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An experimental investigation of Web-based information systems success in the context of electronic commerce

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Abstract

In this paper, we examined Web-based information systems (WIS) success and focused on User Satisfaction in the context of a consumer purchasing decision. The results indicate strong support for the research model consisting of three fundamental User Satisfaction components: Task Support Satisfaction (TSS), Decision Support Satisfaction (DSS), and Interface Satisfaction. The model explains approximately 50% of the variance in users' intention to use Web-based information systems. It is concluded that Decision Support Satisfaction plays an important role in Web-based information systems success. In light of these findings, implications for theory and practice are discussed.

Keywords: Web information systems; Electronic commerce success metrics; Information systems success; Technology acceptance model; User satisfaction; Partial least squares

1. Introduction

The emergence of the World Wide Web as an electronic marketplace is having a profound impact on the world economy and the way business is conducted. In 1996, online sales were approximately US$500 million and have been expanding rapidly since [64]. The total electronic commerce spending estimates for 2004 range from US$963 billion to

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US$4 trillion [20]. Many firms positioned and deployed systems to compete in the electronic marketplace. The systems, in general, are referred to as Web-based information systems (WIS) [76]. Web-based information systems [76] represent a new frontier for businesses trying to establish an on-line presence where consumers are free to shop in more efficient "friction free markets."

Incorporating the radical changes in global marketplaces created by this new application of information technology, Web-based systems are considerably different from the traditional systems in terms of their scope and focus [91]. WIS are usually built to facilitate consumer oriented tasks and focus on enhancing the consumer decision making process. As the Web environment is characterized as non-linear in nature, presentation and delivery of information and frictionless work support are very critical for attracting consumers and enhancing the shopping experience. Lederer et al.'s [46] study found that the TAM model did not adequately explain Web use, and this implies that traditional information systems have different characteristics than WIS.

Given the importance of electronic commerce and WIS, in terms of the magnitude of its impact on business process and organization structure, there is little research addressing fundamental issues such as how electronic commerce systems success can be measured, whether existing measures of success can be applied, and how consumers react to the online shopping experience. Without a clear understanding of the dynamics of Web-based system success to guide firms, proper strategies and system designs are mere speculation. A central activity for researchers will be to define and operationalize the constructs for understanding the success of electronic commerce systems. This paper, while drawing on the traditional information systems success literature, extends that literature to the development of a Web-based model for electronic commerce success in the context of a consumer purchase decision.

The contributions of the current study are threefold. First, this research addresses the issue of how to predict users' intent to use a particular Web site utilizing traditional information systems success theory. The results should be of great interest to Web designers, IS staff and researchers. Second, by explaining the dynamic relationship between User Satisfaction components which influence WIS success, the current research can aid researchers in further refinement of information systems success models in general. Third, the current study provides a reasonable background for applying existing measures of information systems success to the electronic commerce environment.

2. Review of information systems success literature

There is a rich tradition of information systems success research including user information satisfaction, task–technology fit, user involvement, and participation. In this paper, three important, comprehensive studies are further examined in terms of providing theoretical background. They are the DeLone and McLean Model of IS Success [17], the Technology Acceptance Model (TAM) [13–15], and the Garrity and Sanders Model of IS Success [25].

2.1. DeLone and McLean Model of IS Success

DeLone and McLean [17] suggested a model of IS success that is comprised of six multi-level constructs: Information Quality, System Quality, User Satisfaction, System Use, Individual Impact, and Organizational Impact. While the model integrates the comprehensive dependent variables used by IS researchers, there exist several criticisms (although they do not reduce the importance of the model). First, IS Use in the DeLone and McLean model contains too many meanings to be appropriately examined [68]. IS Use is also argued to play a problematic and controversial role in modeling system success (cf. Refs. [15,49,68,69]). Second, because User Satisfaction represents individual impacts of IS in an organizational setting, investigating the causal path from User Satisfaction to individual impacts is fruitless [68]. Finally and most importantly, the model does not explain clearly and fully the relationship between User Satisfaction and individual/organizational impacts.

2.2. Technology Acceptance Model

A second stream of IS success research is focused on the use of information technology as conceptual-