

Information Search Behavior among Chinese Self-Drive Tourists in the Smartphone Era

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Abstract

Purpose: The Chinese economy has grown rapidly over the past decade, making self-drive tours more affordable among Chinese tourists. Thus, self-driving tours utilizing online tourism-related information have also been popular. This study investigates information search behaviors among different segments of Chinese self-drive tourists under the influence of contemporary mobile Internet technologies and compares the results with prior related studies from a global standpoint.

Methodology: This paper investigates the relationships between tourist demographics and information search behavior in Mainland China based on a quantitative method. We collected 228 surveys from users with self-drive tour experience. We also conducted a series of online interviews to explore the potential barriers when self-drive tourists search for information.

Findings: The results showed variances within pre-decision and post-decision stages between different age groups, social classes, and experience levels. Preference for up-to-date information and contemporary platforms were also observed.

Originality/Value: Research paucity exists on self-drive tourists' information search behavior, using data collected from Mainland Chinese tourists utilizing mobile devices. Our findings offer insights to industry practitioners, such as travel agencies and liaison websites, for refining their services to meet the information needs of Chinese self-drive tourists through more comprehensive marketing strategies.

Keywords: information-seeking behavior, travel apps, self-drive tourist, China, quantitative research

Introduction

The Internet is a pivotal means for tourists' information acquisition and destination choices. It dramatically impacts the way tourists acquire and use online information. In China, the middle class has developed a penchant for inland and overseas traveling as their purchasing power has significantly increased with recent economic growth and education levels (Gong et al., 2017). The ubiquity of mobile Internet and improved information literacy in the population at large have helped tourists reach higher levels of independence and changed their information-seeking behaviors (Chiu et al., 2009; Ho et al., 2016; Hsu et al., 2017; Liang et al., 2017; Doric et al., 2019). The dynamics of online communications are changing as social media keeps evolving (Sigala, Christou, & Gretzel, 2016) and augment platforms to maintain offline relationships. Moreover, accelerated development in mobile computing, particularly with the adoption of apps for traveling, has created new locales for information search and use (Wang, Park, & Fesenmaier, 2011; Gong et al., 2017; Chen, 2019; Fan et al., 2020).

Prior research indicated that the rapid development of the Internet and social media changes the tourism industry's landscape. For example, compared between North Americans and the Chinese, there has been grounded cross-cultural evidence in information search behavior. This observation is supported by the findings of Jordan (2008) that online travel information search behaviors differ among tourists from different countries, with noticeable differences between the information search behavior of Chinese tourists and those from other countries. The Chinese tend to spend more time searching for a product, waiting for the purchase to proceed, and having more expectations of how long the product would endure than the Americans (Doran, 2002). Also, the Chinese use lengthier queries ($n = 3.38$ words) when compared to the English-speaking population according to Excite ($n = 2.16$) and AltaVista ($n = 2.35$), whereas the number of unique Chinese words ($n = 7303$) is lower than that of unique English queries (Chau, Fang, & Yang, 2007).

Taking advantage of people's lifestyle changes can benefit both tourists and related service providers. For service providers, such as tourism companies and local governments, tourism-related products and services are well suited for Internet marketing because of their distinctive high prices, high involvement, and well-differentiated characteristics (Bonn, Furr, & Susskind, 1999). From the tourist perspective, Buhalis (1998) revealed that as potential tourists have become more independent and sophisticated, the Internet provides opportunities for disintermediation. This information provided by search engines and travel apps has become increasingly prominent in guiding travel decisions (Meng, Kim, & Hwang, 2015).

Furthermore, self-drive tours have recently expanded in China due to changing lifestyles that

consume more Internet access to travel information and more private car ownerships (Zhou & Huang, 2016). As scant studies focus on self-drive tourists' information-seeking behavior in the age of smartphones (particularly in China), this study evaluated self-drive tourists' information search behavior, characteristics, and possible impacts of the Internet and other information sources. As such, our research question (RQ) is: *What are the relationships between self-drive tourists' demographic characteristics and their use of the Internet and other information sources to gain tourism-related information?*

The research intends to deepen the understanding of self-drive tourists' behavior, at least within the expanding market of Mainland China, to find useful information for self-drive tours. This research also will help industry practitioners, such as travel agencies, provide better services to meet self-drive tourists' information needs and form more appropriate marketing strategies. Local or regional authorities can also develop related policies to facilitate diversified travel needs and provide more useful information on appropriate platforms to attract additional self-drive tourists and ensure risk-free and content trips.

Literature Review

Self-drive tourism in China: the holistic destination trend

Self-drive tours refer to the use of private or rented automobiles in travel for leisure and pleasure purposes (Prideaux, Wei, & Ruys, 2001). Other terms such as “drive travel” or “car travel” are also used for describing such travel arrangements. Self-drive tours are more suitable for travelers who would like to visit remote and peripheral destinations or prefer the flexibility for planning their trip. According to the Ministry of Culture and Tourism¹, during 2018, self-drive trips in China had reached 3.5 billion person-times. The budget for purchasing the next private automobile for 2019 generally tends toward being higher than the current owned model. Most owners had cars below the value of 200,000 Chinese Yuan (CNY, 1 US\$ = 7 CNY approximately during that period, i.e., roughly US\$ 28,600) and desired cars approximately 50,000 to 100,000 CNY more expensive (i.e., US\$ 35,700 to 42,900) than the current model (McKinsey & Company, 2019).

