The Applicability of TAM Outside North America: An Empirical Test in the United Kingdom

SAID AL-GAHTANI, King Khalid University, Saudi Arabia

Recently, researchers in IS have begun to rely on the theories of innovation diffusion to study implementation problems. A major focus of these studies has been how potential users' perceptions of the information technology (IT) innovation influence its adoption. User acceptance of IT has been a primary focus in the MIS implementation research for the past decade. Why do users accept or reject information systems? How is user acceptance affected by perceived usefulness, perceived ease of use, and attitude toward acceptance behavior? The present research addresses these questions in the Western Europe culture. The primary objective of this study is to investigate the applicability of the technology acceptance model in the United Kingdom. This study seeks empirical support for the well-known technology acceptance model, or TAM in the UK. TAM is used as a base model to produce a causal model resembling a network of relationships among the constructs of the study. A field study of 324 users regarding an IT system was conducted in the UK to validate measures used to operationalize model variables and to test the hypothesized network of relationships. Partial Least Squares (PLS), a second-generation multivariate analysis technique, was used to estimate the parameters of the proposed causal model. The study findings indicate that TAM is very applicable to the UK, which lend a hand to a good tool of assessing IT acceptance in this developed region of the world. They also indicate that perceived usefulness has the largest influence on IT acceptance followed by users' attitudes toward IT. Perceived usefulness demonstrate to operate directly on IT acceptance and indirectly through attitudes. Meanwhile, perceived ease of use has a larger influence on users' attitudes than does perceived usefulness. Suggestions for future research and implications of findings are discussed.

INTRODUCTION

IT adoption and use has been a major goal of modern organizations for the past two decades. Research into predicting the factors leading to IT acceptance and use has also received a great deal of attention and has led to a wealth of research. The study of diffusion and adoption of new technologies recently gained new attendance after being very popular during the 1980s. During that period, organizations throughout the Western developed countries started to use computer technology, especially personal computers, on a large scale. This new wave of attention was at least partly initiated by the increasing diffusion of networking technologies and the advent of Internet (Rose & Straub, 1998).

User acceptance is often the pivotal factor determining the success or failure of information system projects (Attewell & Rule, 1984; Davis, 1993; Igbaria, 1993; Swanson, 1988).

Researchers in this field have, for a long time, been occupied in investigating the critical factors predicting user acceptance of information technology. Several past studies addressed the main theme "why do users accept or reject IT systems?" In arriving at a conclusive result, a lot of technical and managerial measures ought to be taken to foster IT acceptance in the organization for its competitive advantage. This will also enable system designers, developers and users to improve user acceptance of the system in the workplace through the design choices of the system (Davis, 1993). Moreover, management can better understand user perceptions and their attitudes toward a given IT system. Implementing all of that via corrective technical and managerial measures will eventually lead to system success.

Numerous indicators of success have been used in the MIS literature. These include user satisfaction (e.g., Amoroso

& Cheney, 1992; Igbaria, 1990; Rivard & Huff, 1988), and system usage (Adams et al., 1992; Davis et al., 1989; Igbaria et al., 1997; Thompson et al., 1991; Straub et al., 1995) which are considered the most widely used measures of success. In addition, Igbaria et al. (1997) report that system usage has been considered the primary indicator for IT acceptance. In a recent study, Al-Gahtani and King (1999) investigated both measures and suggested that system usage is a more clearly defined measure and should better be used as an indicator of IT acceptance.

Recently, researchers in IS have begun to rely on the theories of innovation diffusion to study implementation problems (Brancheau & Wetherbe, 1990; Cooper & Zmud, 1990; Moore & Benbasat, 1991; Prescott, 1995). A literature review by Prescott and Conger (1995), for instance, included 70 IT adoption and use articles based on the diffusion of innovation (DOI) paradigm alone. A major focus of these studies has been how potential users' perceptions of an IT innovation influence its adoption (Moore & Benbasat, 1991). The Rogers' seminal work *Diffusion of Innovations* (1983) is one of the most often cited reviews of the perceived innovation characteristics literature. Rogers, in a survey of several thousand innovations studies, identified five antecedents–relative advantage, complexity, compatibility, observability, and trialability–affecting the rate of diffusion of a technology.

Tornatzky and Klein (1982), in a meta-analysis of findings of 75 articles concerned with innovation characteristics and their relationship to innovation adoption and implementation, found that three innovation characteristics (compatibility, relative advantage, and complexity) had the most consistent significant relationships to innovation adoption. Moreover, Moore and Benbasat (1991) in their work "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation" found that compatibility is confounded with relative advantage and its existence as a separate construct is not clear.

