Smart Tourist Behavior in Wine Cultural Event

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Authors’ contributions
This work was carried out in collaboration among all authors. Author TFY designed the study. Author MHW performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors JLX and MHW managed the analyses of the study. Author JLX managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT
This study aims to investigate smart tourism behavior in wine cultural event, and used valid survey data of 419 tourists in wine cultural event held at Yibin and tested proposed hypotheses undertaken ANOVA. The results showed that the impacts of smart tools on satisfaction, word-of-mouth(WOM), novelty and tourism inertia differed significantly and the impacts of smart tools on the relationships between latent variables differed significantly. This study provided theoretical and practical significance for the development of smart wine tourism.

Keywords: Smart tourism behavior; wine cultural event; ANOVA.

1. INTRODUCTION
COVID-19 has greatly affected China social economy and people’s lives; in particular, the tourism industry has suffered a huge impact and has almost stagnated in the short term. Tourism managers need to anticipate and react wisely to overcome this new crisis. As a bridge between
destinations and tourists, smart technology was a critical aspect of the economic recovery of tourism, and developing smart tourism was not only an effective way to improve local competitiveness, but also a solution to the growth of tourism business [1, 2]. Smart technologies and tools provided tourists with travel information, which played a pivotal role in the acquisition, utilization, supply and sharing of travel-related information, and it also inspired and stimulated them the travel experience of smart tourism destination [3].

Smart tools well connected tourism resources or destinations with tourists [4], which created memorable attraction experiences for tourists [5], and became the promoting and marketing tools for destinations [6]. For example, study has found that the involvement of a visitor would enhance his/her satisfaction and behavioral intention [7]. They found involvement and subjective norm would be the determinates of smart tourism indicating that those visitors whom involved in the utilities of smart tools were more likely to have higher probabilities to present the active behavior in terms of positive words of mouth, recommend, and revisit the destination. On the other hands, smart tools (e.g. map, guiding, tickets booking, room booking, etc.) could quickly and better fulfill the needs of transportation, lodging, dining, entertainment and shopping when traveling of a visitor/tourist.

Moreover, the ultimate goal of smart tools in tourism was to create a more convenient and enjoyable travel experience for tourists [8]. For example, one could scan the QR cord by him/herself with mobile at a tourist site to look up the interpretation instead of the traditional man speaking. The others could browse some comments at social net to confirm the quality of a restaurant or a hotel. Smart tolls were easy to use and made travel become convenient and enjoyable.

However, most studies on smart tourism focus on investigating the influence of smart tourism experience on tourists’ satisfaction and behavior intentions, and little is known about how smart tools influence satisfaction, word-of-mouth (WOM), novelty and tourism inertia. To date, no studies have built a holistic conceptualization about smart tools, satisfaction, WOM, novelty and tourism inertia in smart wine tourism. In order to fill this gap, this paper aims to develop and investigate a conceptually comprehensive model on satisfaction, WOM, novelty and tourism inertia. Therefore, the main purposes of this paper are following: firstly, investigate how smart tools influence satisfaction, WOM, novelty and tourism inertia in smart wine tourism; secondly, examine how smart tools influence the relationships between the latent variables.

Besides, wine cultural tourism has become a popular activity in western China especially in Sichuan province. The origin of domestic wine culture tourism cannot be tested, mainly developed after 2000, especially after the issuance of the State Council alcohol restriction order in 2013, in order to respond to the survival crisis caused by overproduction and the decline of output value, wineries began to operate polygonal wineries one after another. Several big liquor enterprises constantly multi-angle, accelerate the industry fusion. Such as Yibin Wuliangye Group into machinery manufacturing (Ship Group), Licai Group (printing and packaging), Global Group (photoelectric glass), Anji logistics, Sichuan Oak International (tire), Shengshan clothing, health wine and eco-wine company, etc.; In addition to liquor industry-related enterprises, Luzhou Laojiao Group includes certificate papers (Xihua), banks (Luzhou Commercial Bank), investment, micro-loans (Longma Xingda), real estate development, cross-border e-commerce (sea oysters), Subsidiaries of industries such as science and technology and education. These liquor enterprises try to expand the liquor market and attract more consumers through the extension and close integration of primary, secondary and tertiary production [9, 10].

Regardless of whether during or after the COVID-19, how to use smart tools to increase the attention of tourists and maintain a good relationship with tourists, will have a great impact on the development of destinations. Thus, the findings of this study extend the literature on smart wine tourism and offer insights into how to innovate smart tools for wine tourism enterprises and local governments.

