan, 2003; Fesenmaier, 2004; Wang *et al*, 2004; Kim et al, 2007; Law and Bai, 2007; Hsieh and Chen, 2009).

Generally speaking, although greater attention has been paid to the economic, technological and user behaviour aspects of tourism websites, TWs also deserve to be studied from the perspective of geography, since TWs have been strongly related with tourism marketing objectives and tourism development strategies (Liu et al, 2008).

E-Tourism and Tourism Websites Research in China

China has experienced rapid tourism development since its open policy implementation. As the '2008 UNWTO world tourism barometer' (2008) reported, in 2007, China, fourth in international tourist arrivals (54.7 million) (excluding Hongkong, Macao and Taiwan), remained fifth in terms of receipts (41.9 billion US $). Its domestic tourism also developed dramatically in the late 1990s. In 2006, the number of domestic tourists in China had grown to 1.394 billion (2007 Year Book of Tourism China). It is predicted that by 2020, China will have the highest number of inbound and outbound tourists of any country (UNWTO, 2008).

With the appearance of e-commerce, the first tourism website (www.ctn.com.cn) was established in China in 1996, and this simply designed website could only provide very limited tourism information (Lu and Lu, 2004). Since 1997, together with China's fast development of tourism and information technology, more tourism enterprises, such as China Travel Net, C-Trip, Et-china and CYTS (China Youth Travel Service) and other tourism organizations started to invest in website development by offering various online tourism services, and the Golden Tourism Project sponsored by the Chinese National Tourism Administration (CNTA) since 2001 has also established many tourism websites. By 2006, the

internet had become the predominant information-source and media in preference to other traditional media for the public to search for or disseminate tourism information (Wu, 2007). There are 6490 CTWs listed in the directory website of http://www.lywzz.com/indexsite.html on 2009-08-02.

The internet age has fostered China's emergence and development of new ways for tourism operation both internationally and domestically. In 2005, with an increase of about 39% compared with that in 2004, the total revenue of online booking within the tourism industry in China was above RMB 800 million Yuan (equal to 100 million US $ at that time) at the ratio of 0.1% among the total tourism revenue. And it is expected to be RMB 3.7 billion Yuan (about 530 million US $)in 2010 (JieDa, 2009).

There are much academic literature on TWs and tourism online marketing in China. Academic research on tourism websites in China also began with a discussion of technical problems, the value of online marketing, evaluation criteria and development trends in the late 1990s (see Yin, 2001; Zhang, 2003 etc). Very few researchers have investigated the spatial distribution of TWs from the aspect of tourism geography. Zhang et al (2004) first analyzed the spatial distribution differences and their improvement strategies in terms of the criterion of Chinese Tourism Websites Characteristic Index (TWCI). After classifying provincial CTWs distribution into 5 types: the synthesized type (Beijing); the informationized type (Yunnan and Hainan); the distributing type (like Guangdong and Shanghai); the relatively developed type (like Jiangsu and Zhejiang) and the less developed but with superior attraction type (like Tibet and Guizhou, Jiangxi etc), they also put forward the concepts of 'tourism IT-pole'(where CTWs are outstandingly more than that of surrounding

provincial areas), ‘tourism IT-basin’(contrary to IT-Pole, where CTWs are obviously less than that of surrounding provinces) in terms of the term ‘techonopole’ to describe the spatial difference of CTWs. Zhang et al (2004) also found out that provincial number of CTW is statistically related to the provincial numbers of domains, hotels and travel services. Similarly, Liu et al (2008) confirm that there is a strong relationship between tourism cyberspace/websites and traditional geographical space. Li and Lu (2006) made a comparative study on tourism websites and the forecast model of virtual distance decay between China and America, which concluded that there is a similar geographical principle of virtual distance decay of TWs’ distribution in both countries. In addition, Miao and Yu (2006) also examined the difference of tourism websites from the perspective of internet marketing between China and U.S. The results indicated that U.S. tourism websites drove heavier web traffic, attracted more visitors and a higher website tanking; while Chinese tourism websites obtained a higher number of page views and a faster download speed. These results imply that U.S. tourism websites are more popular and effective in terms of internet marketing. Chinese tourism websites, however, focus more on the content and performance, neglecting the function of internet marketing and thus cannot generate desirable marketing results.

Lu and Lu (2004) simply classified CTWs into 2 groups; type of website provider and type of service, and they observe that most CTWs are distributed in China’s south-eastern coastal of provinces. They also found that the distribution of CTWs is related to tourism income, but they found no significant correlation between the number of TWs and the number of tourists. On the contrary, Cheng et al (2009) suggest that the number of CTWs is strongly correlated to the number of tourists and tourism entities, and no significant statistical

model could be found between the number of CTWs and income indexes.

