Chapter 2
Do Mobile Technologies Have a Place in Universities? The TAM Model in Higher Education

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ABSTRACT

The present chapter provides an analysis of the possible applications of the TAM (Technology Acceptance Model) for the study of the mobile technology acceptance process at the higher education level, through a literature review on the state of the art. With this aim in mind, the chapter will start by presenting the theoretical principles of the TAM model and its evolution. After that, the authors will describe the state of the research on the topic, first within the field of education in general, to focus then on the university level, and finally on mobile learning specifically. Throughout the analysis, the most significant studies will be highlighted as an example. Lastly, the authors will provide some brief conclusions and proposals for future lines of research derived from the consulted literature.

INTRODUCTION

The contents of this chapter are focused on the analysis of the mobile technologies adoption process in the field of higher education, as well as the determination of the key factors involved in the achievement of the acceptance of these technologies by educators.

Mobile technologies are taking up an increasingly important place in all fields of an individual’s life (Fundación Telefónica, 2014; Sánchez Prieto, Olmos Migueláñez & García-Peñalvo, 2013), including the education field, where there is a strong interest in incorporating these technologies to the teaching
practice to make the most out of the opportunities for communication, flexibility and individualisation that these devices have to offer (Corbeil & Valdés-Corbeil, 2007; SCOPEO, 2011; Traxler, 2009; Alonso de Castro, 2014; García-Peñalvo & Secoane-Pardo, 2015).

This interest results in the implementation of programmes designed by education authorities with the aim of providing the schools with material resources, as well as in an increase of experiences and research with this type of technologies in all levels of the education system (Petrova & Li, 2009; Sánchez Prieto, Olmos Migueláñez & García-Peñalvo, 2014a), including a sizeable number of them found within the field of higher education (Kukulska-Hulme, Sharpley, Milrad, Arnedillo-Sánchez, & Vavoula, 2011).

Teacher and student attitudes represent a key element in any process involving the successful incorporation of new technologies to the education field, which makes it essential to know the factors that lead to the adoption of information systems (IS) in order to design new tools and integrate them in the classroom.

The process of technology acceptance has been a subject of analysis in numerous studies, which have resulted in theories such as the Innovation Diffusion Theory (IDT) (Rogers, 1962), the Task-Technology Fit Theory (TTF) (Goodhue & Thompson, 1995) or, more recently, the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), all of them trying to pinpoint the key factors that influence the process of technology adoption.

In this chapter, the analysis will be focused on the most widespread model (King & He, 2006), which is the Technology Acceptance Model (TAM).

This model, created by Davis (1986), results from the principles of the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB) (Ajzen, 1985), two theories that come from the field of cognitive psychology and which analyse the process that leads an individual to adopt a given behaviour.

On the basis of these theories, Davis created a proposal specifically designed to explain the technology adoption process. This results in a model based on two key concepts: perceived usefulness (PU), understood as the improvement in the performance derived from the use of the new ICT as perceived by the subject, and perceived ease of use (PEU), that makes reference to the individual’s perception of the amount of effort necessary in order to use a technology.

These two constructs influence the individual’s attitude towards use of a technology (A), formed by the individual’s beliefs that affect their behaviour response, which in its turn influences the behavioural intention of use (BI) that establishes the disposition of the individual to display a specific behaviour, which determines the actual use (AU) of an information system.

The TAM model’s main advantages are its theoretical soundness and the simplicity of its instrument, and it is able to explain a high percentage of the variance (Hernández García, 2008), which makes it a relevant resource for the study of the process of acceptance of new technologies.

Initially, the use of this model was more strongly developed within fields such as computer science (Heijden, 2000; Yang, Cai, Zhou, & Zhou, 2005) or commerce, in studies that analyse, among others, the factors that lead users to use online shopping systems (Chen, Gillenson, & Sherrell, 2002; Gefen, Karahanna, & Straub, 2003). However, in the past few years the model has begun to make the leap to other research fields, one of them being education.

Since its inception, Davis’ proposal has been subjected to frequent modifications made by researchers, among which we can highlight the inclusion of external precursors, the incorporation of factors from other theories or the consideration of contextual factors (King & He, 2006).