Besides the independence and flexibility of self-drive tours, in recent years, the concept of holistic tourism destinations has drawn the Chinese tourism industry's attention (Seabra, 2014). Holistic tourism destinations address developing a whole region for tourist destinations and promoting integrated development (Rocha, Seabra, Silva, & Abrantes, 2016). To pursue further progress, the

¹ http://www.gov.cn/xinwen/2019-09/07/content_5428215.htm

National Tourism Administration of China proclaimed 2018 as the year of Integrated Tourism (Tiwari, 2018). As a result, self-drive tour promotion had been highly emphasized by central and local governments. Particularly for rural destinations, the main consumers are tourists who can go on a self-drive tour. Besides, as society is widely accepting the concept of homestay hotels, self-drive tourists prefer visiting remote places because of available accommodation and lower prices (Sabaruddin, Abdullah, Jamal, & Tarmudi, 2015).

Information needs for self-drive tourists

Apprehending information behavior requires investigating user needs for information search, which is essential for their decision-making. This behavior is often analyzed through specific psychological reasoning, such as using little effort in search methodology selection or grounding with common knowledge (Jordan, 2008; Zipf, 2016). For self-drive tours, the psychological reasoning can be traced back to the 1960s. Wall (1972) studied travel patterns such as frequency, duration, and distance of car-owners in the UK. The study revealed that driving practice itself was as essential as the destination in attracting people to conduct self-drive tours. Travel and route information availability is a crucial factor influencing the tourists' choice of participating in self-drive tours (Clift & Forrest, 1999; Kim, Lee, & Klenosky, 2003; Kozak, 2002; Zhang & Lam, 1999). Eby and Molnar (2001) investigated American self-drive tourists in planning an overnight trip. The result indicated that they focused more on the direct driving activity on the route, such as directness, safety, and congestion, rather than the drive's peripheral enjoyment, such as the road's views. Driving-related factors are crucial to self-drive tourists, which tourists rarely consider using other transportation means.

Earlier studies showed that self-drive tourists preferred using information sources obtained from family and friends, destination-specific literature, the media, and travel consultants (Snepenger & Snepenger, 1993), as well as specific information sources, such as local tourist centers (Howard & Gitelson, 1989), or travel agents (Kendall & Booms, 1989). To this extent, Li & Sang (2007) surveyed self-drive tourists in the Zhejiang Province in China. They found the percentages of self-drive tourists who mainly acquired information from family, friends, radio, TV, and the Internet are all about 30%, respectively, while fewer tourists refer to travel agents and other means. Thus, we anticipated that the rapid development of social media and mobile technologies would further facilitate people obtaining information for self-drive tours.

Travel information search behavior

According to Fodness and Murray (1999), an information search strategy has three dimensions: spatial, temporal, and operational, referring to the locus of the search activity, the timing, and how users search

for information and utilize particular sources respectively. This operational aspect of the information search strategy is the focus of this study. We investigate the empirical usage of information under the particular spatial and temporal experience requisites (Liu et al., 2019) of self-drive tourists in China.

Previous studies reported that trip planning includes many decisions and simultaneous interactions (Stewart & Vogt, 1999). Correia (2002) classified the act of purchasing a trip into three distinct stages: the pre-decision stage, the decision stage, and the post-decision stage. Woodside and Dubelaar (2002) developed a framework of tourism consumption systems composed of the trip planning stage, the travel consumption stage, and the after-trip stage. Based on the process framework of tourist information sources of Bieger and Lasser (2004), this study evaluated trip planning information search from two perspectives: information search behavior before tourists make any constraining decision on a critical characteristic of a trip travel preparation after the first constraining decision.