2. LITERATURE AND PROPOSED HYPOTHESES

New information technology and smart tools bring tourism benefits [8]. In smart tourism, tourists made use of smart tools to search for destination information during the pre-preparing stage, receive real-time information about the destination during the trip, and can feed back to the destination or spread their evaluations to
Therefore, smart tools also have impacts on the satisfied, and their WOM were positive [15].

Moreover, smart tourism tools include guide, amusement, transportation and other aspects. This study focuses on the influence of smart tools in satisfaction, WOM, novelty and tourism inertia, therefore, the following hypotheses are proposed:

Hypothesis1 (H1): The impacts of smart tools on satisfaction, WOM, novelty and tourism inertia will differ significantly.

Hypothesis2 (H2): The impacts of smart tools on the relationships between satisfaction, WOM, novelty and tourism inertia will differ significantly.

3. METHODOLOGY

A survey questionnaire on WOM, satisfaction, novelty and tourism inertia was conducted. The measurement items were culled and modified from previous studies. The back-translation method was used. Scales were translated to Chinese and then back-translated to English to provide accuracy. The three items of tourism inertia (IN) were developed by Yen [9] and Heeup et al. [15] were used to measure the inertia construct: "I am used to the existing travel planning methods", "Compared to trying new tourist destinations, I prefer to travel in Yibin", "I don't like unfamiliar tourist destinations", ranging from "totally disagree" (1) to "totally agree" (5).

Novelty(NV) was composed of four items that were adapted from Yen [16] and Cheng & Lu [17], and was described as freshness, adventure, excitement, challenge, and thrill: "I like to do something new", "I like to take risks", "I like to stimulate challenges", "I like to thrill and stimulate", ranging from "totally disagree" (1) to "totally agree" (5). The scale for satisfaction(SA) was adapted using three items from Konuk [18] and Gallarza et al., [19]: "I am glad to take the time to attend the Yibin's wine cultural event", "It was a good decision to attend the Yibin's wine cultural event", "I am glad that I decided to attend the Yibin's wine cultural event", ranging from "totally disagree" (1) to "totally agree" (5). Furthermore, two items adapted from Konuk [18] were used to measure WOM, with "totally disagree" (1) to "totally agree" (5): "I would tell others the advantages of leisure in Yibin's wine cultural event", "I would recommend others leisure activities in Yibin's wine cultural event", ranging from "totally disagree" (1) to "totally agree" (5).

With smart tools, tourists planned travel by themselves and booked tickets, hotels, and other tourism products and easily obtain information regarding destination transportation, accommodation, and attractions on the platform of mobile sites when they needed it [13]. More specifically, smart tools supplied the updates and real-time information on the destination and directly communicated with other tourists and tourism marketers to make better travel decisions [14]. Therefore, smart tools can not only satisfy tourists with novelty and enhance their expectations, but also arrange the itinerary for tourists with inertia in advance, reduce strangeness and avoid unnecessary trouble. According to the previous study, if tourists had positive emotions and attitudes toward smart tools, their experience in the destination are satisfied, and their WOM were positive [15]. Therefore, smart tools also have impacts on the relationship between satisfaction, WOM, novelty and tourism inertia.
In terms of sampling method, this study adopted a simple random sampling method, with one person for every five persons selected to conduct a sample survey of the participants. Specifically, investigators invited the participants who have completed the visit to accept the questionnaire survey at the exits of the exhibition center. If rejected, it would be delayed until the invitation was completed and the questionnaire survey was successfully conducted.

Then, this study adopted a questionnaire survey method, based on the principle of voluntary participation of respondents, and selected visitors with WeChat preferences to participate in the written questionnaire survey through simple random sampling in the wine culture exhibition area. To ensure the quality of the questionnaire survey, the interviewers were organized by the researcher to conduct interviewer training for 3 hours before the formal survey, so that the interviewer understands the purpose of the survey, the content of the questionnaire, the sampling method, and possible problems and solutions. Afterwards, based on the characteristics of the maternal body, this study arranged for interviewers to conduct pre-survey at Rhein Spring Square in Yibin City. In addition to testing and training results, the workload of the formal survey was drawn up based on the quantity and quality of the questionnaires from the pre-survey. In the two-hour pre-survey, the survey was conducted based on a simple random sampling method, and each of the 8 interviewers could complete 9 copies on average. In terms of the three days of the exhibition, the morning and the afternoon each have a period, and the target number per person is 54. The total number of 8 people can reach 432, which meets the needs of the sample number.

