Developing a User-Centered Tool for the Holistic Evaluation of Destination Websites

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ABSTRACT

Many tourists nowadays go online to seek travel information. Lehto, Kim, & Morrison (2006) found that 93% of Internet users searching for travel information visit the destination's official tourism website. This finding emphasizes the need to evaluate destination websites to ensure their effectiveness as tourism marketing channels. Effective destination websites allow users to obtain relevant information, navigate quickly through textual and graphic elements, and form a positive impression of the destination (Palmer & McCole, 2000). This study proposes an instrument that measures three broad website quality attributes—content, usability, and persuasiveness—to generate a website quality rating called the User-perceived Quality (UPQ) score. The instrument is designed for Internet users, thus it highlights the users' perspective. A pilot test revealed that the instrument exhibits excellent psychometric properties and good internal consistency. The user evaluation results will aid web developers and destination marketing organizations in redesigning their websites to address reported deficiencies.

Keywords: Web design and evaluation, user-centered evaluation, user experience, usability, destination websites, tourism

1. Introduction

The World Wide Web (WWW) is playing an increasing role in tourism promotion (Buhalis & Law, 2008). The trend is that more and more potential tourists prefer to look for travel information online (Jang, 2004). Similarly, people are now more likely to purchase airline tickets online rather than through physical ticketing outlets (Kim, 2004). Clearly, the Internet has become the main resource for travellers.

Although one can also obtain travel information from blogs (Cakmak & Isaac, 2012) and social media pages (Xiang & Gretzel, 2010), many tourists regard official tourism websites as the most credible source since these websites formally represent their destinations (Bastida & Huan, 2012). Indeed, Lehto, Kim, & Morrison (2006) found that 93% of Internet users who seek travel-related information have visited official tourism websites, or simply destination websites.

This finding emphasizes the need to evaluate destination websites to ensure their effectiveness as tourism marketing channels. According to Palmer & McCole (2000), effective destination websites allow visitors to obtain relevant information, navigate through different textual and graphic elements, and form a virtual first impression. If effective, a destination website may encourage and increase the number and frequency of visits to the destination.

2. Literature Review

This section identifies the prior approaches and success factors used in evaluating destination websites, while citing potential research areas or gaps along the way.

2.1 Prior evaluation methodologies

Many researchers have emphasized the need to assess the quality of tourism websites, which include hotel

websites, airline websites, destination websites, and travel agency websites. Law, Qi, & Buhalis (2010) reviewed 75 journal articles about tourism website evaluation.

Their main finding was that the methodologies in tourism website evaluation can be categorized into five: (1) counting, (2) automated, (3) numerical computation, (4) user judgment, and (5) combined methods. The *counting* method involves simply counting the number of features that a website has. The *automated* method employs software or applications to monitor and record a website's number of views, clicks, etc. The *numerical* approach uses formulae and mathematical modeling to measure a website's performance. *User judgment* deals with soliciting the website user's feedback and often measuring his/her satisfaction levels with a Likert Scale (as shown in Figure 1, page 4). Lastly, the *combined* method uses two or more approaches together.

To evaluate destination websites, many researchers have used the "Website Customer Usefulness Rubric" by Dion & Woodside (2010). Applying the counting method, the instrument asks users to check whether certain essential features are present in the website or not. Ultimately, the instrument measures the completeness of information only; it fails to take account of other critical facets of destination websites.

Law, Qi, & Buhalis (2010) contend that quantitative methods are more promising than qualitative methods because they are measurable, repeatable, and can likely be used to form a long-term strategy. They also urge researchers to focus on refining the evaluation instruments instead of purely applying them to different data sets. Furthermore, the authors proposed for future researchers to apply a "sophisticated" approach, i.e. integrating theories and models from other related disciplines such as psychology, computer science, and engineering.

2.2 Destination website success factors

There is a wide array of success factors or quality attributes for destination websites. As a result, every study measured an individual set of attributes, making it difficult to compare the findings of two studies directly. Table 1 lists the various destination website quality attributes cited in literature dated 2005 to the present.