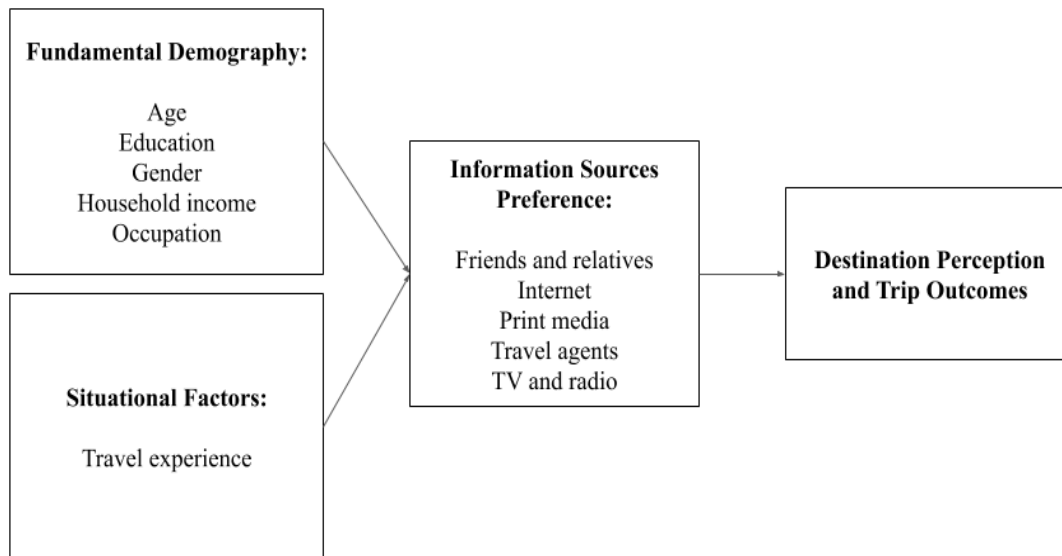


Figure 1. Conceptual framework of tourists information search behavior

Concerning the conceptual framework, this study applied the theory of consumer behavior by Berkman and Gilson (1986), emphasizing that environmental influences and individual differences shape consumers' behaviors. Environmental influences represent external environmental effects, such as cultural, social, and family contexts, while individual differences refer to consumers' internal characteristics. Further, the convenient and fast means of communication brought by the Internet have changed people's lifestyles in information provision and acquisition, especially under the current ubiquitous mobile Internet connectivity (Chen, 2019; Gong et al., 2017; Fan et al., 2020; Liang et al. 2017; Doric et al., 2019). In particular, wide Internet availability with smartphones during travel has

significantly changed tourists' information search behavior (Ho et al., 2016; Kang et al., 2019). However, tourists are still using traditional information sources combined with digital ones (Zillinger, 2020).

Although external environmental influence and individual differences are considered essential for information search behavior, measuring these factors is challenging. Only a certain level of tourist-related factors had been collectible through demographic characteristics and situational entities. To tackle this, this study provides a conceptual framework of tourists' information search behavior in Figure 1.

Research Gap and Hypotheses Development

Previous studies of self-drive tours have focused on issues related to policy and planning, such as the role of self-drive tourism in regional development, economic consequences (Downward & Lumsdon, 2004), destination marketing (Prideaux, 2000), and market segmentation (Prideaux & Carson, 2003). Most existing self-drive travel studies were based on American, European, or Australian markets (Carson et al., 2002; Prideaux & Carson, 2010). Although many studies have investigated tourism-related information behavior, the majority was based on tourists in general, which included group tourists and tourists taking public transport (Bonn *et al.*, 1999; Luo, Feng & Cai, 2004). Scant studies focused on specific self-drive tourists having ubiquitous mobile Internet connections for information access (Gong et al., 2017; Fan et al., 2020).

Earlier studies found that people from a higher socio-economic class background and with older age preferred to use travel agents, while college-educated tourists were more likely to use destination-specified literature (Gitelson & Crompton, 1983; Kotler and Armstrong, 1995). However, these preferences have recently evolved and changed. Despite some still-popular destination-specific publications such as Lonely Planet, more college-educated individuals use the Internet as their primary travel information source. Eby, Molnar, and Cai (1999) reported that in-vehicle tourist information search behaviors differ for tourists with different education levels. Several other studies (Prideaux *et al.*, 2001) presented similar evidence. Bonn, Furr, and Susskind (1998) indicated that gender, education, income, race, and occupation all influence Internet usage, resulting in a difference in travel information search.

This social class measurement was controversial among consumer researchers, according to Boone and Kurtz (1995). Instead, our participants' income was chosen to represent their social classes. Extending behavioral measurements, situational factors such as user experience also affect search behavior. According to Snepenger et al. (1990), matured experience in certain purposed searches differ

from those considered novices since methodological know-how may be attained. To further evaluate the relationship, we propose a total of seven hypotheses based on the following two criteria due to their importance in information behavior determination: demographics and situations (Bonn *et al.*, 1998; Snepenger *et al.*, 1990).

Demographic hypotheses:

H1: The use of information sources before and after travel decision-making varies between genders.

H2: The use of information sources before and after travel decision-making varies among different age groups.

H3: The use of information sources before and after travel decision-making varies between marital statuses.

H4: The use of information sources before and after travel decision-making varies between tourists with the educational background (college degrees vs. without college degrees).

H5: The use of information sources before and after travel decision-making varies among incomes (measured based on monthly income).

Situational hypotheses:

H6: The use of information sources before and after travel decision-making varies between tourists with different experience levels on self-drive tours during the last 12 months.

H7: The use of information sources before and after travel decision-making varies between tourists with different experience levels on self-drive tours.

Methodology and data collection

This study applied a mixed-method research inquiry. For the quantitative method, we designed an online survey (see Appendix) to explore participants' information search behavior, potential external environmental influences, and individual differences. The survey questions were adapted from prior studies (Gong *et al.*, 2017; Eby *et al.*, 2009; Prideaux & Carson, 2010) and required approximately 10 minutes to complete. The survey was divided into three parts: (1) demographic information, (2) behaviors on searching information for self-drive tours, and (3) attitudes towards information sources. A pilot test was conducted on four respondents with massive self-drive tour experience and one respondent from the tourism industry. The pilot test respondents confirmed that the questions and choices of the survey were clear, meeting the research objectives, and no amendment was needed.

The online survey was distributed through the messaging app WeChat and bulletin board systems (BBS) in China. The data were collected using a survey administration website by Tencent (www.wjx.cn). A total of 228 people participated in the survey voluntarily, and the data were analyzed using an ensemble of application software, including SPSS. The Chi-square analysis was applied to test the hypotheses, where the participants' medians were used as criteria for groupings that involve values (e.g., age, income, and travel times).

