

## Chapter 3.13

# Examining the Effects of TAM Constructs on Organizational Software Acquisition Decision

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### ABSTRACT

The use of multicriteria decision analysis (MCDA) methodology is not uncommon in organizational decisions. However, information systems (IS) researchers have focused on statistical hypothesis testing in examining organizational technology adoption decisions. In this study, an MCDA methodology is adopted in examining the effects of the technology acceptance model (TAM) constructs on organizational software acquisition decision. Analytic hierarchy process (AHP) provides an evaluation model based on the experiential knowledge of domain experts. The results of the study show that software performance plays a significant role in the software acquisition decision matrix, while vendor characteristic is given the least priority. The study also points to the fact that perceived usefulness is more vital than

perceived ease of use in software evaluation and acquisition.

### INTRODUCTION

Software selection is a complex process, which is made difficult by the multiplicity of products, variation in product performance, and uncertainties of user needs. It is recognized in (Anderson & Chen, 1997) that the financial risk involved in the selection of inappropriate software is high, considering the fact that acquisition of software is a very high expense activity that consumes a significant portion of capital budgets. Furthermore, the selection of inappropriate packages may compromise business processes, impact negatively on the functioning of the organization, and jeopardize the very existence of the organization (Verville & Halington, 2002). Software

products from different backgrounds are likely to exhibit different strengths and weaknesses. A weakness in one area would not necessarily eliminate a software product from consideration, as organizational requirements are not usually absolute (Williams, 1992). Therefore, it is essential to utilize methodical means of evaluating and selecting appropriate software that is cost effective and suits the business process needs, structure, culture, and environment of the organization.

Software evaluation could be an engineering problem or customer satisfaction problem. Therefore, the emphasis is on one of two dominant perspectives, namely software engineering perspective (e.g., Frank & Hans, 1999), and the customer perspective (e.g., Carney & Wallnau, 1998). Seong and Yoon (2004) observed that most of the evaluation models are focused on the software developer and the development process, while there is an increasing research in the areas of customer satisfaction and perception. Customers are individuals and organizations who purchase software products and services to meet their computing needs. Organizational software evaluation, selection, and acquisition fall within the realm of organizational buying behavior, which is affected by the environment, the buying organization, and buying responses that are dependent on the marketing stimuli of the seller (Kotler & Armstrong, 2006). It is in Uzoka, Abiola, and Nyangeresi (2008) that software evaluation and selection is a technology adoption decision, which revolves around product and organizational characteristics. Individuals within organizations usually accept a given technology based on perceived ease of use and perceived usefulness, which are key constructs of the technology acceptance model (TAM). The TAM (Davis, 1989) is important in software evaluation and adoption because of the high level of user involvement in the software adoption process, which is recognized in Howcroft and Light (2002).

This study adds to the literature of software evaluation and acquisition from the customer's

perspective. It seeks to identify the impacts of the evaluation variables that relate to the constructs of perceived usefulness (PU) and perceived ease of use (PEOU) as a means of understanding organizational behaviour in software adoption. It also ascertains the influence of these cognitive responses (PU and PEOU) on the evaluation and adoption of commercial software by corporate organizations. The use of multicriteria decision analysis (MCDA) methods in software evaluation is common in literature (e.g., Stamelos, Vlahavas, Refanidis, & Tsoiukias, 2000; Vlahavas, Stamelos, Refanidis, & Tsoukias, 1999). An MCDA technique, analytic hierarchy process (Saaty, 1980) is utilized to determine the relative influences of the PU and PEOU variables in the software evaluation and adoption decision matrix. Previous studies have utilized other statistical techniques in determining the influences of PEOU and PU in software evaluation and adoption (e.g., Mathieson 1991; Montazemi, Cameron, & Gupta; 1996; Szajna 1994).

The rest of the article is structured as follows: The "Software Evaluation" section considers software evaluation techniques and factors. "The Research Framework" section presents the research framework, which is based on the technology acceptance model. The AHP model for software evaluation is developed in the next section. An illustration of the utility of the model and discussion of the results of the findings are presented in "Numerical Examples and Discussion," while some conclusions are drawn in the final section.

## **SOFTWARE EVALUATION**

Various methods/models exist for software evaluation, depending on the perspective (software engineering or user focused), organizational needs, and evaluation expertise. Oppermann and Reiterer (1994) categorized evaluation methods into the following: subjective evaluation methods, objective

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