Full Length Research Paper

A two way assessment of tourism websites to increase their effectiveness

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Tourism, world's most significant revenue earning sector, is highly dependent on the effectiveness of the tourism website. A tourist destination must have a website enriched with different design and service related attributes. Here, a user feedback based study was conducted. This user feedback based study shows that there is a lot of difference between the appeal of Indian and International tourism websites. A fuzzy score has been obtained to assign ranks to the websites on the basis of user feedback. On the other hand, ranks were given to the same set of websites on the basis of simple presence and absence of attributes. Websites having more presence of attributes were given higher ranks. The presence and absence of attributes were judged from simple observation. Then it was observed that there is a high degree of correlation between the ranks obtained from the two methods. This shows that more presence of attributes gives better user feedback and an increase in the number of design and service related attributes which is required for Indian tourism websites. In this way, Indian tourism websites can give better impact on user's mind.

Key words: Effectiveness, tourist.

INTRODUCTION

The major decisions of a tourist are taken at the stage of total planning of the entire travel before visiting a tourist destination. Proper dissemination of information through the tourism website can only provide tourists with a set of information that can help them to build an entire plan of the tour at the very initial level of the tour.

In this study ten International and twelve Indian state tourism websites are selected. Firstly, the study was conducted to make a list of attributes. A set of 52 attributes were obtained. Ranks to the websites were given through simple observation. The observation mainly refers to the presence and absence of attributes for Indian and International tourism websites.

The list of attributes is given below and it was also observed that there is a huge deficiency of presence of

attributes for Indian state tourism websites. The total numbers of attributes are categorized into several groups. A set of attributes forming a particular group signifies a particular characteristic. Two procedures have been followed to conduct this study.

(1) Study through observational method.
(2) Study through user feedback based method.

The observational method is based mainly on the presence of attributes of Indian state tourism websites. The result of the presence of attributes is listed using a table. In that table the 52 attributes were grouped and the grouping was done to signify that a set of attributes represents a particular characteristic. If any attribute is available in the website, it is considered as a score and the score is calculated. It was observed that, Indian state tourism websites had low scores in comparison to International websites. This proves that Indian tourism websites have less number of attributes.

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The user feedback based method is based on user's opinion about a particular characteristic. The characteristic is based on some attributes. User's opinion about a characteristic is taken on an ordinal scale. Then the ordinal scale's data, fuzzy score was obtained using the concept of triangular fuzzy number (John, 1999). Ranks of the websites were given on the basis of user's feedback. Now if there is a high degree of correlation existing between two ranks, we can conclude that more presence of attributes gives better user feedback.

SOME PREVIOUS STUDY

Five significant constructs that can play a great role in the success of a website were identified by Palmer (2002). These characteristics of websites are downloading delay, navigation, interactivity, responsiveness, information and content (Palmer, 2002). In a competitive market, customer satisfaction is enriched after evaluation using the fuzzy approach by Farzad (2008). The interaction between the user who wants to collect data about a tourist destination from the internet and conceptual framing of data provided by websites sometimes mismatch and that was analyzed by Pan (2003). The analysis of ordinal scale data using fuzzy mathematical principle was done by John (1999). A study was conducted by Olsina et al. (2001) on quality characteristics and attributes of websites.

OBJECTIVES

Our objective is to make an assessment of Indian tourism websites. The study is an assessment of the effect of deficiency of a set of design and service related attributes that drives the user's impression on a specific dimension. This study also finds out the importance of attributes of a tourism website for better user impression. The objectives of this study also include making a list of design and service related attributes that is required for Indian tourism websites to increase their effectiveness.

METHODOLOGY

In a tourism website there are several components that provide information about different attributes like attractions, accommodation. Attractions include places to visit, fairs and festivals, entertainment, food and wine etc. Information about weather includes climate, forecast of weather information, options for advance information on disasters. So if it is considered that information about attraction is a dependent attribute that provides information about a particular tourist destination then places to visit, fairs and festivals and entertainment are the independent attributes that provide information. Similarly, information about weather (includes independent attributes such as climate, forecast weather information, advance information on disasters etc) have also been considered.

A list of dependent and corresponding independent attributes is given below:

1) Attraction includes links like:
a) Do not miss / Special spot,
b) Events /Festivals
c) Entertainment,
d) Food and wine

2) Weather includes links like:
a) Climate,
b) Forecast of weather information,
c) Advance information of digesters

3) Important information like:
a) Health and safety
b) Emergencies
c) Communication
d) Business hours
e) Holiday and
f) Top weekly news

4) Plan your trip:
a) Tourist office
b) Site map
c) Wi-Fi
d) Interactive itinerary planner
e) When to go and where to go
f) Guide

5) Travel tips:
a) Regulation
b) Health
c) Currency
d) Church services
d) Phone and e-mails
e) Miscellaneous
f) Comparison chart

6) Accommodation includes links like:
a) Hotel directory
b) Hotel map
c) Gov. Accommodation
d) Payment system and currency
e) Services
f) Packages

7) Transportation:
a) By plane
b) Train
c) Airport
d) Ferries
e) Travel time and distance

8) About the Country/state:
a) History
b) Weather
c) Language (option
d) Religion
e) Key facts and figure
f) Events /festivals
g) Location

9) Shopping includes links like:
a) Tips for shopping
b) Tax table
c) Special items

Table 1. Ranking of websites on the basis of number (52) of attributes.