The survey sample consisted of 228 respondents, of which 56.6% were female. Respondents were born from before the 1960s to 1999, about half of them being under 40. Among these respondents, a relatively high proportion, 188 (82.5%), were married. For education level, 144 (63.25%) had Bachelor's degrees, and 25 (11%) had Master's degrees. Concerning monthly income, a normal variance was observed. CNY 3,001~5,000, CNY 5,001~8,000, and CNY 8,001~20,000 were the most common answers, each consisting 23.3%, 31.1%, and 24.1% of total respondents respectively. Comparing our participants' salaries with the median salary in China in 2018 (CNY 82,413 per annum or CNY 6,868 per month), our participants' salary range is around the median salary in China.

Table 1. Experience of self-drive tourists

Travel times	1	2~4	5~8	9~15	16~24	25 or more
Past 12 months	48.68%	35.53%	10.96%	3.07%	0.00%	1.75%
Overall	28.51%	24.12%	19.74%	11.40%	4.39%	11.84%

Among these respondents (see Table 1), 111 (48.68%) had less than one self-drive tour, and 81 (35.53%) had two to four self-drive tours in the last 12 months. 65 (28.51%) only had one self-drive tour before, 55 (24.12%) had two to four self-drive tours, and 27 (11.84%) had more than 25 self-drive tours in total. 52 (22.81%) claimed they always drove cars during self-drive tours, and 59 (25.88%) had never driven during their self-drive tours and were only passengers. For companions, 170 (74.6%) traveled with their relatives, 138 (60.5%) with their friends, and 37 (16.2%) with members from car clubs (automotive enthusiast community) or other social groups.

While we had 16 participants who volunteered to participate in our interview, we selected 6 of them for our follow-up interview. The selection was based on three criteria: age (below and including 30 or above 30), monthly income (below and including CNY 20,000 or above CNY 20,000), and overall self-drive experiences (8 times or less, or 9 times or more), as these factors influenced our participants' responses as shown in Tables 6 and 8. In this interview, we have an equal split of three criteria. To keep this paper concise, we illustrated how the participants' experience affects their information-seeking behavior in the discussion section.

Data analysis

Information needs for self-drive tourists

Table 2 shows the preferences of travel information type as rated by the respondents. We applied “more important” with a score of 4, “important” a score of 3, and “less important” a score of 2, while a respondent who had never searched for their self-drive tours was given a score of 1. Routes and maps ranked first, followed by accommodations, destinations, weather conditions, and food. Table 2 shows how respondents judged the importance of each type of travel information in detail. We noted that routes and maps, accommodations, destination information, road conditions, weather conditions, food, and restaurant information, the transportation routes to the destination, and insurance are considered essential information for self-drive tourists. However, activities or festive information of the destination, travel companion, and shopping information are considered less critical information.

Table 2. Travel information type preferences

Types	Mean	SD	t-value
Routes and maps	3.433	0.876	15.947
Accommodations	3.294	0.842	14.025
Destinations	3.220	0.904	11.759
Road conditions	3.170	0.830	11.591
Weather conditions	3.165	0.852	11.364
Food / Restaurants	3.103	0.908	9.708
Transportation to destination	3.085	0.994	8.568
Insurance	2.750	0.994	3.520
Activities	2.213	0.882	□5.279
Traveling companion	2.198	1.111	□3.718
Shopping	2.164	0.875	□5.279

Note: We compared the mean value of the mid-point of the scale (i.e., 2.5). All *p*-values are < 0.001.

Information source preference

As shown in Table 3, before making any constraining decision on a critical characteristic of a trip, more than half of our respondents would seek information from friends or relatives (68.9%) or WeChat Moments (53.1%) to help them decide on destinations. They would also consider recommendations from other travel information web pages (36.8%) and travel information-sharing blogs (25.4%). From this information, we noted that tourists were likely to take the recommendations from their friends and relatives to go on a self-drive tour. They would also consider recommendations from other online information sources, such as WeChat Moments and other information webpages.

Table 3. Information sources usage for seeking travel destination

Types	Percentage
Friends/Relatives	68.9%
WeChat Moments	53.1%
Travel information pages	36.8%
Travel sharing web/BBS/app	25.4%
Travel Agents	17.1%
Weibo	14.5%

TV/ Radio	12.3%
Print Media	11.8%
Short-form videos web/app	9.2%
Photo sharing web/app	7.9%
Others	16.7%

Table 4 shows the statistics for each information source used for travel preparation. Our respondents would seek information through search engines (57.9%) for travel preparation. They would also seek information through their friends and relatives (50.0%), travel information on websites (46.1%), and travel blogs (35.5%) for such information. Comparing Tables 3 and 4 shows that our respondents obtained information from both humans (friends and relatives) and the Internet (search engines and travel information page).

Table 4. Information sources usage for travel preparation

Types	Percentage
Search engine	57.9%
Friends/Relatives	50.0%
Travel information page	46.1%
Travel review/blog	35.5%
BBS	18.9%
Travel Agents	17.5%
Weibo	12.3%

Demographic background and information search behavior

This study explored five types of information sources that influence tourists’ decision-making before making any constraining decision on a critical characteristic of a trip: the Internet, travel agents, print media, TV/radio, and friends/relatives. From H1 to H5, our study used Chi-square analysis to test the associations between the row and column variables. This analysis examined whether differences exist in Internet usage against other information sources among tourists of various demographics.