In addition, several articles have cited the importance of the persuasiveness factor of destination websites. Kim & Fesenmaier (2008) linked first impression to the persuasiveness of destination websites. The authors posited that a user develops a first impression of a website within just seven seconds of loading. In a similar finding, Lindgaard, Fernandes, Dudek, & Brown (2006) found that a user can assess a website's visual appeal within just 50 milliseconds. Thus, first impression is very critical in that a negative first impression can cause a user to "bounce" from the website, i.e. abandon it through one-time click in favor of another perceivably more appealing website. Regaining the user's trust can be very difficult.

Lee & Gretzel (2012) linked mental imagery processing to persuasiveness. Mental imagery processing means allowing the user to imagine visual representations of the destination after being subjected to certain sensory stimuli (e.g. text, pictures, sounds) presented by the website. This mental imagery is vital because it strongly influences consumers' attitudinal judgments (McGill & Anand, 1989); makes them more resistant to negative external influences because of its high elaboration quality (Petty, Haugtvedt, & Smith, 1995); and enhances expectations and facilitates purchasing outcomes (Walters, Sparks, & Herington, 2007). They tested the ability of textual, auditory, and pictorial features of a destination website to influence persuasion-related outcomes such as attitude strength, confidence, and attitude resistance. It was found that

Table 1. Destination website quality attributes cited in literature.

Author/s and Year Published	Quality Attributes Measured (Independent Variables)	Dependent Variables
Park & Gretzel (2007)	Information quality, ease of use, responsiveness, security/privacy, visual appearance, trust, interactivity, personalization, fulfillment	e-quality, e-satisfaction and e-loyalty
Kim & Fesenmeier (2008)	Inspiration, usability, credibility, information quality, involvement, reciprocity	first impression formation; persuasiveness
Luna-Nevarez & Hyman (2012)	primary focus, visual and presentation style, navigation and interactivity, textual information, advertising, and social media and travel aids	list of common practices in destination website design
Bastida & Huan (2012)	essential website features based on Website Customer Usefulness Rubric	usefulness score

only pictures had a significant impact on persuasiveness; thus, this presents a strong implication in the design of destination websites.

Luna-Nevarez & Hyman (2012) state that there are still no formal metrics for evaluating destination websites because prior studies measured different attributes for websites of different scope, i.e. national, regional, and local websites. The authors developed an instrument that measures visual appearance and interactivity only, so the instrument is not comprehensive as well.

3. Research Hypothesis

After studying prior literature on destination website evaluation, the researchers argue that all quality attributes can be summarized into three:

(1) *Content* refers to the completeness and credibility of information presented.

(2) *Usability* deals with ease of use and navigation, sensibleness, and structure of the website.

(3) *Persuasiveness* refers to the ability of the website to encourage the user to visit the destination.

Palmer & McCole's (2000) assertion seems to support our argument. According to them, effective destination websites allow visitors to obtain relevant information (*content*), navigate through different textual and graphic elements (*usability*), and form a virtual first impression (*persuasiveness*).

4. Methodology

This study proposes an instrument to evaluate destination websites in the most comprehensive way possible by integrating multiple techniques and quality attributes cited in literature. The instrument lets Internet users rate destination websites according to three broad attributes—content, usability, and persuasiveness. Eventually, an overall rating, called the User-Perceived Quality (UPQ) score, is computed.

4.1 Measuring the attributes

4.1.1 Content

Content generally refers to information quality. The researchers combine prevailing aspects of website information quality into two sub-attributes: (1) completeness and (2) credibility.

To measure *completeness*, a combination of the counting instruments developed by Luna-Nevarez & Hyman (2012) and Dion & Woodside (2010) is used. Both instruments involve evaluating the presence or absence of a set of website features predetermined by users (e.g. hotel booking, events calendar, road maps, and weather information). The presence of the feature merits a point of 1 for that feature, otherwise a zero in the absence of that feature. Points are summed up and the website with a higher score is supposedly better in terms of completeness.