All in all, how CTWs are distributed among different provinces and tourism industries, and what factors affect its spatial distribution are still a controversial topic and further investigation is therefore justified. This paper will contribute to the discussion.

Data and Methodology

The data used in this paper derives mainly from two tourism-websites-directory websites: 'www.w18c.com' and 'http://www.lywzz.com/indexsite.html.' accessed in January 2008, which respectively list existed tourism websites from province to province in China. Data on tourist numbers came from the *China Statistic Yearbook (2007) and the China Tourism Statistic Yearbook (2007)*..

The software of SPSS16.0 was utilised in the analysis to explore the statistical relationship and models between TWs and other tourism indicators. Correlation analysis, K-means clusters analysis, Curve Estimation and Regression analysis were conducted to meet the research objectives of this paper.

The number of tourists shown in Table 1 are from the *Yearbooks mentioned above*, while figures of TWs came from the websites of 'http://www.lywzz.com/indexsite.html' and 'www.c18c.com'.

Table 1. Provincial Tourist Number and Tourism Website Number in China in 2007.

Province	Inbound tourist*	Domestic tourist*	Total	TA	Resort	Hotel
Beijing	390.3	13200.0	150	50	50	50
Tianjin	88.1	5481.0	34	12	8	14
Hebei	72.5	9052.8	67	31	21	15
Shanxi	57.4	7517.0	68	39	15	14
Inn. Mongolia	123.3	2451.7	28	12	6	10
Liaonin	161.3	13000.0	58	31	11	16

Jilin	43.5	3192.7	26	13	7	6
Heilongjiang	106.4	5193.8	34	18	11	5
Shanghai	464.6	9684.0	131	50	31	50
Jiangsu	445.2	19935.8	141	50	50	41
Zhejiang	426.8	15050.0	135	40	50	45
Anhui	80.4	6158.7	94	50	23	21
Fujian	229.7	6778.6	58	19	19	20
Jiangxi	49.7	6000.2	44	19	14	11
Shandong	193.1	16700.0	117	50	35	32
Henan	75.7	13063.4	54	23	17	14
Hubei	105.6	8459.7	81	47	18	16
Hunan	97.1	9098.0	85	47	21	17
Hainan	61.7	1543.1	98	50	12	36
Guangxi	170.8	7399.6	103	50	22	31
Guangdong	2089.7	10779.7	143	50	43	50
Chongqin	60.3	6787.19	58	28	11	19
Sichuan	140.2	16580.6	95	50	24	21
Guizhou	32.1	4715.75	14	6	6	2
Yunnan	181.0	7721.3	78	50	11	17
Tibet	15.5	229.0	8	3	2	3
Shaanxi	106.1	6950.0	57	27	15	15
Gansu	30.3	1574.1	35	13	8	14
Qinghai	4.2	810.3	10	4	3	3
Ningxia	0.9	592.6	16	9	3	4
Xinjiang	36.3	1661.0	57	47	5	5

Note 1: total and TA here respectively means total tourism enterprises (including resorts, hotels and travel agencies) and travel agency.

Note 2: ＊--the unit of inbound and domestic tourist is 10,000 person.

Figure 1. Map of the provinces of China

Analysis and Results

Distribution of CTWs

Table 2 is the result of K-means cluster analysis of all 31 provinces in terms of the total numbers of TWs from which some findings of CTWs' distribution can be found as follow:

a) The total numbers of CTWs generally decreases from east China, central China to west China with the only exceptions of Heilongjiang, Tianjin and Jilin. In addition, it is especially dominant in some tourism-developed provinces (like Sichuan, Yunnan, Anhui) over its surrounding regions (see Figure 1). These findings are consistent with the research result of Zhang et al (2004). The explanation may be that the number of CTWs is related to the regional level of economic and tourism development.

b) Among all the websites belonging to different tourism sectors, travel agency (TA) makes up the largest part of the total (percentage: 45.4%, higher than that of tourism resorts-26.3% and hotel-28.3%) , which may be regarded as the travel agencies' response to the challenges and pressures from IT's development.

Table 2. Report of the K-means Clusters Analysis**.**

clusters	1 (total≥117)	2 (78≤total＜117)	3 (44≤total＜78)	4 (total＜44)
case	Guangdong, Jiangsu, Zhejiang, Beijing, Shanghai, Shandong	Guangxi, Anhui, Sichuan, Hainan, Hunan, Yunnan, Hubei	Hebei,Shanxi,Fujian,Henan, Shaanxi, Liaoning, Xinjiang, Chongqing, Jiangxi,	Gansu, Heilongjiang, Tianjin, Jilin, Inn Mongolia, Guizhou, Ningxia, Tibet, Qinghai
Note	all are coastal provinces in eastern China	Most are located in central China, Few tourism-developed provinces (Yunnan, Chongqing) are located in western China.		Most are located in western China.