Table 5. Information source for constraining decisions

Demographic Characteristics	The Internet	Travel Agents	Print Media	TV/ Radio	Friends/ Relatives	p-value
H1: Gender (<i>insignificant</i>)						
Male	58.17%	5.18%	4.38%	4.78%	27.49%	0.957
Female	60.86%	6.97%	4.29%	4.29%	23.59%	
H2: Age (<i>insignificant</i>)						
30 or below	60.13%	5.70%	5.70%	8.23%	20.25%	0.474
Above 30	59.48%	6.47%	3.88%	3.23%	26.94%	
H3: Marital Status (<i>insignificant</i>)						
Married	59.14%	6.57%	3.90%	3.90%	26.49%	0.656
Other	61.59%	5.07%	5.80%	7.25%	20.29%	
H4: Education (<i>insignificant</i>)						
With a university degree	60.49%	5.56%	4.32%	4.53%	25.10%	0.877
Without a degree	54.96%	9.16%	4.58%	4.58%	26.72%	
H5: Monthly income (<i>insignificant</i>)						
Below CNY 20,000 (median)	58.06%	6.26%	4.55%	4.55%	26.57%	0.591
CNY 20,000 or more	68.42%	6.32%	3.16%	4.21%	17.89%	

The Chi-square results showed that tourists’ Internet use and other information sources did not differ significantly between genders (H1), age (H2), marital status (H3), education level (college graduate vs. non-college graduate), and income level (below or above CNY 20,000, the median of our respondents). However, from the proportions, notably, self-drive tourists decided on destination

choices primarily by information from the Internet and friends or relatives.

Table 6. Information sources from the Web for constraining decisions

Demographic Characteristics	Objective information pages	WeChat Moments	Weibo	Video sharing web/apps	Photo sharing web/apps	Travel sharing web/BBS/apps	Other BBS	<i>p</i> -value
H1: Gender (insignificant)								
Male	23.29%	32.88%	6.85%	4.79%	4.11%	13.01%	15.07%	0.612
Female	22.03%	32.16%	10.13%	6.17%	5.29%	17.18%	7.05%	
H2: Age (significant)								
30 or below	12.63%	27.37%	23.16%	13.68%	7.37%	12.63%	3.16%	< 0.001*
Above 30	23.91%	34.42%	5.43%	4.71%	3.99%	15.94%	11.59%	
H3: Marital Status (insignificant)								
Married	20.00%	24.71%	16.47%	7.06%	8.24%	14.12%	9.41%	0.222
Other	23.26%	34.72%	6.60%	5.21%	3.82%	15.97%	10.42%	
H4: Education (insignificant)								
With a university degree	21.77%	32.31%	9.52%	5.44%	5.44%	15.65%	11.22%	0.758
Without a degree	27.78%	36.11%	6.94%	6.94%	2.78%	16.67%	6.94%	
H5: Monthly income (significant)								
Below CNY 20,000 (median)	24.18%	33.99%	10.13%	6.21%	4.90%	10.46%	10.13%	< 0.001*
CNY 20,000 and more	15.38%	26.15%	3.08%	3.08%	4.62%	40.00%	7.69%	

Note: * $p < 0.05$

Table 6 shows the Internet information sources that our respondents relied on for decision-making. First, there was a significant difference ($p < 0.001$) in Age (H2). The results showed young participants (below or at 30 years old) having higher preferences for accepting information from Weibo, video-sharing websites/apps, and photo-sharing websites or apps. Older participants (age > 30) relied more on other BBS information and travel information websites to make their decisions. Another significant difference was found at their monthly income level ($p < 0.001$). Participants with a monthly income of more than CNY 20,000 preferred obtaining information from travel-sharing websites or apps for their decision-making.

Table 7. Information source after constraining decisions

Demographic Characteristics	Friends/Relatives	Travel Agents	Search engine	BBS	Weibo	Objective information	Travel review	<i>p</i> -value
H1: Gender (insignificant)								
Male	21.82%	7.27%	25.91%	10.00%	3.64%	18.18%	13.18%	0.921
Female	20.43%	7.43%	23.22%	6.50%	6.19%	20.12%	16.10%	
H2: Age (insignificant)								
30 or below (median)	18.11%	6.30%	21.26%	7.87%	11.02%	18.90%	16.54%	0.539
Above 30	21.88%	7.69%	25.24%	7.93%	3.37%	19.47%	14.42%	
H3: Marital Status (insignificant)								
Married	21.31%	7.96%	25.29%	7.96%	3.28%	19.91%	14.29%	0.358
Other	19.83%	5.17%	20.69%	7.76%	12.07%	17.24%	17.24%	
H4: Education (insignificant)								
With a university degree	19.53%	6.98%	23.95%	8.84%	5.58%	20.00%	15.12%	0.733
Without a degree	26.55%	8.85%	25.66%	4.42%	3.54%	16.81%	14.16%	
H5: Monthly income (insignificant)								
Below CNY 20,000 (median)	20.95%	7.26%	24.69%	8.09%	5.19%	18.67%	15.15%	0.964
CNY 20,000 and more	21.31%	8.20%	21.31%	6.56%	4.92%	24.59%	13.11%	

However, self-drive tourists' information sources after a constraining decision were different (see Table 7). We noted no difference between tourists with different demographic characteristics

selected in this study. However, by closely examining the results, young tourists prefer searching on Weibo because Weibo is a popular platform among young people.

