

Chapter 17

A Modified Fuzzy Hierarchical TOPSIS Model for Hotel Website Evaluation

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ABSTRACT

The performance of commercial websites is a critical issue that has a significant effect on consumers' online decision-making. This study develops and applies a fuzzy model to assess the performance of hotel websites. It presents a fuzzy decision-making approach to the evaluation of tourism website performance that integrates consumer perceptions with a hierarchical model. The model consists of a fuzzy multi-criteria procedure that weighs evaluation criteria in a hierarchy structure and defuzzifies the matrix in a simpler and more accurate way. The study's findings include a new website usefulness evaluation framework and a newly developed fuzzy hierarchical TOPSIS model. The results from applying this model indicate that the functionality and usability dimensions are equally important for hotel websites. The ranking of hotel website performance is listed in terms of usefulness, functionality, and usability.

INTRODUCTION

Customer purchasing behavior has changed since the advent of the Internet era. In particular, people now search for reference information online, and many subsequently make purchases via the Internet. Nielsen and Norman (2000) stated that online purchasing offers convenience to consumers

and allows them to experience a product before buying it. Law and Bai (2008) found that online browsers and buyers differ significantly in their purchase intentions and their online satisfaction. Concerning travel products, consumers' online purchase intentions can be evaluated in relation to three aspects of e-commerce website design, namely the consumers' trust, attitude percep-

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tion, and satisfaction (Wen, 2009). In the online hotel market, consumers can obtain facility and price information before making a reservation. In addition, website design quality has direct, positive effects in terms of pleasure, arousal, and perceived information quality. Website design also has indirect effects on satisfaction and word-of-mouth (WOM) intention (Ha & Im, 2012). The performance of hotel websites is thus extremely important if hoteliers are to attract consumers and provide a pleasant, satisfying online experience.

Given the importance of the Internet to the hotel industry, websites have attracted considerable attention from both academic researchers and industry practitioners. Previous studies of website evaluation have suggested various approaches to improving the quality of hotel websites (Kaplanidou and Vogt, 2006; Law and Hsu, 2006; Musante et al., 2009). However, very few studies have examined website performance by using formal algorithms that integrate consumer perceptions with evaluation results (Law et al., 2010). Ip et al. (2012) established a Fuzzy Analytic Hierarchy Process method for evaluating hotel website functionality. This process solves the research problem concerning the analysis of customer perceptions and linguistic expressions by producing a hierarchy list for hotel website functionality attributes. As Woodside, Vicente, and Duque (2011) indicated, website performance includes richness of content and ease of use. Ip et al. (2010) investigated only the aspect of website function without considering ease of use. Moreover, Law et al. (2010) concluded that the tourism industry needs repeatable and measurable evaluation techniques that are designed specifically for tourism-related websites, and are suitable for long-term use. To fill this need and establish a comprehensive website performance framework, this study attempts to develop a website evaluation model that incorporates fuzzy algorithms alongside a newly established usefulness framework.

The structure of this article is as follows. First, a review of hotel website evaluation studies is

presented. Then, the modified Technique for Order Performance by Similarity to an Ideal Solution (TOPSIS) model is introduced. The findings from this model represent the importance of hotel website usefulness dimensions, sub-dimensions and attributes through a hierarchy list. The researchers apply the model to six randomly selected international luxury hotels from the publication "The Leading Hotels of the World" (Romanella & Chung, 2007). A hotel website performance evaluation result is subsequently provided, with detailed information and a section on the evaluation process.

ATTRIBUTES FOR EVALUATING HOTEL WEBSITE USEFULNESS

There are no standardized attributes or guidelines that cover both website design and content for the hotel industry (Law, 2007). Previous evaluations of hotel websites have not fully considered website quality in terms of both the design and content dimensions. This study makes an initial attempt to do so by adopting the website usefulness framework of Lu and Yeung (1998), which assesses the functionality and usability of hotel website performance. Functionality refers to the content of a website, and usability relates to website design or ease of use. Table 1 shows a new website usefulness framework that modifies and integrates the design and content dimensions for hotel website development and evaluation.

Website Functionality

The dimensions of hotel website functionality were initially introduced by Chung and Law (2003). Their hotel website evaluation factors have been adopted by other published hotel website research studies. Such studies have investigated the differences in online browsers and online buyers in terms of hotel website functionality attributes (Law & Cheung, 2006; Law & Hsu, 2006), the function-

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