According to Lu and Lu (2004), an online tourism service can be basically characterized by seven functions as follows: (1) general tourism service information publicity; (2) advertising tourism products/ services; (3) enquiries for tourism information and services; (4)

online booking or exchange for tourism products and services; (5) BBS and UGC (user-generated content) etc.

Each website may have one or more functions. After examining CTWs in these 31 provinces for information, the authors found that there are obvious spatial differences of web functions among the CTWs. CTWs in developed especially tourism-developed provinces (like Beijing and Shanghai) have more functions or features with easier accessibility than those in developing or less developed provinces (such as Tibet and Guizhou). There are also quality differences in the on-line tourism service provided by the tourism suppliers and websites between different parts of China according to the criteria of successful e-marketing (including accessibility, quality-controlled content, UGC, search engine optimization, building identity and trust, customer relationship management etc) by WTO (2008). Most CTWs have no UGC (Social Net Working and User-generated Content). Additionally, websites in regions with advanced tourism and economic performance seem more successful in providing additional languages than those in other provinces.

Statistic correlation and regression analysis between numbers of TWs and tourists

The main function of TWs is advertising and marketing via the internet to attract more tourists. So the direct index to test the effect of online marketing is the number of tourism arrivals. Theoretically, the more TWs are used by tourism production suppliers, the more possible it is for them to attract a greater number of tourists. Meanwhile, the more tourism demanding is, the more possibly TWs are used. So the statistic analysis of interactive relationship between tourists and TWs is necessary to achieve the research goals. Table 3 is the result of correlation analysis on the data shown in Table 1 above.

Table 3. Correlation of CTWs and number of tourists (Pearson Correlation:2-tailed)

	total	resorts	hotels	TA	inbound tourists	domestic tourist
total	1.000(.000)	.916**(.000)	.939**(.000)	.881**(.000)	.567**(.001)	.735**(.000)
resorts	.916**(.000)	1.000(.000)	.883**(.000)	.657**(.000)	.585**(.001)	.807**(.000)
hotels	.939**(.000)	.883**(.000)	1.000(.000)	.708**(.000)	.632**(.000)	.622**(.000)
TA	.881**(.000)	.657**(.000)	.708**(.000)	1.000(.000)	.361*(.046)	.596**(.000)
inbound tourists	.567**(.001)	.585**(.001)	.632**(.000)	.361*(.046)	1.000(.000)	.342(.059)
domestic tourist	.735**(.000)	.807**(.000)	.622**(.000)	.596**(.000)	.342(.059)	1.000(.000)

Note: figure in the round bracket is the relevant value of significance at which level the correlation coefficient is.

As shown in the table, the obvious relationship between the number of inbound tourists and resorts, hotel, TA and total TWs does exist, and the highest correlation coefficient of them is that between inbound tourist and hotel (C=0.632, P=.000), followed with that of resorts (C=0.585, P=.001); while the lowest is that between tourists and TA (C=0.361, P=.046). No significant statistic correlation between inbound tourism and domestic tourism can be found. Meanwhile, the number of domestic tourists has a strong correlation with the number of all variations of TWs, and the strongest one is that between the number of domestic tourists and resorts (C=0.807, P=.000), followed with that of hotels (C=0.622, P=.000). The lowest correlation coefficient is between domestic tourists and TA (C=0.596, P=.001). Both the number of inbound tourist and domestic tourist are strong, closely correlated with the total number of tourism websites with the correlation coefficient at 0.567 and 0.735 respectively.

The finding above that a statistical correlation does exist between the number of TWs and that of tourists, suggests that TWs may be extremely important for tourism development. That is to say, CTWs is statistically meaningful to attract tourists and stimulate the market performance.

Curve Estimation and Regression analysis was implemented to test the potential mathematical models between the variations of CTWs, and Table 4 shows the results:

Table 4. Model Summary and Parameter Estimates.