Situational factors and information search behavior

Table 8 explored the association between past travel experience and the uses of five types of information sources for tourists' decision-making before making any constraining decision on a trip's essential characteristic. This study considered past travel experience with two criteria, the number of self-drive tours in the last 12 months and the number of all their self-drive tours, which divided them into two groups according to the median of our participants.

Table 8. Information source for destination decisions

Travel experience	The Internet	Travel Agents	Print Media	TV/ Radio	Friends/ Relatives	p-Value
H6: Travel (self-drive) times during the past 12 months (<i>insignificant</i>)						
4 and below	58.45%	6.56%	4.57%	4.57%	25.84%	0.897
More than 4	65.29%	4.96%	3.31%	4.13%	22.31%	
H7: Overall travel (self-drive) times (<i>marginally significant</i>)						
8 and below	49.57%	6.47%	4.74%	4.31%	34.91%	0.050*
More than 8	70.42%	4.23%	2.35%	3.76%	19.25%	

Note: * $p \leq 0.05$

We found a marginally significant difference between tourists with overall travel experience (self-drive 8 times or less vs. 9 times or more, $p < 0.10$). Experienced self-drive tourists were more likely to make travel decisions relying on Internet information, while less experienced self-drive tourists are more likely influenced by friends and relatives.

Table 9. Information sources from the Web for destination decisions

Travel Experience	Objective information pages	WeChat Moments	Weibo	Video sharing web/app	Photo sharing web/app	Travel sharing web /BBS/app	Other BBS	P-Value
H6: Travel (self-drive) times during the past 12 months (<i>insignificant</i>)								
4 and below	24.83%	31.63%	8.84%	6.46%	4.76%	15.31%	8.16%	0.893
More than 4	16.46%	35.44%	8.86%	7.59%	5.06%	16.46%	10.13%	
H7: Overall travel (self-drive) times (<i>significant</i>)								
8 and below	25.22%	34.78%	10.43%	4.35%	4.35%	13.91%	6.96%	0.028*
More than 8	17.33%	27.33%	6.00%	4.67%	5.33%	14.00%	25.33%	

Note: * $p \leq 0.05$

As shown in Table 9, experienced self-drive tourists visited specific BBS such as car club BBS and local BBS to make their travel decision. In contrast, inexperienced tourists had less ideas about which BBS to visit for travel information ($p = 0.028$). As shown in Table 10, there was no significant difference during travel preparation based on their self-drive experience.

Table 10. Information source during travel preparation

Travel Experience	Friends/ Relatives	Travel Agents	Search engine	BBS	Weibo	Objective information	Travel review	P-Value
H6: Travel (self-drive) times during the past 12 months (<i>insignificant</i>)								
4 and below	20.63%	7.17%	24.66%	8.07%	5.16%	19.51%	14.80%	0.999
More than 4	22.68%	8.25%	22.68%	7.22%	5.15%	18.56%	15.46%	
H7: Overall travel (self-drive) times (<i>insignificant</i>)								
8 and below	24.15%	9.09%	25.00%	9.09%	5.11%	21.31%	6.25%	0.301
More than 8	18.35%	5.06%	27.85%	6.96%	6.33%	18.99%	16.46%	

Discussion

Our findings indicated that tourists combine different online and offline information sources by satisfying their information needs, which is aligned with previous studies on tourists' information needs (Carson et al., 2002; Prideaux & Carson, 2010). This study has considered the unique information needs for self-drive tourists and investigated their attitude towards different sorts of travel-related information. Our findings reflect the need for self-drive tourists to mitigate risks and uncertainty during the trip to a destination. 60.53% of respondents regarded routes and maps as crucial information, which is consistent with the research of Clift and Forrest (1999), Kim et al. (2003), Kozak (2002), and Zhang and Lam (1999). Self-drive tourists also expressed concerns about weather and road conditions, similar to other types of tourists (Luo et al., 2014; Gong et al., 2017).

Some studies have investigated tourist information sources preferences, especially the selection of offline versus online sources (Buhalis, 1998; Fodness & Murray, 1999; Bieger, 2004; Luo et al., 2004; Meng et al., 2015; Choe et al., 2017). Our study validates Mainland China's online information environment and the association between information search behavior and their characteristics. Amidst the extensive use of online information worldwide, tourists still turn to their friends and relatives for information.

In this study, the information search behavior was investigated in two stages: pre-decision and post-decision. Tourists search for information for decision-making on destinations, accommodation, and other vital issues of their self-drive tours for travel preparation. Our findings indicate that different age groups, social classes, and experience levels affect tourists' information-seeking behavior, and we further discuss them below.

Age Group

The use of information sources before travel decision-making varies among different age groups. Previous research of Gitelson and Crompton (1983) shows no significant differences between tourists of different ages using online and offline information source types, as the Internet evolves to become ubiquitous. However, our findings reveal differences in the preferred information sources, which may be related to tourists' familiarity and availability of different sources under ubiquitous Internet access. As young people are the primary users of Weibo and video-sharing apps such as Douyin (known as Tik-Tok outside of China), it is easier for them to get useful information from these social media platforms. At the same time, older tourists are more used to visiting more traditional information sources.

