Research on Evaluation of Tourism Live Marketing Effect

Hao Dong¹, Yanjun Liu¹, linfeng Dong²*

¹Griffith University, Master of International Tourism and Hospitality Management Gold Coast, Queensland, Australia
²Professor, Postdoctoral fellow, Hainan University, Haikou, Hainan Province, China

Abstract: With the development of Internet and tourism industry, live tourism marketing has gradually become an important way of tourism marketing. Among them, tourism live marketing belongs to one of the big categories of live marketing. This paper first determines the evaluation index through the analysis of the influencing factors of live marketing, and further determines the final evaluation index through the use of Delphi method and network research. Then the weights of the evaluation index system are determined by AHP. Finally, the rationality of this evaluation index system is verified through the calculation and comparison of specific cases and evaluation index system.

1. Introduction

Based on the background of the Internet era, tourism live streaming has become popular. Live tourism marketing refers to a marketing model that diversifying tourist destinations or tourism products, presenting them in an all-round way by planning live broadcast of different live broadcast themes, or conveying personal experience and emotion after the host experiences the tourism projects or tourism products. Compared with live TV and network broadcast, such methods have lower cost, stronger sense of presence, and stronger interaction with users. Let the traditional "one to one" mode into "one to many" service mode, so as to improve service efficiency. And the definition of network broadcast marketing is to use the network broadcast platform to achieve remote in-depth communication and interaction with users, so as to improve the visibility, reputation and social recognition of the enterprise, and achieve the goal of directly or indirectly promoting the company(Wang, 2017)[1].

At present, research on tourism live broadcast mainly focuses on theoretical research on the theory of tourism live broadcasting, research on the interaction and presence of tourism live broadcasting on tourism consumers' willingness to participate and marketing effects as well as part of the research from the perspective of live broadcast marketing. For example: Shalini et al. (2020) started from tourists' consumption views, and proposed that quality, price, social status, preference and information value determine their attitudes towards online travel platforms[2]. DeVos J (2020) points out that people's travel needs cannot be met due to the COVID-19 pandemic, and walking, cycling and online travel have become important ways for people to maintain mental happiness [3]. Ji et al. (2020) conducted research on social media platforms such as Twitter and YouTube, and proposed a new computer system providing data support for decision-making and marketing[4].

Based on the analysis of the influencing factors of tourism live broadcast, this article uses research to initially determine the rating index of tourism live broadcast marketing effect. On this basis, taking tourists as the second research object, determine the final evaluation index, and calculate the weight of each index based on the AHP analytic hierarchy process, and establish the evaluation system.

2. Analysis of Influencing Factors of Tourism Live Marketing

Tourism live broadcast marketing can be divided into two categories: (1) "Live broadcast + e-commerce". (2) "Live broadcast + content"(Chen et al., 2021)[5]. The article based on the analysis of the factors influencing the marketing effectiveness of tourism live streaming, preliminary evaluation indicators for the marketing effectiveness of tourism live streaming have been selected. There are a total of 15, including: spread index, user preference, recommendation index, brand awareness, brand trust, interactivity, professional, fan conversion rate, impact index, live streaming frequency, number of fans, live room page views, number of online viewers, live broadcast duration, single popularity peak.

3. Screening of evaluation indicators

In the previous part of this article, 15 evaluation indicators for the marketing effect of tourism live streaming have been summarized. In order to conduct an in-depth study on the evaluation of the marketing effect of tourism live broadcast, this paper uses the expert interview method to further test and modify the
evaluation indicators. Based on this, the author has interviewed 30 experts. According to the valuable opinions put forward by experts, the evaluation indicators of tourism live broadcast marketing effects are screened and supplemented. Later, through online research, it was found that some indicators needed to be deleted. Respondents generally believe that its indicators are "not important". Therefore, a secondary censorship is performed on the indicators. Determine the final tourism live broadcast marketing effect evaluation index including 9 items. There are spread index, recommendation index, brand awareness, brand trust, interactivity, fan conversion rate, live room page views, number of online viewers, sales index.

