

# Web-Based Course Management Systems (WCMS) Acceptance with College Students in Estonia

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## INTRODUCTION

Increasingly, higher education institutions worldwide are adopting information and communication technologies (ICTs) to enhance pedagogy (Ifinedo, 2006; Lee, Cho, Gay, Davidson, & Ingraffea, 2003; Leidner & Jarvenpaa, 1993). Web-based course management systems (WCMS), such as *WebCT* and *Learning Space*, are among the notable ICTs diffusing in higher learning environments globally (Ifinedo, 2006; Tavangarian, Leypold, Nölting, Röser, & Voigt, 2004). WCMS are sometimes referred to as course management systems (CMSs). An instructor using a CMS can place course materials online, communicate with students, track their progress, and conduct online tests, quizzes, and so forth. Sometimes, CMSs are confused with another group of learning technology known as learning management systems (LMSs). Carliner (2005) provides a clear distinction between the two technologies; he notes that CMSs are used in the management of asynchronous educational environments (AEEs) whereas LMSs are basically registrars that perform various enrollment and registration tasks electronically. Examples of LMSs include *Saba*, *NetDimensions EKP*, and *SumTotal*. Both technologies are essential for an effective virtual learning environment (VLE) (Carliner, 2005; Tavangarian et al., 2004). We focus solely on WCMSs in this article in the bid to not generalize the two technologies.

The objective of this article is to present the results of a study that investigates the acceptance of WCMS among college students in Estonia. The country is an emerging economy in the Baltic region of Europe. Estonia has made remarkable progress with respect to the use of ICT products in enhancing education at all levels (The Tiger Leap Foundation, 1997). Recently, Estonia joined forces with a pan-European e-learning project called the UNIVE (Estonian eUniversity, 2004; Ifinedo, 2005). Among other goals, the project aims at “increasing the availability of quality education for

students and other people willing to learn ... and, educating lecturers of universities to compile and practice quality and efficient e-courses” (Ifinedo, 2006). In brief, the UNIVE project aspires to improve VLEs for the participating countries. WebCT is among the VLE tools being used by college students in Estonia. In this respect, this study will increase our understanding regarding the acceptance of such technologies in the region. The research is important for three reasons: (1) first, to provide empirical information about the acceptance of WCMS among Estonian college students, (2) to complement a recent study in Estonia in which the experiences of college teachers on WCMS was investigated, and (3) to answer calls being made for ICT studies to be extended to the other regions of the world, including Eastern Europe (see Ifinedo, 2006). Furthermore, this study draws from the technology acceptance model (TAM); for a theory to be considered valid, its veracity across a wide range of contexts needs to be established. Importantly, the findings of the study will be beneficial to administrators, instructors, and other entities involved in various e-learning projects in Estonia and comparable countries in the region.

## LITERATURE REVIEW

Among the most widely used theoretical frameworks for assessing the adoption or acceptance of technologies in the literature is the TAM, which was developed by Davis (1989). The model is comprised of three constructs (Figure 1). In brief, the TAM proposes that users' acceptance of new information systems (ISs) can be predicted by the users' perceptions of the ease of use and usefulness of the IS (Davis, 1989). The *perceived ease of use* construct in the TAM describes “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989, p. 320). The second construct is the *perceived*

*usefulness* which describes the user’s perceptions of the expected benefits derived from using a particular IS system (Davis, 1989). *Usage* is the dependent variable in the TAM, and it is “theorized to be influenced by perceived usefulness and perceived ease of use” (p. 320). In general, IS researchers have confirmed the relationships in the TAM (see Straub, Limayem, & Karahanna, 1995).

Researchers (e.g., Brown, 2002; Lee et al., 2003; Limayem, Cheung, & Chan, 2003; Pan, Siva, & Brophy, 2003) have studied the adoption and acceptance of WCMS in college environments. Brown (2002) studied the acceptance of *WebCT* among college students in a developing country, The Republic of South Africa (RSA). He found that perceived ease of use is strongly related to usage and perceived usefulness. Limayem et al. (2003) found support among the constructs used to investigate the adoption (and continuance intention) of WCMS among students in Hong Kong, a developed economy. Lee et al. (2003) reported strong relationships between perceived ease of use and perceived usefulness as did Brown (2002). However, other researchers have reported equivocal results regarding the suitability and relevance of the TAM for WCMS in higher learning contexts. For example, Pan et al. (2003) concluded that the TAM may in fact not be applicable to higher educational settings following the lack of support among the relationships for the constructs in their study. In the same vein, other findings in the IS literature examining the relationships in the TAM framework have indicated mixed results as well (Gefen & Straub, 2000). Nevertheless, the TAM remains the most widely used framework for studying technology adoption and acceptance by IS researchers.

**THE RESEARCH FRAMEWORK AND HYPOTHESES**

Figure 1 illustrates the TAM as well as a research model used for the study. The arrows in Figure 1 indicate the directions of the hypotheses (H1–H3) that are discussed in-depth below.

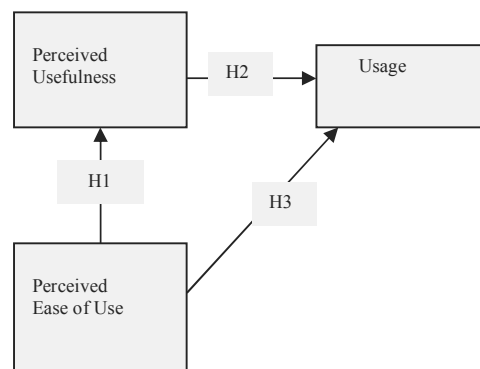
Perceived ease of use and perceived usefulness have been noted as important predictors of information systems (IS) usage (Adams, Nelson, & Todd, 1992; Davis, 1989; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Straub et al., 1995). Studies have shown that perceived usefulness and perceived ease of use are good predic-

tors of usage (e.g., Adams et al., 1992, Igbaria et al., 1997; Straub et al., 1995). As previously noted, others have raised doubts as to the veracity of the framework or model for VLE tools in higher educational settings (Pan et al., 2003).

Gefen and Straub (2000) suggested that perhaps some aspects of the TAM may be relevant for IS acceptance in the developed West. They listed 42 studies using the TAM and noted that 25 of these studies did not show perceived ease of use to be a significant predictor; the others showed mixed results and only nine studies seemed to uphold the view that perceived ease of use is a predictor of usage. At a general level, Gefen and Straub suggested that the perceived usefulness construct tends to support the TAM consistently. Similarly, other researchers (e.g., Anandarajan, Igbaria, & Anakwe, 2002; Brown, 2002) using the TAM to research IS acceptance in developing countries underscored the pertinence of relevance of regional contextual influences. For example, Anandarajan et al. (2002) and Brown (2002)—researching *WebCT* acceptance among students—found that perceived usefulness is not a significant predictor of usage, which is contrary to the view in Gefen and Straub. This information indirectly strengthens the observations in Gefen and Straub highlighting the role of contextual considerations. In this regard, results for the acceptance of WCMS in a developing country like RSA indicated that a strong relationship exists between perceived ease of use and usage.

Despite its size, Estonia leads Eastern Europe with regard to the adoption and use of ICT products for socio-economic development. With regard to the Internet diffusion per capita, Estonia is among the world’s lead-

Figure 1. The technology acceptance model



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