The formal survey was carried out at the Yibin International Wine Culture Festival in December 2019. Eight interviewers were assigned to 4 exits of the Exhibition Center. Questionnaire surveys were carried out at 10:30 in the morning and 3:30 in the afternoon based on simple random sampling. Firstly, interviewers asked basic questions such as “Do you plan to call a car home”, “Where do you plan to go for lunch”, “Do you know any leisure activities around” and other basic questions to judge whether the exhibitor uses WeChat. If no, the interviews will be ended. If there is, we will learn more about the use of WeChat and the use of WeChat for food, accommodation, travel, and entertainment.

Tourists who have participated in wine events in Yibin were selected for data collection, e.g., “Yibin Wine Culture Tourism Festival”. Data were collected during October 2019. A total of 430 questionnaires were collected, and 419 questionnaires were used in this study, after excluding 11 incomplete forms. The effective questionnaire rate reached 92%. This study used SPSS25.0 and AMOS22.0 statistical software to process the data.

The sample of this study was classified by gender, age, occupation and levels of income and education. Of the 419 respondents, the gender ratio was 3 to 2. Most respondents in the sample were in the 23-28 age group. Most respondents had a high school education or above (59.4%). And the occupational composition included military, police and civil servants (4.5%), manufacturing personnel (4.8%), business/service personnel (22.2%), agricultural personnel (4.3%) and students (13.1%), and other occupational personnel accounted for 51.1% of the sample. A monthly income of less than 3,000 yuan was well over half of the sample (54.7%), which was the middle-lower income group.

4. RESULTS AND DISCUSSION

According to previous study, smart tools were divided into eight categories based on features, including dining, accommodation, booking, shopping, navigation, guided tour, hiring & renting and others, and number (1) to (8) respectively. (1) Dining and (2) accommodation belong to destination guide category; (3) booking and (4) shopping belong to amusement shopping category; (5) navigation, (6) dining, (7) guided tour and (8) hiring & renting belong to transportation category; with (9) others being the category.

Table 1 presented the travel modes of the respondents in smart wine tourism. In the usage of travel tools, the majority (32.55%) were self-driving for male respondents, followed by self-driving cars at 27.44%. While bus accounted for the largest proportion (31.10%) for female respondents. As for the smart tools categories, male and female respondents mostly used booking, navigation and others in the wine tourism destination, indicating the improvement and upgrading of smart wine travel tools could be appropriately concentrated on traveling and arrangement. Overall, the total proportion of travel tools self-driving cars was the highest (approximately 60%). Among the various types of smart tools selected by tourists, other categories
4.1 One-way ANOVA

With respect to the hypothesis 1, one-way ANOVA was conducted to check whether there are significant differences in the impact of different types of smart tools on each latent variable. The ANOVA results revealed that variables differed by the smart tool categories, $F^{(SA)}(7, 411) = 3.168$, $p^{(SA)} = .003$, $F^{(NV)}(7, 411) = 2.214$, $p^{(NV)} = .032$, $F^{(WO)}(7, 411) = 2.489$, $p^{(WO)} = .016$, $F^{(IN)}(7, 411) = 6.811$, $p^{(in)} = .000$. However, as WO and NV Levene’s test for equality of variance were violated, $F^{(WO)}(7, 411) = 3.317$, $p^{(WO)} = .003$, Welch’s adjusted F ratio was used and was significant, $F^{(NV)}(7, 70.816) = 2.525$, $p^{(NV)} = .022$, $F^{(IN)}(7, 69.928) = 7.131$, $p^{(NV)} = .000$ (see Table 2).

Then the LSD post hoc results of SA showed that dining smart tools was significantly higher than other smart tools (mean differences(1-8) = .3949, $p(1-8) = .15$); accommodation smart tools was significantly higher than shopping smart tools (mean differences(2-4) = .4822, $p(2-4) = .032$) and other smart tools (mean differences(2-8) = .5631, $p(2-8) = .005$); navigation smart tools was significantly higher than shopping smart tools (mean differences(5-4) = .4069, $p(5-4) = .012$) and other smart tools (mean differences(5-8) = .4878, $p(5-8) = .000$).

Then the LSD post hoc results of IN showed that hiring & renting smart tools (mean differences(7-4) = .3895, $p(7-4) = .044$) and dining smart tools (mean differences(7-1) = .4945, $p(7-1) = .007$) were significantly higher than shopping smart tools; other smart tools was significantly higher than accommodation smart tools (mean differences(8-2) = .3810, $p(8-2) = .043$), booking smart tools(mean differences(8-3) = .24734, $p(8-3) = .035$) and shopping smart tools (mean differences(8-4) = .4437, $p(8-4) = .002$).