(Dependent Variable: number of inbound tourists)

Independent variable	equation	Model Summary					Parameter Estimates			
		R^2	F	df1	df2	Sig.	Constant	b1	b2	b3
Total Tourism websites	cubic	.873	61.784	3	27	.000	76.842	13.377	-.398	.003
Resorts website num.	Power	.717	73.615	1	29	.000	3.982	1.212		
Hotels website num.	Power	.671	59.127	1	29	.000	4.737	1.119		
TA website number	Power	.498	28.784	1	29	.000	3.194	1.050		

As can be concluded from the analysis of curve estimation, there is some statistically significant mathematic models between inbound tourists and the total number of tourism websites (R^2=0.873), and then resorts (R^2=0.717) and then hotel (R^2=0.671). The value of R^2 between inbound tourists and travel agencies is as low as 0.498 (less than 0.50). This gives a statistic models as:

$$Y=76.842+13.377\times\text{Total TW}-0.398\times\text{Total TW}^2+0.003\times\text{Total TW}^3$$

$$Y=3.982\times\text{RESORTS}^{1.212}$$

Or $$Y=4.737\times\text{HOTEL}^{1.119}$$

Here Y refers to the number of inbound tourists, and Total TW, RESORT, HOTEL respectively refer to the number of total websites, resorts, hotels, travel agencies.

Similarly, the statistically significant mathematic models of the number of domestic tourists and CTWs are as follows:

$$Y=-1894.752+958.360\times\text{RESORT}-24.666\times\text{RESORT}^2+0.252\times\text{RESORTS}^3$$

Or $$Y=-2537.309+240.724\times\text{Total TW}-1.980\times\text{Total TW}^2+0.007\times\text{Total TW}^3$$

Y means the number of domestic tourists here, and RESORT, Total TW respectively

refer to the website number of tourism resorts websites and total websites with the R^2 at 0.708 and 0.572. And the value of R^2 between domestic tourist and total websites, hotels and travel agency is less than 0.50.

Regression analysis between numbers of tourists and the numbers of TWs at subgroup levels was conducted for further exploration. And the results suggest that no statistically significant correlation and statistic models can be found in subgroup 1, 2 and 3. On the contrary, for subgroup 4, significant S Function/model can be found between the number of domestic tourists and websites number of resorts/ attractions ($R = 0.933$, $R^2=0.870$), while the best-fit model between the number of inbound tourists and total CTWs is a linear model with a very low value of R^2 (0.485).

Conclusions and Discussions

Conclusions

From the analysis above, the following conclusions can be drawn:

(1) The number of CTWs and its service functions generally decreases from eastern China to central China then to western China, and the only exception is that of some tourism-developed provinces such as Sichuan, Shaanxi and Yunnan. There are normally more tourism websites in these provinces than that of their neighbour provinces. This finding supports the research of Zhang (2004).

(2) Strong statistical positive correlation between the number of tourists and CTWs exist, which means the practical marketing meanings of CTWs for attracting more tourists. And it implies that regional tourism development (index-number of tourists) give rise to the development of CTWs; on the other hand, CTWs promote regional tourism development via

online marketing. The number of inbound tourists has provided the strongest correlation with that of hotels at 0.632, and 0.585 with resorts, while the correlation with travel agency is the lowest at 0.361. It may imply that CTWs of hotels and resorts play more important roles in attracting inbound tourists and sharing a larger proportion of the inbound tourism market. So the online marketing and the improvement of TWs of hotels and resorts will be crucial for local inbound tourism development. On the other hand, the traditional role of travel agencies has declined and more efforts will be needed to react to this challenge. The correlation coefficient between number of domestic tourists and resorts is the highest at 0.807, whilst the correlation coefficient between domestic tourism and travel agency is the lowest at 0.596.

(3) Some power and cubic statistic models can be found between the number of tourists and all kinds of CTWs with high value of R^2 as below:

Number of inbound tourist $=76.842 + 13.377\times\text{Total TW} - 0.398\times\text{Total TW}^2 + 0.003\times\text{Total TW}^3$

Number of domestic tourist $=-1894.752 + 958.360\times\text{RESORT} - 24.666\times\text{RESORT}^2 + 0.252\times\text{RESORTS}^3$

To summarise, there is an significant statistical relationship between the number of tourism websites and tourists. And it can be statistically meaningful for online marketing effects of CTWs.

Discussion

Some limitations of this research can be concluded as follows: (1) The data of CTWs came from two tourism-website-directory websites, but they have not possibly collected all the CTWs in each province of China, which may impact on the results; (2) Could it be the

other way around, that is where there are more inbound tourists the more websites have developed as a result of the high demand for such services? (3) Should the number of tourists or other factors be regarded as the index of CTWs' online marketing effects? (4) Compared with previous general analysis, how to explain the incompatible analytic results at subgroup levels? Does the incompatibility have any specific implies? Further investigation is greatly needed to answer all these questions.

All in all, to gain competition advantages in this globalized, information-based tourism market, TWs will certainly play an more and more important role in tourism marketing and management. For China, many measures should be taken to improve CTWs and their functions. These could include providing more vivid online services with better quality and in various languages, which is especially crucial for China's central or western provinces who have excellent tourism attractions with great tourism attraction but poor market performance due to limited marketing funds and difficult transport accessibility.

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