Robust Data Findings of E-Learning Analytics Recommender Systems and Their Impact on System Adoption for Student Experiences

Hadeel Alharbi, University of New England, Armidale, Australia
Kamaljeet Sandhu, University of New England, Armidale, Australia

ABSTRACT

E-learning recommender systems have an import role in Saudi Arabia to facilitate the education empowerment of women. The understanding of the key factors that affect adoption is critical to achieving educational equality in outcomes in countries with gender-based cultural practices. Therefore, this study examined Saudi Arabian students’ experiences of using an e-learning analytics recommender system during their study and the extent to which their experiences were predictors of their adoption and post-adoption of the system. A sample of 353 students from various universities in Saudi Arabia completed a survey questionnaire for data collection. Results showed that user experience is a significant predictor of student adoption and post-adoption of an e-learning recommender system. This study determined that adoption is significantly linked to the ability to effectively navigate and utilise the e-learning systems. Therefore, based on these findings, this study concluded that universities must support students to develop their awareness of, and skills in using an e-learning recommender system to support students’ long-term acceptance and use of the system.

KEYWORDS

E-Learning Recommender System, TAM, University, User Experience

1. INTRODUCTION

E-learning has an important role in the provision of educational material to the educationally disadvantaged through the use of electronic information, multimedia, and communication technologies (ICT) to overcome cultural barriers. E-learning has rapidly grown to be inclusive of all education technology applications related to training, learning, and teaching. Key to this growth understanding the role that student experience affects adoption rates. Adoption rates have generally been linked to the advantages of e-learning which include: the provision of flexible and convenient learning pathways, geographical reach, cost effectiveness in course delivery, and more effective management of learning spaces without the need for violating cultural norms (Al-Gahtani, 2016; Mueen et al., 2016). E-learning and associated recommender systems are an effective means of resolving informational

DOI: 10.4018/IJOCI.2018070101

Copyright © 2018, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.
retrieval challenges though the presentation of relevant materials negates the effects of information overload where useful information is often buried within the general search results (Tarus et al., 2018). In particular the improvements in system ontology have led to increased rates of acceptance and user retention through clustering of searches to provide a collaborative filtering that maximises relevance and importance of search results (Tarus et al., 2018). This approach means that there is a clustering of profiles that reflect differing search approaches and needs enabling the system to improve overall data mining and information relevance (El Moustamid et al., 2017).

One way in which e-learning recommender systems improved student experience is through system flexibility (Chang and Willis, 2015). This flexibility is optimised in e-learning systems when integrated to the cloud based host. These clouds provide a means of shared access of data centres and discussion boards in real time, as well as, providing the infrastructure to enable collaborative projects between users in a cost and time effective manner (Chang and Willis, 2015). The use of cloud systems also provides the learner with the tools to operate in real world situation where collaborative projects are often virtually hosted. Furthermore, the ability to adapt to different domains and platform tools found in the e-learning sphere assists in bridging the divide of real world experience and academic practice (Chang and Willis, 2015).

One of the advantages of recommender systems is the transferability and reusability where existing systems with proven track records can be modified or applied to different situations within an organisation (Chang, 2004). This reusability enables the introduction of e-learning recommender systems without the need to rewrite source codes and undertake web design programming resulting in savings of both time and cost building of learner’s previous skill sets and reducing the need to initiate early stage adoption practices (Chang, 2004). Furthermore, the next generation of e-learning recommender systems are inter-gradable enabling the refining of software with diverse applications to be integrated into the design of new systems. There is a need to revise e-learning recommender systems to enable effective assessment of the system in terms of optimisation outside of the context of adoption and promotion (Farid et al., 2018). However, this optimisation still should have the primary goal of encouraging long term adoption, and therefore adoption studies have a role to inform the way in which the assessment of the system and any upgrading that may occur.

It is the new generation of e-learning systems with personalised and integrated recommender systems that has led to revolution in the provision of web based directed and self-directed learning environment that meets the needs of the individual student (Benhamdi et al., 2017). Modern e-learning recommender systems have been developed to take into consideration the negative feedback to enable the identification of key search failings and improve the system accuracy and user performance levels (Albatayneh et al., 2018; Farid et al., 2018).

E-learning recommender systems have important roles in not only achieving desired educational outcomes but also in the social factors that govern a student’s success (Estefania et al., 2016). E-learning systems enable the presentation of information to diverse range of students that have cultural restrictions on behaviour and social interactions. In particular, the new generation of recommender systems are able to tailor information based on the cultural situation (Mueen et al., 2016). This targeted culturally filtered material has been demonstrated to increase the overall student performance leading to improved results; particularly in countries were gender-based segregation in learning occurs such as Saudi Arabia with married women (Mueen et al., 2016; Yamin and Aljehani, 2016). Therefore, e-learning has an important role in determining the educational experiences generating collaborative platform that overcome these cultural barriers that once disempowered and disenfranchised individuals that were bound by cultural practice (Aljehani, 2016). The use of e-learning systems has important ramifications for understanding the way in which students’ experiences lead to the adoption and acceptances of technology in education.

Within the suite of e-learning technologies is the e-learning analytics recommender systems (ERS). Broadly categorised as a collaborative, content-based, or hybrid system, an ERS primarily helps students who lack adequate personal experience or competency to evaluate and make better
Using Swarm Intelligence for Optimization of Parameters in Approximations of Fractional-Order Operators
[www.igi-global.com/chapter/using-swarm-intelligence-optimization-parameters/72829?camid=4v1a](www.igi-global.com/chapter/using-swarm-intelligence-optimization-parameters/72829?camid=4v1a)

A Discrete Artificial Bees Colony Inspired Biclustering Algorithm
[www.igi-global.com/article/discrete-artificial-bees-colony-inspired/67536?camid=4v1a](www.igi-global.com/article/discrete-artificial-bees-colony-inspired/67536?camid=4v1a)

Sustainability of Strategic Information Systems in Emergent vs. Prescriptive Strategic Management