The TambaneT2 post hoc results of NV showed that hiring & renting smart tools (mean differences (7-8) = .9351, $p(7-8) = .043$), dining smart tools (mean differences(1-8) = .6679, $p(1-8) = .048$), booking smart tools (mean differences(3-8) = .5418, $p(3-8) = .035$) and shopping smart tools (mean differences(4-8) = 1.1886, $p(4-8) = .000$) were significantly higher than other smart tools.

In addition, the TambaneT2 post hoc results of WO showed navigation smart tools was significantly higher than other smart tools (mean differences(5-8) = .4251, $p(5-8) = .013$).

All in all, hypothesis 1 was supported since the impacts of smart tools on satisfaction, WOM, novelty and tourism inertia differed significantly.

4.2 MANOVA

Concerning the hypothesis 2, multivariate analysis of variance (MANOVA) was conducted to examine whether there are significant differences in the impact of different types of smart tools on the relationships between the latent variables. The MANOVA tests revealed that SA, WO, NV, and IN had main effects on the smart tool categories significantly (see Table 3). Meanwhile, the Wilks’ Lambda multivariate test results showed that there was an interaction between the dependent variables, $F(28, 1472.487) = 3.151$, $p = .000$.

The ANOVA results revealed that the measured covariance matrix of the dependent variable of each group was equal, $F(70, 7572.675) = 1.234$, $p = .09 (<.05)$, which meant that the relationship between SA, IN, WO and NV significantly differed by the smart tool categories. The LSD post hoc results showed that tourists using shopping smart tools had stronger novelty than tourists using accommodation smart tools (mean differences(4-2) = .8288, $p(4-2) = .008$), tourists using booking smart tools (mean differences(4-3) = .6486, $p(4-3) = .004$) and tourists using other smart tools(mean differences(4-8) = 1.1886, $p(4-8) = .000$). Meanwhile, tourists using navigation smart tools had higher WOM than tourists using booking smart tools (mean differences (5-3) = .3550, $p (5-3) = .007$) and tourists using shopping smart tools (mean differences (5-4) = .4783, $p (5-4) = .002$). Also, tourists using hiring & renting smart tools had stronger inertia than tourists using shopping smart tools (mean differences (7-4) = .3895, $p (7-4) = .044$), and tourists using dining smart tools had stronger inertia than tourists using accommodation smart tools (mean differences (1-2) = .4318, $p (1-2) = .05$) and tourists using shopping smart tools (mean differences (1-4) = .4945, $p (1-4) = .007$).

It also indicated that tourists using accommodation smart tools (mean differences (2-4) = .4822, $p (2-4) = .032$) and navigation smart tools (mean differences (5-4) = .4069, $p(5-4) = .012$) had stronger satisfaction than shopping smart tool.
Table 1. Usage of travel tools (N=419)

<table>
<thead>
<tr>
<th>Tools</th>
<th>Gender ratio</th>
<th>Total ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Travel tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle</td>
<td>5.88%</td>
<td>3.66%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>5.49%</td>
<td>2.44%</td>
</tr>
<tr>
<td>Bus</td>
<td>24.71%</td>
<td>31.10%</td>
</tr>
<tr>
<td>Self-driving</td>
<td>32.55%</td>
<td>27.44%</td>
</tr>
<tr>
<td>Tourist coach</td>
<td>9.02%</td>
<td>7.32%</td>
</tr>
<tr>
<td>Others</td>
<td>22.35%</td>
<td>28.05%</td>
</tr>
<tr>
<td>Smart tools categories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Destination guide category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dining</td>
<td>7.06%</td>
<td>10.98%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>4.71%</td>
<td>6.10%</td>
</tr>
<tr>
<td>Amusement shopping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Booking</td>
<td>20.39%</td>
<td>16.46%</td>
</tr>
<tr>
<td>Shopping category</td>
<td>8.63%</td>
<td>12.80%</td>
</tr>
<tr>
<td>Navigation</td>
<td>21.18%</td>
<td>14.63%</td>
</tr>
<tr>
<td>Guided tour</td>
<td>1.18%</td>
<td>2.44%</td>
</tr>
<tr>
<td>Hiring &amp; Renting</td>
<td>6.27%</td>
<td>8.54%</td>
</tr>
<tr>
<td>Others</td>
<td>30.59%</td>
<td>28.05%</td>
</tr>
</tbody>
</table>

Notes: The numbers 1 to 8 of the smart tools are also used in the analysis of ANOVA below.

