Empirical Evaluation of Indian Tourism Websites

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Abstract
Given the competition between different tourist destinations to attract domestic and international tourists it is absolutely vital to examine their website efficacy on specific attributes. This study employs one of the recently developed multi-criteria decision-making method the Best–Worst Method to assess the state government official tourism website across four Indian states known for their tourism potential- Himachal Pradesh, Uttrakhand, Uttar Pradesh and Rajasthan on specific attributes provided by the widely acknowledged WebQual instrument. Information Fit-to-Task and Trust emerged as the most important criterion. Relative advantage and Innovation the least important. The results of the study are easily interpretable and visual. They offer both an individual and comparative analysis of the perceived website efficacy on specific attributes to facilitate tourism stakeholders and website administrators to strategize and make their digital presence effective and competitive.
Keywords:
Best Worst Method, WebQual, Tourism Websites, Information

1. Introduction

Websites play a pivotal role to provide information about a destination to prospective tourists. Therefore, website efficacy is critical to examine in contemporary times where competition is fierce and customer expectations are high. In tourism sector a prospective tourist expects accurate, reliable and updated information particularly at government run websites. Barring a few [1,2] Yet there is scant research in this area particularly for South Asian region.. This paper addresses the same. It employs one of the recently developed multi-criteria decision-making (MCDM) methods the Best–Worst Method (BWM) to present the importance of various criteria that prospective tourists use to assess the state government websites across North India and illustrate their competitiveness on the specific website attributes. To the best of the author's knowledge, no prior study exists which evaluate tourism websites alternative using this kind of approach. The primary objective of this study is – 1) to identify the most important website attributes for prospective tourists which aids their browsing motive and helps in decision making and 2) to illustrate and evaluate the competitiveness of four state government official

tourism websites based on attributes using the Best–Worst Method (BWM). It is expected that the results will help discern the strengths and weaknesses of each of the website which will eventually aid website managers and tourism stakeholders to optimally design their website.

2. Identification of criteria and Tourism Alternatives

WebQual framework having different dimensions and which has been widely adopted by past researchers to assess website quality forms the foundation of criteria selection for this study. WebQual offers researchers and practitioners a validated reliable instrument to evaluate B2C websites [3]. It consists of 12 dimension and eight have been adopted in this study which are discussed ahead in Table 1. Some dimensions were excluded (Emotional Appeal, Ease of Understanding, Consistent Image and Online Completeness) as they were meaningful for e-tailing sites. Four tourism websites of state government were selected as the alternatives for this study. Himachal Pradesh (https://himachaltourism.gov.in/); Uttar Pradesh (https://www.uptourism.gov.in/); Rajasthan (rajasthan.gov.in/) and Uttrakhand (https://uttarakhandtourism.gov.in/). These states in North India are known for their great tourism potential encompassing – Natural and scenic settings, culture, history and art, local cuisine and merchandise. Cities such as Shimla, Mussoorie, Jaipur, Udaipur, Manali and Agra in these states have emerged as popular tourist destinations but also act as competitors to each other to attract domestic and International tourists. Thus they were an apt choice for the study.

3. Methodology

The BWM has been employed to evaluate the competitiveness of each of tourism website using the set of identified criteria. As recommended by past researchers [4,5] the following steps were carried out:(1) Formulation of the problem; (2) Find the best and the worst criterion; (3) Find the preference of the best criterion over all other criteria; (4) Find the preference of all other criteria over the

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worst criterion; (5) Estimate optimal weights; and (6) Final scores of alternatives.

As suggested by [5] in analytical methods such as BWM, the quality of the information or observations is more important than the quantity. Most of the past studies have used purposive sampling [6,7] and a sample size of 20 meets the due appropriateness[5]. Respondents were selected based on their frequent travel history via. their LinkedIn accounts. Prior to the distribution of the survey, the solicitation letter seeking their consent to participate in the survey included the URL of the tourism websites. The participants (from North India) were requested to browse them for the next two weeks. Following this the survey was distributed to the 20 participants who had consented to participate in the study. 11 men and nine women participated in the study. All of them were professionally qualified and employed in the age group of 28 to 45 years..

