A genetic algorithm-based learning approach to understand customer satisfaction with OTA websites

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HIGHLIGHTS

- Developed a GA-based approach to evaluate customer satisfaction with OTA websites.
- Help understand customer preferences on different criteria for different segments.
- Help determine how customers gain overall satisfaction across different criteria.
- Followed the design science paradigm by emphasizing the importance of relevance.
- Findings exemplified the importance of human factors in tourism.

ABSTRACT

In an extremely competitive marketplace, it is increasingly important for online travel agencies (OTAs) to understand customer satisfaction of different segments. The survey method has been widely used to gain such understanding. However, few previous studies on the tourism and hospitality business have proposed intelligent solutions to analyze such survey data to understand customer preferences on different criteria for different segments, and to determine how customers obtain overall satisfaction across different criteria. In this study, we follow a design-science research paradigm to develop a genetic algorithm-based learning approach to understand customer satisfaction and their psychometric reasons. We further validate this approach through an empirical study for evaluating OTA websites. The results show that different customer segments have different opinions on the importance of various evaluation criteria. The results also reveal that customers tend to judge OTA websites in terms of certain important criteria, instead of by the weighted average of every factor concerned. The proposed approach and the findings of this study can provide constructive suggestions to practitioners and researchers for developing customized marketing campaigns and improving the services of OTA websites.

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1. Introduction

The exponential increase in the popularity of online shopping and the unprecedented growth in the number of online travel agencies (OTAs) have created an extremely competitive marketplace. OTA websites play an essential role in every fabric of tourism, which includes information distribution, transaction facilitation, destination marketing, and connections among travelers (Ip, Law, & Lee, 2011; Law, Qi, & Buhalis, 2010). Moreover, mobile technology and global roaming services make it possible to shift transactions
from pre-trip planning to actual traveling. Consequently, managers and researchers now pay more attention to customer satisfaction with their websites, and they increasingly turn to advanced analytical technologies for insights into making their OTA sites more competitive (Chaudhuri, Dayal, & Narasayya, 2011; Davenport, 2006; Fuchs, Abadzhiev, Svensson, Höpken, & Lexhagen, 2013; Min, Min, & Emam, 2002; Turban, Sharda, Aronson, & King, 2008).

Customer satisfaction leads directly to repeat purchases and increased likelihood of making recommendations for OTAs (Anderson, Fornell, & Lehmann, 1994; Chon, 1989; Oliver, 2010). Several studies have followed the behavioral-science paradigm (Hevner, March, Park, & Ram, 2004) to investigate and measure nomological networks of customer satisfaction (e.g., Baker & Crompton, 2000; Del Bosque & San Martin, 2008; Szymanski & Hise, 2000; Yoon & Uysal, 2005; Yüksel, Yüksel, & Bilim, 2010). The evaluation of customer satisfaction is also critical for OTA web design (Ip et al., 2011; Law et al., 2010). However, some researchers (Hevner et al., 2004; Yüksel & Yüksel, 2003) have argued that without a specific managerial focus, it is difficult for current customer satisfaction theories to produce actionable information for business practice. Although many studies have analyzed the features of OTA websites, most of them have focused on the breadth of features without considering which technical details are most important for satisfying specific segments of customers (Ting, Wang, Bau, & Chiang, 2013). Different segments of customers have various requirements and psychological features with regard to their satisfaction with OTA websites (Buhalis & Law, 2008; Law et al., 2010). This diversity requires that new advanced analytical methods be designed to integrate different algorithms and theories from related disciplines and to capture the dynamic psychometric characteristics of customer satisfaction with OTA websites (Ip, Law, & Lee, 2012).

Therefore, we propose an innovative approach to understand customer satisfaction and their psychometric reasons for preferring OTA websites. Particularly, we develop a genetic algorithm- (GA-) based learning approach to answer the following research questions:

1. What are the preferences on the satisfaction criteria for customers in different segments?
2. How do different customer segments obtain overall satisfaction across various criteria?

The remainder of this paper is organized as follows. Section 2 reviews the related literature. Section 3 formalizes the process of website evaluation with fuzzy synthetic evaluation. Section 4 elaborates the proposed GA-based approach to understand customer satisfaction. Section 5 describes empirical specifications to validate the proposed approach. Section 6 discusses the results. Finally, Section 7 concludes this paper with theoretical and practical implications.

2. Literature review

Customer satisfaction has been well studied in relation to the behavioral aspects of marketing research. Oliver (1980, 2010) explains that customer satisfaction involves an attitude or judgment toward a product or service that successfully provides a pleasurable level of consumption-related fulfillment. Customer satisfaction is considered one of the most important outcomes of all marketing activities by market-oriented firms (Kandampully & Subhartanto, 2000). In the tourism and hospitality field, the study of customer satisfaction has evolved into an important research stream over several decades.
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