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A Fuzzy Logic Analysis of E-Commerce Website Quality Factors for Customers' Purchase Intention

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Abstract

The increasing rate of online purchasing has resulted in the emergence of novel economical activities. It is essential to comprehend consumers' intention to achieve highly competitive advantages offered by e-commerce. Understanding what motivates consumers is crucial because such motivation is of paramount importance to succeed in this hypercompetitive and fast-paced environment. Business-to-Consumer (B2C) e-commerce is one of the various types of e-commerce, which has turned into an influential key to retailing channel. Using fuzzy logic method, this paper was aimed to find out the importance of key factors affecting the consumers' intention to purchase on B2C e-commerce websites. Findings can help researchers and decision makers to determine the factors that can satisfy consumers when using an e-commerce and persuade them to do online purchase. To achieve the objectives of this study, fuzzy logic was employed to effectively assess the factors. The outcome of the proposed system helps shopping websites managers and service providers to know the real level of the factors' importance, which in turn helps them improve their website quality.

Keywords: Fuzzy Logic, B2C Websites, Intention to Purchase, Electronic Commerce.

1. Introduction

In recent years, e-commerce has offered substantial advantages to both consumers and sellers (Schneider, 2007; Schaupp and Bélanger, 2005). According to (Schneider, 2007), e-commerce is the utilization of the web to sell services or products to individual consumers. Many enterprises have therefore embraced the use of e-commerce as an important trading tool to achieve higher efficiency in their daily business processes (Schaupp and Bélanger, 2005).

Trust has been taken into consideration comprehensively in economics (Akter et al., 2012), marketing (Done and Cannon, 1997), and electronic commerce (Pavlou, 2003). Trust has been shown significantly effective on customers' decision to buy in an e-commerce context (Hong and Kim, 2012). Therefore, it is a crucial task to identify significant factors of customer' trust in e-commerce and reveal their actual level of importance. This helps firms to focus on factors and elements with the highest significance to determine the most appropriate policy for improving their websites with high quality and effectiveness for e-commerce. To this end, fuzzy logic has been developed to handle mathematically the vagueness of human linguistics and thinking. In addition, fuzzy logic and fuzzy set are more appropriate in human linguistic reasoning with imprecise concepts in relation to crisp approaches (Nilashi and Ibrahim, 2014). In the evaluation of qualitative information related to human opinions, perceptions, and tastes, linguistic phrases are of higher importance than numerical ones. As a result, to reveal the actual importance level of trust factors, it is more appropriate that the linguistic terms be considered for users to express their knowledge, preferences, knowledge, and personal judgments. This paper is accordingly aimed to develop an assessment tool for customers' trust based on websites' features to improve the intention of purchasing on an e-commerce website. In online environment, three aspects most related to trust are security, privacy, and information quality (Flavián and Guinalíu, 2006; Ponte et al., 2015). Therefore, this research proposes perceived security, perceived privacy, and information quality as three antecedents of trust, and the relationships between them are analyzed and consequently an analysis is done on the effect of trust on customers' intention of purchasing to find out the extent to which these relationships are widespread. Table 1 shows previous studies that have investigated the effect of trust, perceived privacy, perceived security, and information quality on intention to purchase on e-commerce websites, and Table 2 presents the definitions of aforementioned factors.

This paper is organized as follows. The next section discusses research methodology, Section 3 presents the proposed fuzzy logic system together with the obtained results, and finally, Section 4 concludes the paper.

2. Methodology

In this paper, an expert system was developed to assess the Business-to-Consumer (B2C) websites quality factors