Country (Website)	Presence of attribute	Rank from observation
Switzerland (www.myswitzerland.com)	39	1
Singapore (www.yoursingapore.com)	37	2
Italy (www.italiantourism.com)	35	3
Goa (www.goaTourism.com)	22	4
Madhya Pradesh (www.ktdc.com)	17	5
West Bengal (www.wbTourism.com)	16	6

Table 2. Total expert feedback.

Score	Number of persons
1	1
2	1
3	2
4	3
5	7
6	6
Total	20

d) Payment option

10) Immigration and custom:
a) Visa/passport
b) Validation
c) Percolation
d) What to do and how to do
e) Office address and emergency contact no

In the above list 52 independent attributes and 10 dependent characteristics are given. In the observational method a survey was conducted on the presence of one attribute in a particular website. In this study the survey was conducted on tourism websites of Switzerland (www.myswitzerland.com), Singapore (www.yoursingapore.com), Italy (www.italiantourism.com) , Goa (www.goaTourism.com), Madhya Pradesh (www.ktdc.com) and West Bengal (www.wbTourism.com). The websites were selected because they have a good number of attributes from Indian and International perspectives. Out of the 52 attributes, the presence of attributes is shown Table 1.

User feedback based method

In the observational method, 52 independent attributes and 10 dependent attributes were selected. 10 dependent attributes represent the information and   service of a particular tourist destination. 10 questions were designed on the basis of the 10 dependent attributes and user feedback was taken in an ordinal scale. The ten questions are given below:

1. Information about attraction is adequate.
2. Information about Weather is adequate.
3. Information about things to do is adequate.
4. Information about plan to your trip is adequate.
5. Information about travel tips is adequate.

6. Information about accommodation is adequate.
7. Information about transportation is adequate.
8. Information about the country is adequate.
9. Information about shopping is adequate.
10. Information about immigration and custom is adequate.

User feedback on the above statements was represented on an ordinal scale of six intervals marked A, B, C, D, E, and F thus;

A) Strongly disagree
B) Generally disagree
C) Moderately disagree
D) Moderately agree
E) Generally agree.
F) Strongly agree

The result of the ordinal scale is analyzed using fuzzy mathematical principle. Fuzzy scores from the ordinal scale data were obtained by incorporation of the concept of triangular fuzzy numbers. For example, a respondent who was evaluated on question 5 provided an appropriate interpretation/choice in the range of 4 (as the minimum) and   6 (as the maximum). To obtain the fuzzy score of the number 5, it is represented as (4, 5, 6) using triangular fuzzy number (TFN). The ordinal scale score and corresponding score using the TFN is given below.

$1 = TFN(1,1,2), 2 = TFN(1,2,3), 3 = TFN(2,3,4), 4 = TFN(3,4,5), 5 = TFN(4,5,6), 6 = TFN(5,6,6)$

Here user feedback was taken from 20 expert users. These experts are persons who are quite aware of the basic qualities of a website. Although a larger sample can give better result, but a small sample was chosen because it is very difficult to find experts who have the basic idea about good qualities of a website.

The 20 users provided feedback (on the 10 questions) on the above six websites of six tourist destinations.

The procedure by which the TFN score was generated is given in Table 3 (John, 1999). The six sets of data on the six websites are also given in Tables 3.

A total of 20 expert feedbacks were obtained. Table 2 shows each expert assigned a number and the number belonging to a particular score.

Taking the average weighted score for each TFN representing the appropriate score yields a TFN of 3.8, 4.75 and 5.45 when carried out with appropriate attention to arithmetic rules of TFNs thus;

$[(I, I, 2) \times 1 + (I, 2, 3) \times 1 + (2, 3, 4) \times 2 + (3, 4, 5) \times 3 + (4, 5, 6) \times 7 + (5, 6, 6) \times 6]/20 = (3.8, 4.75, 5.45)$

Applying the above rule, it is possible to compute the average weighted score for the data obtained from the survey.

Table 3. Average TFN score for websites.

