Review of Technology Acceptance Model usage in predicting e-commerce adoption

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ABSTRACT

Technology Acceptance Model (TAM) has been used widely in e-commerce adoption studies. A review of TAM can assist scholars to identify common themes, strengths and weaknesses, leading to redesigning and enhancing the model for more effectiveness. TAM has been used widely in most e-commerce adoption studies owing to its ease of use and extensive modifications to rectify on its weakness. This study has reviewed 25 e-commerce adoption publications. The authors discussed these studies to establish the usage of this model. In addition, the researchers cited the major strengths and weakness of TAM. Finally, the article draws conclusions and makes further recommendations.
Keywords: Adoption, E-commerce, TAM, Technology, Acceptance, Model

1. INTRODUCTION

The literature work of Davis, (1989) has been foundational in studies related to e-commerce adoption [1]. TAM is an advancement of Theory of Reasoned Action by introducing two new variables, perceived usefulness and perceived ease of use. In TAM, both constructs could predict an individual's system usage inclination. Moreover, TAM did not include subjective norm as a determinant of intention. Since its introduction by Davis, (1989) and Davis et al., (1989) the model has been extensively used to predict the reception, adoption, and use of e-commerce[1]. As recommended by Legris et al., (2003) and Serenko et al., (2008), the power of prediction and justification of TAM should be evaluated by amalgamating other technology-specific constructs. Hence, the article reviews of past work on usage of TAM in predicting e-commerce adoption [2][3].

The study is structured as follows: Technology Acceptance Model briefing. A literature review of TAM in e-commerce adoption and the conclusions coupled with recommendations.
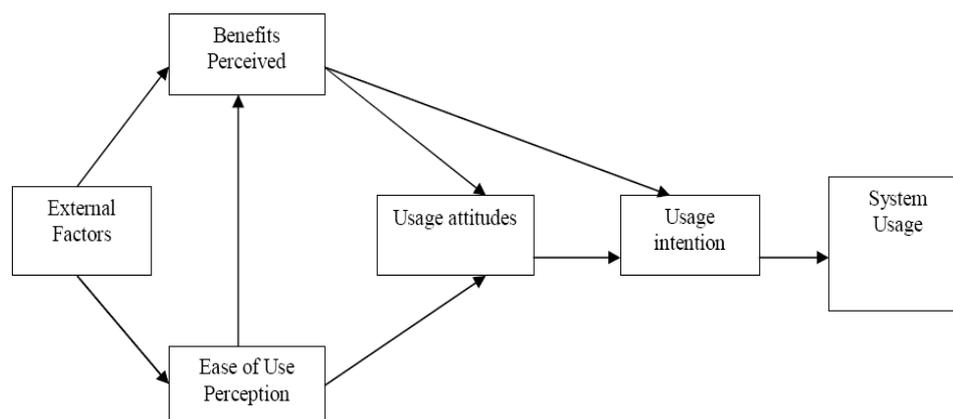
2. TECHNOLOGY ACCEPTANCE MODEL BRIEFING

TAM is an expansion of TRA. However; TAM has apparent center of attention on technology acceptance performance of computer users. Mainly TAM is used to examine how external factors such as system distinctiveness and training influence in-house attitude and intention [1]. TAM (Table 1 –Shows TAM constructs) which demonstrates the four major variables; Behavioral Intention, Attitude, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

Table1. Definitions of Technology Acceptance Model variables (predictors).

Construct	Construct Definition
Behavioral Intention	Individual's intent to carry out activities
Attitude	Positive or negative assessment of an activity by an individual
Perceived Usefulness	Beliefs that using a specific system would improve an individual task execution
Perceived Ease of Use	Belief that a system usage would be free of effort

TAM has been widely used in the area of Information Systems to study user behavior in the context of various information technologies, such as PCs [4], computer application [5] and internet [6]. In these studies, the aforementioned factors had noteworthy outcome on individual's technology approval. Likewise, a latest meta-analysis of TAM cited the importance of these factors [7].