The TAM model, which was first introduced by Davis (1986), is quite similar to a diffusion of innovations models. TAM is a well-respected model of IT adoption and use. TAM does not use all Rogers' constructs, but it includes two constructs, perceived usefulness and perceived ease of use. However, the similarity between these constructs and Rogers' perceived relative advantage and perceived complexity is quite clear (Davis et al., 1989). Usefulness and ease of use are both believed to be important factors in determining acceptance of IT (Davis, 1989; Davis et al., 1989; Igbaria, 1993; Igbaria et al., 1997; Keil et al., 1995).

Previous Testing of TAM
TAM was successfully tested by several previous empirical studies in North America; however, just a few studies were carried out to test the applicability of TAM outside this region. Table 1 shows a selection of those studies by country and the IT examined. It is striking that no single study took place in Europe other than the one investigating the diffusion of e-mail in Switzerland. It has been argued that the TAM model may not hold equally well across cultures (Straub et al., 1997).

The TAM model is suggested to be a promising practical tool for early user acceptance testing. Organizations have incurred high costs for investing in information technology. The diagnostic measures provided by TAM should help practitioners identify and evaluate strategies for enhancing user acceptance. Accordingly, if higher levels of user acceptance are achieved, productivity should be enhanced and greater gains and return on investment would be maintained.

While TAM has been widely applied and tested in North America, there have been attempts to extend this work to other regions of the world (Straub et al., 1997). Straub et al. further elaborated that there exists a pressing need to understand whether TAM applies in other cultures, given the rapid globalization of business and systems. This study is an attempt to respond to and satisfy some of this necessity by testing TAM in Western Europe and more specifically in the UK.

Comparison of IT Acceptance and Support of TAM
Early in this decade, an estimate in the UK predicted that the ratio of computer terminals or microcomputers to office workers was already approaching an average of one to one (Stewart, 1990). Straub et al. (1997) combined Hofstede's cultural dimensions indices to create a "computer-based media support index" (CMSI). In their study "Testing the technology acceptance model across cultures: A three-country study", they show that CMSI for the U.S. anchors one end of the scale while Japan occupies the other end and Europe (Switzerland) occupies the middle position, but closer to the U.S. than to Japan. They conclude that, "based on the ordinality revealed through this index and the dimensions of culture, it is possible to predict whether a given culture would support a TAM description" of IT use. The CMSI index for Hofstede's indices for those countries (USA, Switzerland, Japan) with the UK introduced as the country of concern for this study was (157, 194, 295) and 147, respectively. Straub et al. (1997) found CMSI to be conversely proportional to the degree of supportive of TAM to the specified country. This shows how close the UK is to the U.S., which reflects a higher potential degree of support of TAM. Moreover, statistics regarding IT adoption and use in Western Europe compared to U.S. and the world shown in Table 2 reveals strong support of applicability of TAM. All of this together gives high potential to the applicability of TAM in the UK with a promising attempt to carry out the test in this part of the industrialized world.

The purpose of this research was to test the applicability of the TAM model to predict IT adoption and use in the United Kingdom as an important country of the industrialized world in Western Europe. This paper presents an extension of the work of Davis in two ways. First, unlike his work, which examined the TAM constructs through multiple regression

Related Content

Agile Development
Fabrizio Fioravanti (2006). *Skills for Managing Rapidly Changing IT Projects (pp. 95-107).*
www.irma-international.org/chapter/agile-development/29004

B2B E-Commerce Diffusion: The Efficacy of Institutional Discourse
Kim Virborg Henriksenand Helle Zinner Andersen (2008). *Information Communication Technologies: Concepts, Methodologies, Tools, and Applications (pp. 600-616).*
www.irma-international.org/chapter/b2b-commerce-diffusion/22690

Directed Basic Research in Enterprise Resource Planning (ERP)
S. Parthasarathy (2010). *Information Resources Management: Concepts, Methodologies, Tools and Applications (pp. 896-909).*
www.irma-international.org/chapter/directed-basic-research-enterprise-resource/54523

Enterprise Architecture Management and its Role in IT Governance and IT Investment Planning
Klaus D. Niemann (2010). *Information Resources Management: Concepts, Methodologies, Tools and Applications (pp. 996-1026).*
www.irma-international.org/chapter/enterprise-architecture-management-its-role/54529

The Inclusion of CIOs in Top Management Teams: A Longitudinal Study of the Strategic Role of IT
Wenhong Luo (2016). *Information Resources Management Journal (pp. 37-52).*
www.irma-international.org/article/the-inclusion-of-cios-in-top-management-teams/163243