Table 2. Difference in dependent variables by smart tools (N=419)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levene’s test</th>
<th>Welch’s adjusted F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DF</td>
<td>F</td>
</tr>
<tr>
<td>SA</td>
<td>7/411</td>
<td>1.544</td>
</tr>
<tr>
<td>IN</td>
<td>7/411</td>
<td>.688</td>
</tr>
<tr>
<td>WO</td>
<td>7/411</td>
<td>2.158</td>
</tr>
<tr>
<td>NV</td>
<td>7/411</td>
<td>3.137</td>
</tr>
</tbody>
</table>

Notes: SA: satisfaction, WO: word-of-mouth (WOM), NV: novelty, IN: tourism inertia, the same below; **p < .001, *p < .05

Table 3. Manova tests of the main effect

<table>
<thead>
<tr>
<th>Main effects</th>
<th>Sum of squares</th>
<th>D.F.</th>
<th>Mean square</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>16.12</td>
<td>7</td>
<td>2.303**</td>
<td>3.168</td>
<td>.003</td>
</tr>
<tr>
<td>WO</td>
<td>11.672</td>
<td>7</td>
<td>1.667*</td>
<td>2.489</td>
<td>.016</td>
</tr>
<tr>
<td>NV</td>
<td>67.800</td>
<td>7</td>
<td>9.686***</td>
<td>6.811</td>
<td>.000</td>
</tr>
<tr>
<td>IN</td>
<td>10.170</td>
<td>7</td>
<td>1.453*</td>
<td>2.214</td>
<td>.032</td>
</tr>
</tbody>
</table>

Notes: **p < .001, *p < .05

There, hypothesis 2 was confirmed since the impacts of smart tools on the relationships between satisfaction, WOM, novelty and tourism inertia differed significantly.

5. CONCLUSION

Through the analysis of one-way ANOVA, this research found that different types of smart tools had significant differences in each variable. For tourism inertia, tourists using both hiring & renting and dining smart tools had a higher-level perception of inertia than tourists using shopping, which showed that tourists using hiring & renting and dining smart tools got used to existing travel modes and preferences, and they followed their dietary preferences in wine tourism destinations. In contrast, shopping tourists had a lower perception of inertia, and they preferred to experience different things. Then, as far as satisfaction was concerned, tourists using dining smart tools had a higher-level perception of satisfaction than tourists using others; tourists using accommodation smart tools had a higher-level perception of satisfaction than tourists using shopping smart tools. It could be seen that tourists traveling to the wine destination paid more attention to dining and accommodation, where they could gain more happiness. While tourists using shopping smart tools had less
satisfaction, maybe the category, characteristics or price of the wine tourism destination did not meet their expectations. For novelty, tourists using hiring & renting, dining, booking and shopping smart tools had a higher-level perception of satisfaction than tourists using others, indicating tourists using the transportation, destination guide and amusement shopping categories had a higher perception of novelty and pursued different travel experience. As far as WOM was concerned, tourists using navigation smart tools made more WOM on wine tourism destinations than tourists using others. That is, tourists used transportation smart tools had more experience in the wine tourism destination, and they would share with others.

Then, through the Multivariate analysis of variance (MANOVA), this study examined that smart tool categories significantly differed in the relationships between variables. Different types of smart tools had significant differences in the relationship of variables, and the destination guide category, amusement shopping category, transportation category and others also had significant differences in the effects of variable relationships. For tourists' novelty, tourists using amusement shopping category had higher novelty than tourists using destination guide and other category. Tourists using amusement shopping smart tools preferred to seek new and different things in wine tourism destinations. Furthermore, tourists using transportation category smart tools had a deeper experience to the wine tourism destination, intended to make more evaluations on wine tourism destinations than tourists using amusement shopping category, then WOM was generated. For tourists' inertia, tourists using both transportation category and destination guide category had higher inertia than amusement shopping category, indicating that tourists using transportation and destination guide category relied on past travel experience or recommendations from surrounding people, and like to arrange a good itinerary to travel to wine tourism destinations. For tourists' satisfaction, tourists using destination guide category and transportation category had a higher satisfaction level than tourists using amusement shopping category. If the wine destinations' dining, accommodation, navigation etc. were satisfied with tourists' expectation, they felt more happiness. In comparison, tourists who used amusement shopping category smart tools were not satisfied with the goods in wine destinations.

CONSENT
The whole process was recorded with the oral consent of the participants. As per international standard or university standard, respondents' oral consent has been collected and preserved by the author(s).

COMPETING INTERESTS
Authors have declared that no competing interests exist.

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