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New Discoveries for User Acceptance of E-Learning Analytics Recommender Systems in Saudi Arabia

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ABSTRACT

This article adopts e-learning analytics principles to provide a new model to explain the acceptance behaviour of recommender systems adoption with e-learning in the Saudi Arabian context and reflects the increasing focus of the Saudi Arabian Ministry of Education on delivering online educational services. This focus has come at the necessity to improve overall access to the education system, and higher education and has been driven with evidence of improving learning outcomes with electronic learning (e-learning) information and instructional technology with the use of e-learning analytics recommender systems. This review utilises the technology acceptance model as a theoretical framework to generate a set of interlocked hypotheses that go to explaining student behaviours towards technological acceptance and continued usage intention of recommender systems.

KEYWORDS

e-Learning, Recommender Systems, Saudi Arabia, Tam University

INTRODUCTION

The successful integration of face-to-face learning with e-learning systems is determined by the level of technological acceptance and continuity of use by users within the learning environment. One of the differences and challenges that e-learning environments face is the dynamic shift towards changing content offered by e-learning systems compared to the more ridged and inflexible course materials offered in face-to-face learning. The ability to moderate content in real time to meet the demands of the student makes e-learning systems increasingly more valuable as a teaching tool, particularly for those who need special learning assistance (Al-Shehri, 2010). However, one of the current limitations in Saudi Arabia to the effective role out of e-learning systems is user satisfaction and its relationship to the speed of the internet and related services (Xanthidis, 2016). It is anticipated there will be increased focus on non-traditional learning systems across all levels of the Saudi education sector as the quality and penetration of the internet deepens in the Kingdom, and this will further lead to an increased level of acceptance and understanding of e-learning systems.

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Notwithstanding the shift in Saudi education policy towards the introduction of e-learning systems, particularly after 2006, the implementation of e-learning systems has experienced many challenges (Al-Shehri, 2010). Al-Shehri (2010) noted that the lack of user familiarity with e-learning systems resulted in up to 50% of all users failing to take advantage of the full range of services offered by the e-learning system. This implies a failing in the methodological approach to the introduction of the new technology. More importantly, it highlights a lack of engagement in how the technology is to be used and the explanation of its benefits to users as they become more confident with the system over time. Therefore, understanding the conditions that lead to greater acceptance of e-learning analytics recommender systems is critical to increasing e-learning instruction use given that three-quarters of all students prefer non-e-learning modes of instruction (Ubbisa, 2014).

Learning analytics involves data analysis to guide decision making in education systems (Czerkawski, 2014). Central to the decision-making outcomes is the approach to leverage student data for the delivery of more personalised and adaptive teaching and learning (Miteva, Stefanov, & Stefanova, 2016). In terms of process, a statistical analysis of student data is undertaken to develop a deeper level of understanding of the student experience. The results of the data analysis are then used to inform strategies to provide more individualised instruction to meet each student's unique learning needs (Miteva et al., 2016). All university learning management systems (LMS) have reporting metrics (e.g. time of access, time spent on pages, number of posts) embedded within them. Moreover, dashboard software for LMS is available to collect key learner metrics and to aggregate data (West, 2012). However, learning analytics provides a more sophisticated data set in relation to students' online behaviours.

Contemporary e-learning courses have the capabilities to analyse a wide range of student behaviours such as time spent by students reading teaching materials, resources used by the students, information access points, how fast they master online content (West, 2012). E-learner recommender systems include learner analytics functionalities to support analysis of the relationships between learning behaviours (UNESCO, 2012). Notwithstanding these functionalities, learning analytics in e-learning is not without its challenges. The online student data is generally highly distributed or incomplete, highlighting the importance of data quality and robust collection methods (Reyes, 2015). In addition, prior to conducting analytics it is necessary to identify the best predictors for determining students' social and behavioural responses. As such, it is highly important to clearly define the behaviour measures and predictors to be applied prior to commencing the analysis through learning analytics (Miteva et al., 2016). Given the central objective of e-learning analytics is to understand human and social processes, research studies analysing learning analytics data do well to adopt interpretivist research paradigms.

Acceptance of e-learning systems in Saudi Arabia has the potential to have profound effects on society, particularly the advancement of women who are not always afforded the same higher education opportunities as their male counterparts (Hendley & Charles, 2015). This is because the use of e-learning systems removes the need for students to attend face-to-face classes and therefore enables the education system to provide services that negate the challenges associated with gender segregated education in the Saudi Arabian context. The benefits of incorporating e-learning platforms in Saudi universities are yet to be fully realised in terms of a shift from face-to-face instruction to online lecture formats (Al-Nuaim, 2012). The transition away from face-to-face lessons means that e-learning systems must target information that is most suitable for the student at any given time if it is to enhance the student's educational experience within the e-learning environment.

The use of e-learning analytics recommender systems can help to resolve some of the problems related to content selection within e-learning systems by allowing the curriculum to be targeted to the student. This, however, represents a paradigm shift in the methodological approach to the teaching of a curriculum. The use of e-learning platforms, particularly those with recommender systems, allows for more flexible content delivery, and is ideal for distance education and classes with students that have differing learning development levels. Moreover, it can replace a rigid curriculum with

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