Factors influencing postgraduate students' intention to use learning management system

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Abstract: Learning management systems (LMS) are continuously being implemented in tertiary institutions to manage and strengthen educational activities. LMS such as Moodle facilitates the management of learning content, collaboration, and communication. However, there have been limited studies examining factors influencing postgraduate students' intention to use LMS in Malaysian universities, as studies mainly concentrate on undergraduates' use intentions. Therefore, this study investigates factors influencing the behavioural intention to use LMS based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The results indicated performance expectancy (PE) followed by social influence (SI) and effort expectancy (EE) as the factors influencing the behavioural intention (BI) to use LMS. Concurrently, facilitating conditions (FC) were found not to influence BI, and we denote that socio-economy standings and maturity influence their

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overall acceptance of the LMS. Practical and theoretical implications are discussed accordingly.

Keywords: LMS; UTAUT; technology acceptance; postgraduate; Malaysia.

I. Introduction

The recent advancement of technological innovations has triggered a gradual change from the conventional teaching method towards modern methods that adopt online learning. These methods range from learning management systems (LMS), blended learning, mobile learning, and flipped learning as a means to introduce technology in the classroom. Henceforth, most higher education institutions has resorted to benefit from this need by integrating a platform to support multiple online resources such as a LMS.[1] LMS is a web-based application used to organize, implement, manage, and assess learning content.[2] It has been widely used to support e-learning worldwide[3] and successfully implemented in Malaysian HEIs.[4] It is a system created to assist administrators, teachers, and students in accessing and managing online learning services,[5] data and contents, and are available as an open source platform (e.g. Moodle, Google Classroom, Dokeos, and Claroline) or commercially (e.g. Blackboard and WebCT).

In Malaysia, most public universities use Moodle as their official LMS[6,7] due to its scalability and free access.[8] LMS allows instructors to share, upload,

[1] Castro, "Blended Learning in Higher Education: Trends and Capabilities," *Education and Information Technologies* 24, no. 4 (2019): 2523–46. https://doi.org/10.1007/s10639-019-09886-3.

[2] Alias and Zainuddin, "Innovation for Better Teaching and Learning: Adopting the Learning Management System," *Malaysian Online Journal of Instructional Technology* 2, no. 2 (2005): 27–40.

[3] Binyamin, Rutter, and Smith, "The Students' Acceptance of Learning Management Systems in Saudi Arabia: A Case Study of King Abdulaziz University," *INTED2017 Proceedings* 1, no. 3 (2017): 9324–33.

[4] Zaidi, "Application of E-Learning for Teaching Hadith in Higher Education Institutional Education in Malaysia: A Literature Review," *Journal of Quran Sunnah Education & Special Needs* 3, no. 2 (2019): 28–34.

[5] Paulsen, "Online Education Systems : Discussion and Definition of Term,." *NKI Distance Education* 4, no. 2 (2002): 1–8.

[6] Kumar, Bervell, and Osman, "Google Classroom: Insights from Malaysian Higher Education Students' and Instructors' Experiences," *Education and Information Technologies* 24 (2019): 1793–1817. https://doi.org/10.1007/s10639-018-09858-z.

[7] Bervell et al., "Remodelling the Role of Facilitating Conditions for Google Classroom Acceptance: A Revision of UTAUT2," *Australasian Journal of Educational Technology* 38, no. 1 (2021): 115–35. https://doi.org/10.14742/ajet.7178.

[8] Juhary, "Perceived Usefulness and Ease of Use of the Learning Management System as a Learning Tool," *International Education Studies* 7, no. 8 (2014): 23–34. https://doi.org/10.5539/ies.v7n8p23.

and interact with students, whereas students at the receiving end have easy access to these learning interactions[9] and communicate with their lecturers.[10] These attributes facilitate collaboration,[11] engagement,[12] create a flexible learning environment,[13] and monitor progress and assess performance.[14] Despite these benefits, some challenges still hindered students from using LMS effectively. LMS has been found to have implementation issues such as technical setbacks, lack of proper implementation policies, unengaging,[15] and mobile accessibility.[16] Moreover, LMS is also perceived as a course-centered platform with high reliability to the internet connection for successful implementation.[17] Furthermore, instructors have been found to treat LMS as a learning content repository and henceforth lack initiatives to design interactive content that promotes interaction through the platform.[18] Due to this, empirical

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[9] Alhassan, Rashad, and Gbolagade, "An Enhanced Web-Based Platform for Mobile Learning Management System," *International Journal of Computer Applications* 124, no. 16 (2015): 30–34. https://doi.org/10.5120/ijca2015905807.