4. Construction of evaluation index system for tourism live broadcast marketing effect

(1) Selection of research samples and design of questionnaire

1. Selection of research samples

This survey takes tourists from Qilou Old Street, Nanmen Snack Street, and Baishamen in Haikou City, Hainan Province, China, as the research objects, and distributes as well as fills in online questionnaires. The three places will have nearly 15,000 tourists from March 5 to 10, 2023. So the total sample size of this questionnaire is 15,000. With a confidence level of 90%, a maximum error of 5% is allowed. According to the statistical simple random sampling calculation formula \( n = \left(\frac{Z^2 \cdot S^2}{d^2}\right) \), \( n = \left(\frac{1.96^2 \cdot 0.5^2}{0.05^2}\right) + N \) (Note: \( n \) is the initial sample size; \( Z \) is the statistic under the confidence level; \( S \) is the overall Standard deviation, take 0.5; \( d \) is the maximum allowable error; \( n_0 \) is the minimum effective sample size; \( N \) is the target total). Calculate the minimum effective sample size for a total sample size of 15,000. The minimum effective sample size at the beginning of the calculation is 264. During the investigation process, a total of 300 questionnaires were issued, and 300 were returned, with a return rate of 100%. After removing the invalid questionnaires, there were 285 valid questionnaires, and the effective rate of the questionnaires was 95%. If the number of valid questionnaires recovered in this survey meets the above-mentioned minimum valid sample size requirements, the survey data are valid and reliable.

2. Questionnaire design

First, the use of the AHP method requires the construction of a judgment matrix. Therefore, in this study, the DELPH method is used to construct the judgment matrix. Secondly, the judgment matrix is not directly given in the questionnaire, but the Likert scale transformed into the attitude scale method is used. According to the content of the research, the attitude scale in the questionnaire needs to be converted into an importance scale. The five options of the scale are very unimportant, unimportant, general, important, and very important. Finally, explain each indicator in detail to avoid the influence of the respondents on the weight judgment due to the ambiguity of the meaning of the indicators, thereby affecting the accuracy of the research results.

(2) Trust level analysis

The method of testing reliability in this paper is to use cronbach \( \alpha \). When Cronbach \( \alpha \leq 0.3 \), \( 0.3 \leq \text{Cronbach} \leq 0.4 \), \( 0.4 \leq \text{Cronbach} \leq 0.5 \), \( 0.5 \leq \text{Cronbach} \leq 0.7 \), \( 0.7 \leq \text{Cronbach} < 0.9 \), \( 0.9 \leq \text{Cronbach} \), respectively corresponding to not credible, barely believable, believable, very believable (most common), very believable (less common), vital believable. Through the analysis of the data, the corresponding cronbach \( \alpha \) value is obtained, and the \( \alpha \) reliability coefficient of each index is greater than 0.6, which proves that the consistency between each index and the corresponding topic is good, and the reliability of the scale is good, the recovery data is relatively reliable.

(3) The weight determination and analysis of the index system.

When using the AHP method to construct the judgment matrix, the author draws on the 1-9 scale method to reduce the 9-level scale to 5-level scale, so as to reduce the data errors caused by the subjective will of the respondents when filling out the questionnaire. Sum the values of the questionnaire survey matrix and take the arithmetic average to obtain the judgment matrix. Follow the steps above. Using SPSS to perform matrix operations, the results of AHP hierarchical analysis are shown in the table 1.

<table>
<thead>
<tr>
<th>Index</th>
<th>Eigenvalues</th>
<th>Weights</th>
<th>Largest eigenvalue ( \lambda_{max} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spread index</td>
<td>1.067</td>
<td>11.842%</td>
<td></td>
</tr>
<tr>
<td>Recommendation index</td>
<td>1.059</td>
<td>11.747%</td>
<td></td>
</tr>
<tr>
<td>Fan conversion rate</td>
<td>1.001</td>
<td>11.103%</td>
<td></td>
</tr>
<tr>
<td>Interactivity</td>
<td>0.994</td>
<td>11.025%</td>
<td></td>
</tr>
<tr>
<td>Number of online viewers</td>
<td>1.056</td>
<td>11.717%</td>
<td>9.064</td>
</tr>
<tr>
<td>Live room page views</td>
<td>1.023</td>
<td>11.352%</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Analyze the data results table.
In Analytic Hierarchy Process, if CI=0, it means that the judgment matrix has complete consistency. Its calculation formula is CI=(λmax-n)/(n-1), n=9. According to the table 1, the maximum eigenvalue λ max=9.064. CI=0.008. Calculate the CR value according to the CI value and RI value to check whether the judgment matrix meets the consistency test. The formula is CR=CI/RI.