Table 1 WebQual Dimensions

WebQual Dimension	Description
Trust	Trust, in relation to websites, is defined as consumers' confidence that any information entered into the website will remain confidential and that said information will be transmitted and stored in a secure fashion [3].
Visual Appeal	Visual Appeal measures how aesthetically pleasing a website is to the consumer [5]. Determining what is aesthetically pleasing is complicated: it ranges from the overall complexity of the website [8] and the layout of the interface.
Innovativeness	Innovativeness is "the creativity and uniqueness of a site design" [3
Information Fit-to-Task	This is an amalgamation of information quality and functional fit-to task [3]. In component form, information quality refers to the data's appropriateness for use or ability to meet the users' needs [8]
Tailored Information	The ability for consumers to tailor the information displayed on a website to meet their needs is Tailored Information [9] .
Response Time	Response time (e.g. download time or download delay) is defined by [10] (2001, p. 56) as "... the time it takes for a web client to fully receive, process, and display files", and is ranked as one of the largest impediments to electronic commerce in their research.
Intuitive Operations	This aspect deals with the usability of a website, and includes items such as navigability, link placement, operation and changing the color of visited links [11]. Intuitive Operations could be thought of as making the webpage easy to navigate and providing intuitive options for available tasks [3].
Relative Advantage	The advantage the website has over other competing sites. This criterion has been given attention by past researchers [12] in e commerce domain, yet this is highly relevant for news websites too. If the users perceive a visible relative advantage a particular site has over others it would definitely strengthen its competitive position.

4. Empirical Application of the Best Worst Method

STEP 1 Formulation of the problem
The first step is to determine the evaluation criteria for decision making about the tourism websites alternatives. The four alternatives are the official state government websites for the states- Himachal Pradesh, Uttar Pradesh, Uttrakhand and Rajasthan. The criteria associated to assess the competitiveness of these websites include- trust, visual appeal, innovativeness, information to task fit, task, response time, intuitive operations and relative advantage are a part of the study.

STEP 2 Find the best and the worst criterion
In this step, the respondents were asked to respond to the following two questions- "which of the eight criteria is the most important for browsing tourism website?" and "which of the eight criteria is the least important for browsing tourism website?" In this study the most important criterion is referred as the best and the least important criterion as the worst.

STEP 3 Find the preference of the best criterion over all other criteria
To obtain this, respondents ranked the importance of the best criterion over all other criteria using a 1–9 scale. Hence, the best to others vector is expressed as:
$A_B = (a_{b1}, a_{b2}, \ldots\ldots a_{bn})$

(1)

Here, a_{bj} indicates the preference of the best criterion B over the criterion j.

STEP 4 Find the preference of all other criteria over the worst criterion
Respondents ranked the importance of all other criteria over the worst criterion on a scale from 1 to 9. Hence, the expression of the others to worst vector is as follows:

$A_W = (a_{1w}, a_{2w}, \ldots\ldots\ldots a_{nw})$ (2)

Here, a_{jw} indicates the preference of the criterion j over the worst criterion W.

STEP 5 Estimate optimal weights
In this stage, we minimize the maximum absolute differences $\left(|w_b - a_{bj} w_j|, |w_j - a_{jw} w_w| \right)$ for all j to find the optimal weights of a criterion. Following [4], we can express the minimization problem as:

$$\min \left[\max_j \left(|w_b - a_{bj} w_j|, |w_j - a_{jw} w_w| \right) \right]$$

Table 1 : Example of respondent 1 (Steps 1-6)

Best criterion, Worst criterion, preference of the best criterion over all other criteria and preference of all other criteria over the worst criterion (Step 2 ,3 and 4)							
Best	**TR**	**VA**	**IN**	**IFT**	**TI**	**RT**	**IO**	**RA**
TR	1	5	4	2	2	3	3	4
Worst	**TR**	**VA**	**IN**	**IFT**	**TI**	**RT**	**IO**	**RA**
IN	5	4	1	6	4	4	4	4

Optimal weight (Step 5)							
	0.25	0.07	0.04	0.17	0.17	0.11	0.11	0.08

Rating of each alternative (Step 6)							
HP	6	6	4	3	6	6	4	4
UK	7	6	6	4	6	6	7	4
UP	5	5	6	6	7	6	5	4
RJS	6	7	6	5	7	6	5	4

Normalized values							
HP	0.86	0.86	0.67	0.50	0.86	1.00	0.57	1.00
UK	1.00	0.86	1.00	0.67	0.86	1.00	1.00	1.00
UP	0.71	0.71	1.00	1.00	1.00	1.00	0.71	1.00
RJS	0.86	1.00	1.00	0.83	1.00	1.00	0.71	1.00

Priority calculation							
HP	0.21	0.06	0.03	0.08	0.14	0.11	0.06	0.08
UK	0.25	0.06	0.04	0.11	0.14	0.11	0.11	0.08
UP	0.18	0.05	0.04	0.17	0.17	0.11	0.08	0.08
RJS	0.21	0.07	0.04	0.14	0.17	0.11	0.08	0.08