Meanwhile, Wang, Beatty, & Foxx (2004) laid out three defining factors of *credibility*—over-all trustworthiness, reliability of source, and capability of the source to keep its promises. In a subsequent study, Kim & Fesenmaier (2008) suggest that these three factors of credibility have an impact on first impression formation. In the instrument, users are given three statements about credibility. They are asked to agree or disagree on those statements using a five-point Likert Scale (an example is seen in Figure 1).

Websites can enhance their credibility by using "cues" such as awards from neutral sources, accolades, privacy and security components, and seals of approval (Fogg, et al., 2001). Using the word "official" also conveys credibility (Xiang & Fesenmaier, 2006).

4.1.2 Usability

Destination websites must be user-friendly so that information searchers can navigate sites quickly and attain site goals with minimum mental effort. Kim & Fesenmaier (2008) suggest that usability is vital in first impression formation and purchase attitude formation.

To measure *usability*, Lee & Kozar's (2012) instrument for general website usability is adapted. From that instrument, only the four factors of navigability, interactivity, learnability, and readability are studied under usability; the other factors deserve their own classifications because of their explicit significance to destination websites. The four factors are then classified into two sub-attributes of usability—learnability and readability fall under *ease of understanding*, and navigability and interactivity fall

under *ease of use/navigation*. Similarly, a five-point Likert scale is used to measure these two general constructs.

4.1.3 Persuasiveness

To measure *persuasiveness*, the approaches of Kim & Fesenmaier (2008) and Lee & Gretzel (2012) are combined. Kim & Fesenmaier (2008) found three attributes that influence persuasiveness—inspiration, usability, and credibility. Among the three, inspiration made the greatest impact on persuasiveness, hence it alone is considered as a sub-attribute; the other two already fall under the previous categories nonetheless. To evaluate inspiration, Kim & Fesenmaier (2008) proposed three determinants: (1) website represents the destination in an appealing way, (2) website fosters visual imagination, and (3) website inspires user to visit the destination.

Moreover, the sub-attribute *allure of pictures* is included as a reference to the finding of Lee & Gretzel (2012), which says that pictures have a significant effect on persuasiveness.

Both inspiration and allure of pictures are measured using a five-point Likert scale.

4.2 Computing the User-Perceived Quality Score

Users are given several statements regarding the website's content, usability, and persusasiveness. They are asked to agree or disagree on those statements using a five-point Likert Scale. Each point on the scale is assigned a value, i.e. Strongly Disagree = 1, Strongly Agree = 5. The values for all statements are then summed up. The sums are divided by their corresponding total scores to derive the percentage scores.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Figure 1. The 5-point Likert Scale and corresponding values

However, it is expected that the three broad attributes do not necessarily bear equal weights toward the UPQ score; users may value one attribute more than the other. To allow this variation, the respondent is required to provide arbitrary percentage weights to each attribute near the end of the questionnaire. Given these weights,

the UPQ score is then computed using the factor-rating method.

5. Results

The instrument undergoes pilot testing to evaluate its psychometric properties. Three official destination websites in the Philippines are selected for the pilot testing. They are as follows:
(1) Aklan Province
   http://www.aklan.gov.ph/aklan02_toursm.php
(2) Batangas Province
   http://www.batangasallheresonear.com/
(3) Zambales Province
   http://tourism.zambalesnow.com/
Respondents must be Filipino, be at least 18 years old, be an Internet user, and be able to understand at least intermediate English. They must not have been to the destination represented by the website that they are evaluating.

The instrument is integrated into a remote user testing software called Loop11 (*http://www.loop11.com/*). Loop11 produces a link to the instrument which is distributed to respondents via email or Facebook private message. Upon receiving the link, respondents can choose to participate at their convenient time and place. This allows respondents to be more relaxed and at ease while performing the activity, as opposed to being in a controlled laboratory setup.