Fig 1: Technology Acceptance Model (TAM)[1]

3.A LITERATURE REVIEW OF TAM IN E-COMMERCE ADOPTION

The most cited model in e-commerce adoption is TAM hence it has been reviewed severally [8]. Lee et al. (2003) made an analysis and survey on 101 TAM studies [9]. They paid attention to the advancement, restrictions and potential guidelines of TAM. Legris et al. (2003) review of 22 TAM publications focused on the progressive enlargement of TAM, and apt address on the strengths and limitations of the model [25]. For this study the analysis is focused on TAM usage in predicting e-commerce adoption.

In the recent past TAM has been notably used in predicting e-commerce adoption and in other cases to validate its modifications such as e-Commerce Adoption Model (e-CAM), which is derived from the theoretical foundations of prior research in the theories of perceived risk as well as its predecessor [10]. Amongst the existing adoption theories, TAM notably appears as the most widely acknowledged amid e-commerce adoption scholars owing to the affluence of recent empirical evidence [11]. Several researchers have done extensive evaluation of the TAM variables as used in e-commerce adoption. For instance, in virtual store consumer acceptance they have argued that perceived ease of use has a significant effect on perceived user-friendliness [12]. Hassanein and Head (2007) stated that highly-perceived ease of use affects highly-perceived user-friendliness in online shopping websites [13]. In addition, models have been generated of consumer acceptance of e-shopping such as, in Turkey for the intention of including factors not found in the classical TAM model, such as enjoyment, trust and quality of e-shopping, which determine behaviour, intentions and attitudes towards e-shopping [14]. TAM usage in e-commerce adoption comes with several strengths as well as weaknesses as expressed by various scholars. Hassan & Fatemeh (2011) have done an empirical study on determinants of electronic exchanges acceptance with a key emphasis of enhancing TAM with two extended variables namely trust and quality [15]. Using TAM they designed a comprehensive model for acceptance of electronic exchanges technology in textile industry. A research framework that was proposed by Gapar & Janatul (2011) offers an emphasis on TAM factors that contributed to the e-commerce acceptances [16].

A more sector specific TAM, TECTAM—Thai E-Commerce Technology Acceptance Model, demonstrates how e-commerce adoption among SMEs can be approached in a wholesome manner in gaining knowledge on the adoption and use of e-commerce [17]. A further test of TAM in Australian regional communities SMEs context and their attitudes to and intentions to use e-commerce would be useful in an attempt to encourage adoption has been carried out by Wayne & Michelle, (2003) [18]. Elizabeth & Michael, (2002) extend the empirical study of TAM by evaluating extensively the main variables, Perceived Strategic Value and Adoption of Electronic Commerce [19]. Within E-banking TAM along other models has been used as model to support the underpinning theories on the basis of strong theoretical bases, proven empirical supports, and applicability to wide range of IS innovation [20]. To further the usage of TAM, John et al. (2003) developed a framework that demonstrates the drivers of e-commerce success [21]. Despite TAM having substantial explanatory power, its major weakness is low descriptive richness that would allow researchers and managers to draw conclusion upon [22]. In addition to its failures, TAM relationships exhibits imperfections; there exists large deviation in the predicted outcomes in some researches with diverse examples of users and systems [23]. However, different variables have been implemented to modify TAM and consequently leverage on this weakness [24].

4. CONCLUSIONS AND RECOMMENDATIONS

TAM has demonstrated to be a key theoretical model in helping to understand and explain the use, behavior and atitude in e-commerce adoption. It has been evaluated in numerous empirical studies and reasonably verified to be of quality and to yield statistically dependable results used against other research tools. Understanding the essence of TAM can guide scholars to enhance the model and developers to plan diverse human interaction interfaces for diverse online clients, and as a result attain high e-commerce adoption. This study reviewed 25 studies to understand the past essence

of TAM in e-commerce adoption. The authors discussed the major strengths of TAM as well as minor weaknesses that have led to various extensions.

The authors found that TAM is the most frequently used model in predicting e-commerce adoption with most studies being carried out in developing countries. They also found TAM to be suitable in providing most statistically correct outcome in e-commerce adoption. In addition, the classical TAM deficits have been adequately catered for with various extensions that added the essential missing variables such as trust and quality as intervening variables. The authors recommend further study of TAM within other adoption areas such as green computing and cloud computing systems. This will offer comparative studies from diverse fields.

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