When CR ≤ 0.1, it indicates that the judgment matrix has consistency. When n=9, RI=1.46, calculated CR=0.05<0.1. Therefore, it is proven that the consistency test of the judgment matrix and the calculated weights have consistency.

Determination of indicator weight value: spread index, recommendation index, brand awareness, brand trust, interactivity, fan conversion rate, live room page views, number of online viewers, sales index. These nine items account for 11.84%, 11.75%, 11.10%, 11.72%, 11.03%, 11.35%, 10.44%, 10.32%, 10.46% respectively.

5. Establishment of evaluation index system for tourism live broadcast marketing effect

(1) Index value representation

The interactivity of travel anchors is represented by the number of likes. The spread index, recommendation index, fan conversion rate, number of online viewers, live room page views, and sales data are all from Xindou(https://xd.newrank.cn/home/search). Brand trust and brand awareness are represented by the "Alexa ranking" and "website PR value" in the comprehensive tourism website ranking list (http://top.chinaz.com/list.aspx) of the website ranking network. Among them, the higher the PR value, the higher the brand awareness of the website. Alexa ranking refers to the world ranking of the website, the higher the ranking, the stronger the authority of the website, and the user's higher trust in them.

(2) Normalization of indicators

Since the magnitude and dimension of each indicator above are different, it is necessary to normalize the indicators. The specific method is
\[X_i = \frac{X_i - X_{min}}{X_{max} - X_{min}}\]
When \(X_i = X_{max}\) or \(X_{min}\), take the decimal part expressed in scientific notation, \(n=\)the power of 10.

(3) Establish system

The weighted summation method is used to establish the evaluation system. Multiply the normalized value of the index with the corresponding index weight(Y), and finally sum to obtain the final marketing effect M. The formula is
\[M = \sum_{i=1}^{n} (X_i \cdot Y_i)\] for \(n=(1,3,4,5,6,7,8,9)\).

6. Verification of the evaluation system for tourism live broadcast marketing effects

Author uses Douyin as the live broadcast platform and selects the Douyin accounts of officially certified by Ctrip and Fliggy as examples. Using the system established above, the theoretical value of the tourism live broadcast marketing effect of the two websites was calculated (a total of 10 live broadcasts). Among them, table 2 is the Ctrip Index normalized data table.

<table>
<thead>
<tr>
<th></th>
<th>(X_i)</th>
<th>(X_i')</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spread index</td>
<td>66</td>
<td>0.00026</td>
</tr>
<tr>
<td>Recommendation index</td>
<td>6.7</td>
<td>0.00003</td>
</tr>
<tr>
<td>Fan conversion rate</td>
<td>24%</td>
<td>0.24000</td>
</tr>
<tr>
<td>Interactivity</td>
<td>3616</td>
<td>0.01446</td>
</tr>
<tr>
<td>Number of online viewers</td>
<td>24</td>
<td>0.00010</td>
</tr>
<tr>
<td>Live room page views</td>
<td>9700</td>
<td>0.03880</td>
</tr>
</tbody>
</table>
Sales
Brand awareness 7 0.00003
Brand trust 922 0.00369

\[ M_X = 0.00026 \times 11.84\% + 0.00003 \times 11.75\% + 0.24000 \times 11.10\% + 0.01446 \times 10.44\% + 0.00003 \times 10.32\% - 0.00369 \times 10.46\% = 0.29 \]

And Fliggy \( M_F = 0.17 \)

Conclusion: The marketing effects of the two tourism live broadcasts are \( W_X > W_F \). That is, the marketing effect of Ctrip’s travel live broadcasts is greater than that of Fliggy’s travel live broadcasts.

A total of 400 valid questionnaires were filled in and returned through the survey questionnaire, 266 valid web-based questionnaires and 134 valid paper-based questionnaires. Through the research proves that the evaluation index system established above is reasonable and feasible.

7. Conclusion

This paper takes tourism live broadcast as the research object, determines the evaluation indicators through literature review and questionnaire survey, collects data through secondary research, analyzes the data to obtain the weight of each index, and establishes the evaluation index system of tourism live broadcast marketing effect. Finally, the evaluation index system is verified, and the verification proves that the index system is correct.

References