Forty people are recruited for the pilot testing. In gratitude for their participation, they are rewarded with electronic cellphone load. After screening the responses, only 18 are considered complete and valid.

Batangas earns the highest average UPQ score among the three with 73.75%. It scored highest in usability and lowest in content.

Aklan received an average UPQ score of 64.91%. It also scored highest in usability and lowest in content.

Zambales received the lowest average UPQ score among the three with 63.67%. It scored highest in persuasiveness and lowest in content.

All three websites scored lowest in content. Interestingly, after analyzing the given percentage weights, content is the attribute that the respondents value the most, with an average weight of 38.9%. Usability comes second with an average weight of 32.9%. Persuasiveness is third with an average weight of 28.1%. This means that these websites should

definitely provide more information and appear more credible to users.

Through multiple regression analysis (with 95% confidence level) in Microsoft Excel, a regression equation to predict UPQ score (y) with the three indicators content (c), usability (u), and persuasiveness (p) is formulated.

$$y = 0.42c + 0.41u + 0.19p - 0.009 \qquad (1)$$

Since the p-value = 1.9E-10 < 0.05, the model (1) is a good fit for the data. The coefficients of all three indicators are also significant since their p-values are less than 0.05. By comparing the coefficients, it is found out that content and usability are the best predictors of UPQ (consistent with the average percentage weights discussed earlier). Moreover, the R square = 0.965 indicates that a very large deal of the variability of the UPQ score is captured by the model.

Internal validity is determined by computing for the Cronbach's Alpha, a widely-used estimate of reliability for psychometric tests. The alpha is computed for every attribute measured by the instrument. The closer the alpha level is to 1, the more reliable the instrument is for measuring that attribute. The Cronbach's Alpha is computed electronically in Microsoft Excel.

The Cronbach's Alpha for the attribute of completeness is 0.814, 0.879 for credibility, 0.755 for usability, and 0.909 for persuasiveness. All alpha levels suggest that the instrument has good internal validity.

6. Conclusion

This study proposes a tool to measure the user-perceived quality of destination websites according to three all-encompassing attributes consolidated from prior literature—*content*, *usability*, and *persuasiveness*. Since the instrument measures a wider-ranging set of attributes, it is naturally more holistic than the other evaluation instruments that measure one or two attributes only.

The tool is designed for Internet users, thus it highlights the users' perspective. In today's world where computing is highly pervasive, Internet users are major stakeholders and should not be ignored.

Effectively, this study proposes to the tourism industry a standard framework for evaluating destination websites. According to Buhalis and Law (2008), there is still no universally-accepted instrument for evaluating destination websites yet since existing evaluation instruments each have their own focus and measured varying website attributes.

The user assessment results can aid developers of destination websites and Destination Marketing Organizations (DMOs) in instituting corrective action in their future design iterations. This is important because an appealing website may encourage and increase the number and frequency of destination visits.

7. Areas for Further Investigation

Due to time constraints, only 40 respondents were recruited to pilot test the instrument. Obviously, the pilot testing would have yielded more conclusive results if significantly more respondents had been recruited.

Moreover, only 18 out of 40 responses were considered complete and valid. This can be explained by examining several factors such as Internet connection speed, availability of the respondents, and the length and understandability of the instrument. It turns out that some people were not able to participate within the time frame for data gathering. None reported having difficulty understanding the statements and tasks. Some respondents, however, reported that the instrument was very long and that they were experiencing a slow Internet connection, thus they were unable to finish the activity. In order to use Loop11 seamlessly, one must have a steady and fast Internet connection. Hence, future researchers should consider alternative user testing methods unless they can be sure that their respondents have fast Internet connection speeds.

The instrument employs the counting and user judgment approaches to destination website evaluation. Subsequent iterations of the instrument must integrate more approaches such as the automated (i.e., web analytics instruments) and mathematical modelling methods.

Acknowledgements

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