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Examining Teachers' Use of Learning Information Systems (LIS) of the Basic Education Schools in the Philippines Using Structural Equation Modeling

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ABSTRACT

The Learner Information System is an online service that the Department of Education in the Philippines used to manage learner's information and improve the collaboration of all personnel in the organization. However, there is a need to examine the user's actual use, attitude, and behavior towards the system and to understand the factors affecting its successful implementation to improve the system capabilities and cater teacher and learner increasing needs. Using the extended technology acceptance model (TAM), this work analyzed 127 datasets gathered from 45 public and private schools in the Philippines using structural equation modelling in partial least squares. The result shows that system quality and facilitating conditions are significant predictors of teachers' attitudes towards the system. Generally, all original constructs of TAM were found to be significant implying a positive acceptance of the Learner Information System. These results provide further evidence in understanding the user acceptance of ICT-based teaching-learning systems in the Philippines.

KEYWORDS

Learner Information System, Partial Least Squares, Structural Equation Modeling, Technology Acceptance Model

1. INTRODUCTION

Information and Communication Technology (ICT)-based solutions have shown a significant influence on the teaching-learning process, and the use of these solutions is necessary for education. Many developed and developing countries had invested in bringing ICT into academic institutions (J. Zhang, Yang, Chang, & Chang, 2016). Massive technological developments proved that ICT's role in education would rise enormously in the future. ICT enhances teachers' capacities to acquire skills other than teaching in the classroom (Voogt & Roblin, 2012). Accordingly, teachers must be given continuing professional development to form the new teaching methods and be introduced to new tools to enhance the teaching-learning process (Agbo, 2015). ICT is seen not just as a tool but as an essential instrument to provide a multitude of advantages to support new ways of the teaching-learners process (Potkonjak et al., 2016) and has become mainstream in the education sector and

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has been adopted massively (Al-Fraihat, Joy, Masa'deh, & Sinclair, 2020). Moreover, ICT-based learning management tools should be used to enhance students' skills to communicate, cooperate, solve problems, and promote lifelong learning (Plomp, Ten Brummelhuis, & Rapmund, 1996; Sudam Kaware & Kumar Sain, 2015).

On the other hand, the Philippines Department of Education (DepEd) has long been making a lot of improvements to facilitate one of the most important aspects of a country using ICT-based solutions. DepEd had implemented the Learner Information System (LIS) to centralize learner's information and gather data from each school for analysis and future developments. With this, the centralized learner registry is enabled, and capturing and storing learner information become possible through active participation by teachers (DEPED, 2014). It can be accessed through a secured facility to improve tracking and decision-making at various levels of DepEd management (Amilbahar & Cordero, 2018).

Technology-based solutions had challenged the traditional teaching-learning process, and managing and maintaining learner's adequate records (Ahern, 2019). Its ubiquity has dramatically reshaped the structure of the education sector (Albrahim, 2020). The implementation of ICT-based learning management tools is a new challenge to teachers and educational institution administrators but offers significant benefits. However, decision-makers and managers like DepEd need to understand the factors affecting the effectiveness and cost-effectiveness of the LIS, so training strategies and other supports can be explored to sustain the implementation of such systems and applications (Bervell & Umar, 2017; W. S. Shin & Kang, 2015).

The current work primarily aimed to examine the factors influencing teachers to use Learners Information System and to gather more insights into the actual usage of the system and to discover areas in the system that needs improvements. This work also aimed to analyze the teacher's perception towards intention and adoption of LIS. This research provides significant results related to the behavior of the teachers under the circumstances of compulsory use of LIS by undertaking an empirical survey among teachers.

Lastly, the Technology Acceptance Model (TAM) was used in the study adapted from F D Davis (1985) and extended the initial TAM by including variables and adapting the indicators from Fathema, Shannon, & Ross (2015), Liaw (2008), Malhotra & Galletta (1999), Teo (2010), Venkatesh, Davis, Venkatesh, & Davis (2016). In administering the survey, mixed-method was utilized employing activities such as online surveys and face to face interviews. Also, structural equation modeling in partial least squares was used to evaluate the model reliability and validity and structural model analysis, as suggested by prior works of Al-Emran, Mezhuyev, & Kamaludin (2019) and Wu & Chen (2017).

2. LITERATURE REVIEW

2.1 Online Learners Information and Management Systems

Encouraging teachers and learners to adapt in the digital context have been the focus of numerous educational organizations and institutions (Saleh & Abel, 2018). It has been said that educational organization and institution change their learning strategy, and ICT-based applications and solutions support the educational learning process (Lytras et al., 2015). Also, the collaborative learning approach is one of today's major trends in education supported by ICT-based collaboration techniques (Al-Abri et al., 2017; Haldorai et al., 2020; Matias et al., 2020). This strategy facilitates a better environment for the learning process that expedites interactivity, networking and simulation (Kara, Çubukçuo, & Elçi, 2020) that improves the overall student performance (Ahmed & Mesonovich, 2019; Santiago et al., 2020) and enhances the student learning process (Ahmed & Mesonovich, 2019).

One of the most prominent Communication tools are Learning Management Systems (LMSs) since most of these solutions are open-source and freely available online (Cavus & Zabadi, 2014). These LMSs are capable of performing variety of functions that work together to provide the user

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