Social Class

The use of online information sources for travel decision-making also differs between different social classes. Self-drive tourists with higher income showed a significantly higher preference for travel reviews in travel decision-making, which was not sufficiently focused upon in prior studies, only until recently finding of Gursoy (2019). Here, past travel experience influences information search behavior. Our findings indicate that experienced tourists who have traveled with eight or more self-drive tours would use more online sources than inexperienced tourists. Comparing the online information sources self-drive tourists use, our findings also indicate differences. This is because tourists can gain prior knowledge from their experiences (Choe et al., 2017), and experienced tourists are more familiar with niche-based information sources, formulating efficient search strategies to search for what they want.

User Experience

To understand how user experience level affects, we explore this further with user interviews to shed more light on how knowledge and experience related to traveling that a tourist already acquired could influence the information search.

During our interviews, the interviewees first answered what had given them the intention of visiting a destination or place. All noted that they had been attracted by photos shared by friends in WeChat Moments, especially when the friends were also self-drive tourists. Two interviewees mentioned Tik Tok, China's top short-form video app, enabling users to view and edit videos with music and effects. Processed videos can be enticing, showing unintended marketing made by previous tourists' video uploads which propel many places to be popular travel destinations (Sheng et al., 2020). One interviewee revealed that she followed several Internet celebrities on Weibo and would ask for a place to visit after watching. Another interviewee pointed out that Minsu, a homestay hotel brand, attracted him in others' photos or travel reviews. The other two expressed that it was hard to say what gave them the thoughts to visit a place: firstly, there was an intention to travel, and then a destination would appear in their mind.

For searching travel information during travel preparation, our participants explained that even if they searched for routes to their destinations in search engines, such information was often insufficient and brief. Therefore, they would use navigation apps or follow the guideposts on the way. Some noted the convenience of direct search in search engines, for example, searching 'Hangzhou West Lake Hotel' to find famous hotels near the West Lake of Hangzhou city. However, they always used the apps of travel businesses to book hotels. One mentioned he once planned traveling according to travel journals but was worried that the information could be outdated quickly as the fast

development of local tourism facilities. Therefore, he would search for the recently published travel reviews online.

Interviewee #1 pointed out: *“When I want to visit a destination where I have been, I will not search for more information.”* Some tourists may prefer traveling with less information, as Interviewee #2 noted: *“I prefer an unknown journey than a perfectly planned trip. I like self-drive tours because it gives me a sense of freedom, and I want to make it as free as possible.”* As tourists may gain information from friends and relatives or other information sources, they need not always use the Internet. Interviewees #4 and #5 mentioned the following, respectively:

“Information is available from my friends, so I do not want to waste time searching online. Besides, I think it is hard to find the information I want, asking other people is much easier for me.”

“I always go [sic] travel with self-drive tour club members, the organizer would provide information to us, so I do not need to search by myself.”

One interviewee expressed that he had no trouble searching online for travel information as he knew where to search and how to search for the information he wanted.

Practical Implications

For the supplier side, touristic destinations are trying various ways to improve self-drive tourist entities, such as optimizing operations in camping fees (Mmopelwa, Kgathi, & Molefhe, 2007). Our findings in self-drive tourists' preference reveal that marketing through contemporary social media or micro-blogging websites is an efficient approach. For example, Shanghai Disneyland builds its image on Weibo and asks actors famous for a harmonious family to promote Disneyland. Ho and See-To (2018) also suggested the importance of using social media fan pages to engage online communities for promoting tourist attractions.

As most tourists search for travel preparation information through search engines, companies can make their website appear at the top of related search results in various ways. For example, Baidu provided a bidding system for keywords and advertisements on pages when users search for specific keywords. Although it may let companies bid more than necessary to get high-ranking results, it is genuinely a critical approach to gain more customers. If travel agencies target young customers, they should also consider social media as an effective channel, providing valuable and interesting posts (Ho & See-To, 2018; Cheng et al., 2020).

Moreover, this study's interviews validate that a destination can promote itself through celebrities,

attention-grabbing images, and objective descriptions, ensuring that potential customers can find up-to-date information they need quickly. Local or regional authorities should invest in infrastructures such as the appropriate number and location of guideposts to ensure that self-drive tourists arrive at their destinations safely with sufficient information (Prideaux, 2000; Snepenger et al., 1990; Su et al., 2019).

Conclusion

This study's primary purpose was to understand how information sources related to self-drive tourists' characteristics. We filled the gap of their information search behavior in Mainland China under ubiquitous mobile Internet information availability and the increasing popularity of self-drive tours. Our findings showed some variances within pre-decision and post-decision stages between different age groups, social classes, and experience levels. Preference for up-to-date information and contemporary platforms were also observed. Thus, our findings are anticipated to advise industry practitioners, such as travel agencies and liaison websites, to provide refined services to meet the information needs of Chinese self-drive tourists and produce more comprehensive marketing strategies.