www.myswitzerland.com	www.yoursingapore.com	www.italiantourism.com	www.goaTourism.com	www.ktdc.com	www.wbTourism.com
SET I	SET II	SET III	SET-IV	SET-V	SET-VI
(3.8,4.75,5.45)	(4.05,5.07,5.8)	(4.1,5.1,5.9)	(2.05,2.95,3.96)	(1.75,2.6,3.54)	(1.6,2.2,3.4)
(3.9,4.9,5.5)	(4.45,5.1,5.82)	(4.05,5.05,5.8)	(2.4,3.1,4)	(1.7,2, 3.5)	(1.54,2.25,3.5)
(3.6,4.6,5.35)	(4.2,4.98,5.7)	(4.6,5.5,6)	(2.2,3.5,4.1)	(1.6,2.01,3.04)	(1.61,2.3,3.7)
(3.9,4.8,5.76)	(4.4,5.15,5.6)	(4.15,5.25,6.1)	(2.1,3.2,4.2)	(1.06,2.5,3.09)	(1.8,2.4,3.73)
(3.5,4.9,5.8)	(4.5,5.2,5.75)	(4.3,5.6,5.9)	(2.25,3.15,4.3)	(1.79,2.65,3.65)	(1.98,2.5,3.4)
(3.45,4.7,5.75)	(4.21,4.9,5.66)	(4.1,5.07,5.99)	(2.14,3.02,4.25)	(1.8,2.8,3.7)	(1.6,2.32,3.1)
(3.56,4.65,5.68)	(4.08,5.21,6)	(4.2,5.45,5.89)	(2.08,3.5,4.05)	(1.85,2.08,3.6)	(1.45,2.6,3.6)
(3.5,4.71,5.8)	(4.1,5.2,5.91)	(4.43,5.4,6.01)	(2.07,2.9,4.45)	(1.76,2.9,3.65)	(1.67,2.34,4)
(4.3,4.7,6)	(4.3,5.1,5.9)	(4.7,5.08,5.75)	(2.6,3.22,4.06)	(1.78,2.8,3.45)	(1.9,2.8,4.2)
(4.1,4.6,5.9)	(4.35,4.91,5.81)	(4.5,5.06,5.88)	(2.4,3.01,4.35)	(1.67,2.6,3.68)	(1.52,2.12,3.08)

Table 4. Defuzzyfication of TFN average score.

Country/ Web site		Score	User feedback rank	Observed rank	d^2
Switzerland (www.myswitzerland.com)	Set I	4.73	3	2	1
Singapore (www.yoursingapore.com)	Set II	5.055	2	1	1
Italy (www.italiantourism.com)	Set III	5.1867	1	3	4
Goa (www.goaTourism.com)	Set IV	2.85	4	4	0
Madhya Pradesh (www.ktdc.com)	Set V	2.274	6	5	1
West Bengal (www.wbTourism.com)	Set VI	2.501	5	6	1

RESULTS

Expected value of TFN scores (Peide and Zhongliang, 2009):

$W_i = (\sum a_i /n + 2\sum b_i /n + \sum c_i /n) / 4$ (Table 4)

Applying Spearman's Rank correlation coefficient formula:

$R = 1 - 6\sum d^2 / (n^3 - n)$ (Priyotosh, 2010)

= 0. 772

Therefore, user impression is positively and highly correlated with the observed value. Ranking of the six websites with the observational method was obtained and the ranks are mainly given on the basis of presence of attributes. Out of the 52 independent attributes, the frequency of presence was obtained. It was revealed that international websites obtained higher ranks in comparison to the websites of Indian state tourist spots.

From the user feedback based method, ranks of tourism websites were also obtained by firstly formulating ten questions from which user feedback was obtained and placed in an ordinal scale. Fuzzy scores were then obtained using TFN and defuzzyfication technique was applied to generate ranks for the six websites. Lastly using the spearman's rank correlation formula, it was found that a high degree of correlation exists between observed results of presence of independent attributes and its ranking and user feedback

based rank.

LIMITATIONS AND FUTURE RESEARCH

One of the limitations of this study is language barrier; only English language websites were included thereby limiting the number of sample websites.

For future studies, it is very important to investigate how cultural differences influence tourism information seeking patterns.

Conclusion

This survey shows that user impression is positively correlated with efficiency between International and national tourist web sites. Indian tourist websites do not fulfill the international standard of providing their potential customers better information and service in three main areas of attraction, accommodation and travel. This survey points out the deficiencies in Indian tourist websites and therefore proposes a possible technological upgrade. Improvements and changes are required to make the Indian tourism sector first choice in the world so as to generate for her much needed foreign exchange.

REFERENCES

Farzad Mehdi (2008)."The Fuzzy Evaluation of e-Commerce Customer satisfaction."World Appl. Sci. J., 4(2): 164-168.

John Hassall (1999). "Methods of analyzing ordinal interval questionnaire data fuzzy mathematical principle." University of Wolverhampton, Working paper series. pp. 164-168.

Olsina L, Godoy D, Lafuente GJ, Rossi G (2001). Specifying quality characteristics and attributes for websites. Lecture Notes in Computer Science- Web Eng., 20(16): 266-27.

Palmer J (2002). Website usability, design and performance metrics. Inform. Syst. Res., 13(2): 151–167.

Pan B (2003). Travel Information Search on the Internet: An Exploratory Study. Unpublished doctoral dissertation, University of Illinois, Urbana.

Peide L, Zhongliang G (2009). Evaluation Research on the Quality of the Railway Passenger Service Based on the Linguistic Variables and the Improved PROMETHEE-II Method. JCP, 4(3): 265-270.

Priyotosh Khan (2010). Statistics for Management, Economics and Computer. Everest Publishing House, Seventh Edition.