An analysis of the influence of students’ technological culture on their technology acceptance
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The increasing implementation of learning management systems (LMS) in educational institutions during the last decade has raised the interest among the research community on the acceptance and use of these systems by both teachers and students. At first, the implementation of LMS was based on their technical design and the adaptation of the learning processes to the virtual environment, neglecting students’ characteristics when the systems were deployed, which led to expensive and failing implementations. The Unified Theory of Acceptance and Use of Technology (UTAUT) proposes a framework which allows the study of the acceptance and use of technology that takes into consideration the students’ characteristics and how they affect the acceptance and the degree of use of educational technology. This study questions the role of the user’s attitude towards use of LMS and uses the UTAUT to examine the moderating effect of technological culture in the adoption of LMS in Spain. The results from the comparison and analysis of three different models confirm the relevance of attitude towards use as an antecedent of intention to use the system, as well as the important moderating effect of gender and technological culture. The discussion of results suggests the need for a more in-depth analysis and interrelations of cultural dimensions in the adoption of educational technologies and learning management systems.
Introduction and research objectives

During the last twenty years a wide range of theoretical models for analysing technological acceptance have been used, mainly Davis’s Technology Acceptance Model (TAM) [1], based on Fishbein and Ajzen’s Theory of Reasoned Action (TRA) [2]. This study applies a TAM-followup, the Unified Theory of Acceptance and Use of Technology (UTAUT), an integrative model by Venkatesh et al. [3], as a ground for our research model. UTAUT consolidates features of eight different acceptance models and proposes a unified model with four core constructs that determine IT use behaviour, and which takes into account the moderating role of gender, age, experience and voluntariness of use. UTAUT is a relatively new theory, and the effect of cultural elements, a key factor in learning processes, is not yet taken into consideration in its original formulation [4].

This research then focuses on two aspects seldom covered by UTAUT studies: (1) the mediation role of attitude towards use as a predictor of behavioural intention to use and (2) the attitudinal differences between students with technological and non-technological background education and culture. The first one is a topic in which no consensus has been achieved yet [5]; the second examines a moderating variable on the adoption of e-learning technologies from a cultural perspective, an approach that has not been introduced in UTAUT studies until recently.

Research Design and Methodology

Three different models have been analyzed in order to achieve the research goals: a basic TAM-based model, an extended UTAUT model – which also considers anxiety and self-efficacy – with attitude towards use as a predictor of behavioural intention to use and the extended UTAUT model without the attitude towards use construct. The second and third models included technical background education as a moderator variable.

In order to test the model, online surveys have been completed by 79 graduate, post-graduate and lifelong learning Spanish students – 62 of them belonging to the technologic culture – who already used a Learning Management System (Moodle). Results of these surveys have been analyzed with structural equation modelling with a partial least squares approach, for which PLS Graph 3.0.1130 and SPSS 18 software packages have been used.

Conclusions

After verifying the model and reformulating some constructs to assure the consistency and reliability of the measure instrument, the main results reveal the attitude towards use as a mediator between both performance expectancy and social influence, and behavioural intention. However, effort expectancy was not found to have a significant relevance for any of the models, contradicting thus prior literature.

While no moderation effect was found from experience – either Moodle-, LMS- or ICT-related –, age or voluntariness of use, the differences between technological and non-technological culture, together with gender differences, arised as strong moderators for the intention to use the LMS. This is an important finding which emphasizes the appropriateness of considering cultural factors to study the acceptance of technology in education – particularly, both moderating variables have been entwined in the Spanish educational system, where the majority of technological degree courses have traditionally comprised male students, in contrast to non-technological studies.

The study confirms that, for students belonging to a non-technological culture, higher levels of performance expectancy and social influence lead to a more positive attitude towards using a learning management system. Furthermore, facilitating conditions become, more than attitude, the determinant factor of the intention to use the LMS in the case of non-technological culture.

These results emphasize the importance of the existing support infrastructure – both technical and human – when delivering courses via LMS in order to reach a higher audience and expand to all educational disciplines. Also, the comparison between our research results and those found by Nistor et al. [7] with a larger sample of technical and non-technical participants suggests a balance between facilitating conditions and anxiety in the acceptance of ICT-based LMS, so that this reciprocal relation may not be explained only by psycho-social factors perceived by the individual, but also depend on the inherent socio-cultural dimensions.

References