Limitation of this study and future research direction

Although this study has limitations, it provides some directions for future research. According to the framework of tourism consumption systems (Woodside & Dubelaar, 2002), the consumption process includes the pre-trip or planning stage, the travel consumption stage, and the after-trip stage. This study focuses on the planning stage. However, information search also occurs in the actual traveling stage and the after-trip stage in the smartphone era. In particular, privacy and security issues during travel (Hung et al., 2007) and dealing with disaster situations (Chiu et al., 2010; Zhang et al., 2017; Wu & Worrall, 2019) are to be further investigated.

Our upcoming research plans to discuss in focus groups to reveal further the significant differences found in this study. We also plan to collect more data and use other models to verify further the answers provided by the interview. Besides the characteristics analyzed in this study, future research may include factors such as the life stages of their family, which may consider younger households without children, households with children, and retired households. As for the situational factors, future research may focus on previous visits to a destination, travel companions, and reputation issues (Chiu, Leung, & Lam, 2009). We also suggest investigating the association between information search behavior with trip outcomes and destination perceptions.

Finally, this study intended to survey Mainland China's self-drive tourists. However, according to the location distribution data generated by the survey website, economically advanced Zhejiang and

Guangdong were IP (Internet Protocol) addresses for most respondents of this study. Future research is proposed to investigate a greater area for diverse self-drive tourists through online and offline surveys, including a field survey at several destinations.

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Appendix – Survey and Interview Guide

Demographics. Gender / Age / Marital Status / highest level of education / living province / household monthly income in RMB / typical budget of a SINGLE tour /

Which type of traveler do you position yourself?

How many times you have traveled as self-drive tourists. Overall / In the past 12 months

How much do you prefer to travel in these areas? Inside your province / Outside your province in China / Overseas within Asia/ Overseas outside Asia

For your LAST self-drive tour,

- about how long did you drive on the road for the WHOLE tour?
- about how long did you drive TO the destination?
- did you take other transportation (e.g., train or plane) before driving near your destination?
- what is the number of your previous visits to the destination?
- whom did you travel with?
- about how many nights did you stay at the destinations?

Where did you stay for the night?

Which of the following devices that you currently own or frequently use for information search?

Which device do you use most often while traveling?

How often do you do online information search for self-drive tours?

In what situation(s) will you conduct information search for self-drive tours?

Please rate the importance of searching the information about the following categories BEFORE a trip? Routes and map; Accommodations; Food / Restaurants; Destinations and attractions; Transportation to destination; Location of local information center; Insurance; Activities during festivals / celebrations / events; Weather conditions; Road conditions; General shopping; Souvenir; Local tour and cruise; Meeting local people; Others

Please rate the importance of searching the information about the following categories DURING a trip. Routes and map; Accommodations; Food / Restaurants; Destinations and attractions; Transportation to destination; Location of local information center; Insurance; Activities during festivals / celebrations / events; Weather conditions; Road conditions; General shopping; Souvenir; Local tour and cruise; Meeting local people; Others

Rate the following are the reason(s) that prevent you from conducting any online information search BEFORE self-drive tour. Time-consuming; Information already available from other channels and therefore online searching is not necessary; I prefer an unknown journey than a perfectly planned trip; I am not familiar enough with searching; I don't trust the Internet; Others

Rate the following are the reason(s) that prevent you from conducting any online information search During a self-drive tour. Time-consuming; Information already available from other channels and therefore online searching is not necessary; I prefer an unknown journey than a perfectly planned trip; I am not familiar enough with searching; I don't trust the Internet; Poor Internet connection; Expensive Internet costs; Others

BEFORE making any constraining decision on a key characteristic of a trip, what information sources do you usually use? Rate the importance of your sources for information. Friends/relatives; Travel agents; TV and radio; Newspaper and Magazines; Comprehensive search engine; Personal or travel blogs and reviews websites; Tourism-related public agency websites; Tourism-related business

websites; Official website of local tourist office; Social media; Pictures and videos sharing websites or apps; Others

After a constraining decision has been made, what information sources do you usually use? Rate the importance of your sources for information. Friends/relatives; Travel agents; TV and radio; Newspaper and Magazines; Comprehensive search engine; Personal or travel blogs and reviews websites; Tourism-related public agency websites; Tourism-related business websites; Official website of local tourist office; Social media; Pictures and videos sharing websites or apps; Others

Please rate your importance of the following information quality considering your self-drive tours. Information should be easy to find / up-to-date / easy to understand / brief and to the point / contain pictures./ objective / contain personal views.

Please rate your overall satisfaction with information regarding self-drive tours. The information you got online BEFORE the trip / DURING the trip when you are driving / online DURING the trip when you are NOT driving / from other channels BEFORE the trip / from other channels DURING the trip when you are driving / from other channels DURING the trip when you are NOT driving.

Interview Guide

1. How do you plan a self-drive tour?
2. How does an information source influence your perception of a road trip and destination?
3. Are you satisfied with the information you get?
4. Have you ever searched travel information on social media or reviews websites for other travel experiences? If Yes - Was it easy for you? If No -Why not?
5. Have you shared your own travel experience online?
If Yes -What was it? Which social media did you use for sharing? Can you tell me the reason why you shared it?
If No –Why?
6. How do you verify the reliability of the travel information you get on social media? Are there any issues or berries you have come across?
7. What attracted you to a destination other than the destination itself? Such as a special B&B or a special activity?