

Investigating the effect of website quality on e-business success: An analytic hierarchy process (AHP) approach

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Abstract

This study investigates website quality factors, their relative importance in selecting the most preferred website, and the relationship between website preference and financial performance. DeLone and McLean's IS success model extended through applying an analytic hierarchy process is used. A field study with 156 online customers and 34 managers/designers of e-business companies was performed. The study identified different relative importance of each website quality factor and priority of alternative websites across e-business domains and between stakeholders. This study also found that the website with the highest quality produced the highest business performance. The findings of this study provide decision makers of e-business companies with useful insights to enhance their website quality.

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1. Introduction

The importance of evaluating information systems (IS) success has long been recognized by both IS researchers and practitioners [4,16,24,62]. Evaluation is a challenging task because information systems are complex socio-technical entities [54], IS investment is related to intangible benefits and indirect costs [23], and financial data to measure impact of information systems typically are not accumulated [7]. E-business success is no exception and needs careful evaluation.

The decision makers at e-business companies have continued to make vast investments in developing websites for e-business without having clear knowledge of

what factors contribute to developing a high quality website and how to measure effects on e-business success [23,63]. Many researchers are concerned about this issue. For example, DeLone and McLean [17] pointed out that “companies are making large investments in e-business applications but are hard-pressed to evaluate the success of their e-business systems. . . . Researchers have turned their attention to developing, testing, and applying e-business success measures” (p. 24). Similarly, Zhu and Kraemer [73] indicated that “while sizeable investments in e-business are being made, researchers and practitioners are struggling to determine whether and how these expenditures improve the business performance of firms, or even how to measure the Internet-based, e-business initiatives in the first place” (p. 276). Studies reported that less than 5% of customers shopping at physical stores engaged in on-line purchases [8,22]. Therefore, there is an urgent need to help deci-

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sion makers gain a better understanding of online customers' perceptions of more desirable websites [45,70].

This study assumes that the success of an e-business company is more likely when its website is developed to provide the highest level of website quality among alternative websites. This results in online customers selecting a site as the most preferred website. If more customers select the website, the higher the likelihood of improved business performance. The relationship between website quality, preference, and business performance has been proposed by many researchers [11,33,43], but no empirical study has been done. This study addresses this concern, restricting the scope of this study to an investigation of website quality of B2C websites designed for online retail customers.

This study has three sub-objectives. The first is to examine website quality factors (or criteria) and their relative importance in website selection. Using DeLone and McLean's IS success model [17], this study identifies four website quality factors including information quality, system quality, service quality, and vendor-specific quality, which include 14 sub-factors. Then by applying an analytic hierarchy process (AHP) approach [48], this study investigates the relative importance of each factor and ranks alternative websites. AHP has been applied successfully to resolve complex alternative selection problems and more than 1000 AHP articles have been published in refereed journals [21]. The difference between website quality factors and alternative selection in different e-business domains is also examined. The second objective is to identify the perceptual gap between online customers and managers/designers of e-business companies with respect to evaluating website quality and selecting alternative websites. In previous IS development literature [14,60,69], the perceptual gap between users and designers has been recognized as the most critical reason for poor IS development and project failures. By examining this gap, this study can provide insight on managers/designers' misunderstanding of the needs and preferences of online customers and how to address this misunderstanding. Instead of investigating the gap based on a specific theoretical view, this study is an exploratory effort focused on the identification of sources of the gap. The final objective is to investigate the relationship between website preference and business performance. The relationship is tested by comparing the ranking of the most preferred website with that of business performance. The findings of this study responds to the requests of previous researchers to examine the relationship between IS success measures and financial performance [17].

In sum, this study provides useful insights to support the decision making of e-business companies to make strategic and resource allocations for developing high quality websites to improve financial performance.

2. Background

2.1. Evaluating information systems success

During the past decades, companies made large investments in the implementation of information systems with the expectation of productivity gains, competitiveness enhancement, and the reduction of market, administrative and operational costs [40,51]. However, such claims have not been validated by empirical data. Therefore, researchers have made efforts to propose a better way of evaluating information systems. These efforts can be divided into two categories. One is to develop methods for evaluating information systems [24,25,37,57], and the other is to identify factors affecting information system success [16,53], the focus of this study.

Many theoretical models have been proposed for measuring IS success. Out of them, DeLone and McLean's IS success model [16] is the most highly cited. By synthesizing previous IS success models, DeLone and McLean's model demonstrates the interplay of six information systems success factors including information quality, system quality, use, user satisfaction, individual impact, and organizational impact. DeLone and McLean [16] state:

System quality and information quality singularly and jointly affect both Use and User Satisfaction. Additionally, the amount of Use can affect the degree of User Satisfaction—positively or negatively—as well as the reverse being true. Use and User Satisfaction are direct antecedents of Individual Impact; and lastly this impact on individual performance should eventually have some Organizational Impact (pp. 83–87).

The model has been applied successfully to measure the success of a variety of information systems [38,40,53]. Nearly 300 articles in refereed journals have cited the model (Fig. 1) [17].

2.2. Evaluating e-business success

After observing a turbulent e-business environment with the burst of the dot.com bubble, companies realized that e-business is not a magic bullet and a license

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