TR = Trust,VA = Visual Appeal,IN= Innovativeness,IFT = Information Fit-to-Task,
TI =Tailored Information,RT = Response Time,IO = Intutive Operations,RA = Relative advantage
HP= Himachal Pradesh, UK = Uttrakhand, UP = Uttar Pradesh; RJS = Rajasthan

$$s.t. \quad \sum_j w_j = 1 \tag{3}$$

$$w_j \geq 0 \text{ for all } j$$

Next following the steps as recommended by [4] the equation (3) can be solved as a linear optimization model as illustrated below in (4)
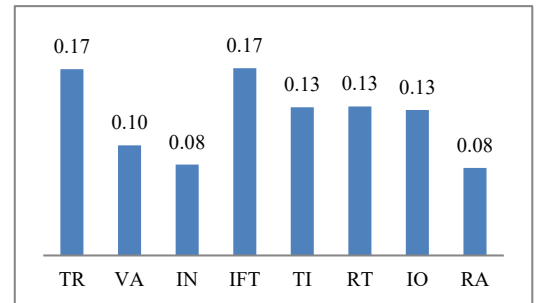
$$\min \delta^L$$
s.t.

Figure 1 : Optimal weights (Full sample)

$$\left| w_b - a_{bj} w_j \right| \leq \delta^L, \text{ for all } j$$

$$\left| w_j - a_{jw} w_{wj} \right| \leq \delta^L \text{ for all } j \tag{4}$$

$$\sum_j w_j = 1$$

$w_j \geq 0$, for all j

A solution to (4) gives the optimal weights $(w_1^*, w_2^*, \dots, w_n^*)$ as well as the optimal value of δ^L. δ^{L*} is the consistency ratio of the pair-wise comparison procedure in BWM. The optimal weights of each criteria for each respondent and the consistency ratio thus computed is presented in Table 2 and Figure 1.Information Fit-to-Task emerges as the most important criterion closely followed by Trust and Response Time. Relative Advantage appears the least important. As the consistency ratio in BWM is output-based, a δ^{L*} up to 0.459 is acceptable for studies with eight criteria [13]. In this study, the average consistency ratio is 0.105.

STEP 6 Final scores of alternatives
To calculate the final priority of tourism websites, the competitiveness scores for each of the four alternatives is computed. Respondents were asked to rate the competitiveness level of the four alternatives under each of the eight criteria using a 1–9 scale, where 1 refers to 'not competitive at all' and 9 refers to 'extremely competitive'. Table 1 demonstrates the same for respondent 1 as an example. The values in table were

normalized using the linear normalized approach that is dividing each value by their column-wise maximum value. To calculate the priority of the four alternatives (of the respondent), first, the multiplication of each of the normalized values by their respective weights is undertaken. In the final stage, the row-wise total is taken and the final priority scores is obtained for each of the four alternatives. This process is expressed as follows:

$$Z_i = \sum_{j=1}^{n} w_j x_{ij}^{norm}$$

Here, Zi is the final priority value of the alternative *i* and x_{ij}^{norm} denotes the normalized values of the criterion *j* under the alternative *i*. By repeating the same calculation process demonstrated in Tables 1, we can calculate the priorities for the tourism websites alternatives for all respondents, which is presented in Table 2. Overall, tourism website of Rajasthan emerges as most competitive .It is followed by Uttrakhand, Uttar Pradesh and Himachal Pradesh. It may be noted that the mean values are extremely close indicating that they are more or less equally competitive. Furthermore, earlier as an example (1st respondent) the priority of alternatives under each criterion was presented in Table 1,similarlyto find the aggregate priorities, the average of all respondents is calculated (Table 3). The values in the table 3 and figure 2 indicate that the website of Rajasthan scores high on – trust, visual appeal, innovativeness, relative advantage and response time. The website of Uttar Pradesh is rated high on information fit to task and tailored information and relative advantage. The website of Uttrakhand on intuitive

Table 2: Priorities of alternatives (full sample)

Respondent	HP	UK	UP	RJS
1	0.098	0.114	0.110	0.113
2	0.085	0.112	0.116	0.116
3	0.099	0.114	0.110	0.116
4	0.091	0.110	0.111	0.119
5	0.094	0.113	0.109	0.112
6	0.098	0.112	0.104	0.109
7	0.099	0.109	0.122	0.118
8	0.104	0.116	0.111	0.114
9	0.105	0.115	0.113	0.118
10	0.101	0.108	0.117	0.108
11	0.087	0.110	0.114	0.106
12	0.096	0.117	0.121	0.111
13	0.091	0.106	0.113	0.114
14	0.096	0.111	0.108	0.112
15	0.092	0.111	0.102	0.119
16	0.097	0.110	0.111	0.122
17	0.093	0.112	0.111	0.118
18	0.103	0.117	0.121	0.125
19	0.102	0.105	0.113	0.112
20	0.112	0.114	0.122	0.107
Mean	**0.097**	**0.112**	**0.113**	**0.114**

Table 3 : Priority of alternatives under each criterion (Full sample)

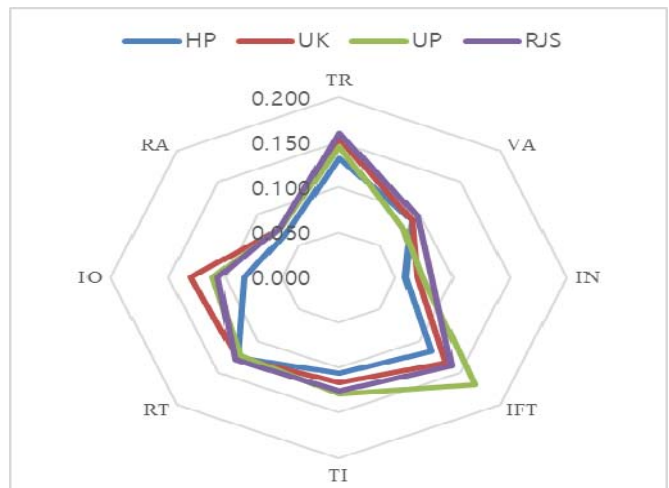| Alternatives/Criteria	HP	UK	UP	RJS
TR	0.132	0.155	0.145	**0.161**
VA	0.090	0.091	0.079	**0.098**
IN	0.058	0.069	0.073	**0.082**
IFT	0.115	0.133	**0.169**	0.139
TI	0.106	0.117	**0.129**	0.125
RT	0.126	0.126	0.123	**0.130**
IO	0.083	**0.130**	0.111	0.106
RA	0.067	0.074	0.074	**0.075**
Average	**0.097**	**0.112**	**0.113**	**0.114**

Figure 2: Aggregation of Criteria Value for Each alternative

operations.

5. Discussion and Conclusion

Unlike in the past, today is the era inundated with digital natives and websites therefore emerge as the most favored option for prospective tourists to gain information about a destination and make a travel decision. Website design is extremely critical as within a few seconds a visitor may be disenchanted and move to other options. As per a digital article [14] "A visitor just scans the site during the initial few seconds. Only a good design can grab visitor attention and lead them to important information on the website".The state government official tourism websites have a much greater responsibility and are expected to offer reliable and trustworthy content. Nonetheless they can not take their web users for granted and play with their patience. Overall the website of Rajasthan appeared as most competitive and Himachal Pradesh the least. Some specific directions based on the results of the study are presented below

Quality content and Information – Information -fit to task and trust emerged as the most important attributes for prospective visitors. Website of Uttar Pradesh scored best on IFT and Rajasthan on Trust. According to Maazouzi [15] "destination's official tourism website have a distinct influence on the destination's image perception that eventually attracts, motivates, and encourages tourists to visit once or repeatedly". The content and menu arrangement and navigation should be visible and clear without attaching any cognitive load to the visitor.

Tourist Attractions and Activities - In this study Intuitive operation and Tailored information are also attributes with a relatively higher load. The state of Uttrakhand and Uttar Pradesh score relatively higher on these specific attributes than the rest. Any prospective tourist is on lookout for key tourist attraction aspects such as - natural and scenic settings, culture, history and art, local cuisine and merchandise. A website design should follow the intuitive journey that a prospective user will make on the website and offer them well categorized information.

Distinctiveness – Almost all of these states have similar natural settings and scenic beauty and therefore it is critical to highlight the unique aspects of the state through innovative means such as graphics and video tours, testimonials by past visitors and use of chat assistants. Website of Rajasthan was perceived as most innovative and Himachal Pradesh the least. Rajasthan website also scored high on Visual appeal. Using the right color scheme and tonality can also make the website attractive.

Optimization- Modern day web users balance their time and effort and have limited patience. Site loading time and response time should efficiently optimized. Call to action buttons should be highlighted and easily visible to aid any kind of interaction. Response time and relative advantage are therefore critical aspects that should be considered. Website of Rajasthan tourism scored high on response time and relative advantage.

In conclusion this study has provided academia, policymakers and web administrators key insights on improving the competitiveness of state tourism websites. Tourism stakeholders and website managers possibly devote time and resources to collect business website data and analyze a site's strengths and weaknesses however they could certainly benefit from a criteria based approach -BWM as illustrated in this study. Although the sample size is limited to 20 respondents it is an acceptable size in MCDM family of analytical methods.   However the respondents were English speaking computer savvy, urban dwelling north Indian individuals and therefore future studies may include more diversity in their sample size on demographic or other parameters. Furthermore, the proposed BWM framework can be extended by future researchers adding other relevant criteria for evaluating state tourism websites.

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