[10] Bakar, Razak, and Abdullah, "Assessing the Effects of UTAUT and Self-Determination Predictor on Students Continuance Intention to Use Student Portal," *World Applied Sciences Journal* 21, no. 10 (2013): 1484–89. https://doi.org/10.5829/idosi.wasj.2013.21.10.2920; Korhonen, Ruhalahti, and Veermans, "The Online Learning Process and Scaffolding in Student Teachers' Personal Learning Environments," *Education and Information Technologies* 24, no. 1 (2019): 755–79. https://doi.org/10.1007/s10639-018-9793-4.

[11] Ross, "Slack It to Me: Complementing LMS With Student-Centric Communications for the Millennial/Post-Millennial Student," *Journal of Marketing Education* 41, no. 2 (2019): 91–108. https://doi.org/10.1177/0273475319833113.

[12] Al-Hunaiyyan, Al-Sharhan, and AlHajri, "Prospects and Challenges of Learning Management Systems in Higher Education," *International Journal of Advanced Computer Science and Applications* 11, no. 12 (2020): 73–79. https://doi.org/10.14569/IJACSA.2020.0111209.

[13] Al-Zaidiyeen and Mei, "Teachers' Attitudes and Levels of Technology Use in Classrooms: The Case of Jordan Schools," *International Education Studies* 3, no. 2 (2010): 211–18; Nurakun, Ismailova, and Dündar, "Learning Management System Implementation: A Case Study in the Kyrgyz Republic," *Interactive Learning Environments* 26, no. 8 (2018): 1010–22.

[14] Alias and Zainuddin, "Innovation for Better Teaching and Learning: Adopting the Learning Management System," *Malaysian Online Journal of Instructional Technology* 2, no. 2 (2005): 27–40.

[15] Roslina, Nur Shaminah, and Sian-Hoon, "Students' Satisfaction on Blended Learning: A Preliminary Study," *Pertanika Journal of Social Science and Humanities* 21, no. 3 (2013): 1119-1131.

[16] Kumar, Rajamanickam, and Osman, "Exploring the Use of Mobile Apps for Learning : A Case Study on Final Year Engineering Undergraduates in Malaysia," *ASM Science Journal* 13, no. Special Issue 3 (2020): 63–67.

[17] Muruthy and Yamin, "The Perception and Effectiveness of Learning Management System (LMS) Usage among the Higher Education Students," *Journal of Technology and Operations Managemen* 12, no. 1 (2017): 86–98.

[18] Kite et al., "Exploring Lecturer and Student Perceptions and Use of a Learning Management System in a Postgraduate Public Health Environment"; Mpungose and Khoza, "Postgraduate

findings in Malaysia indicated that HEI students are more favourable towards conventional learning because LMS has been perceived as incapable of offering physical-emotional interaction, especially for a vast number of learners simultaneously.[19] Therefore, we theorised that even if the acceptance of e-learning has been universal, there is not much understanding of the factors affecting the intention and use of LMS.[20] Similarly, these assessments have been consistent with empirical findings on postgraduates in Malaysia as reported by[21] highlighting limited studies that warrants further investigation.

Furthermore, LMS are usually adopted as a formal learning platform to enhance content delivery, assessment, and manage learning activities for postgraduates.[22] Therefore,[23] claims that identifying factors influencing LMS intention and use for postgraduate students may be novel in improving any existing e-learning system in higher education. Moreover, this is further amplified with limited studies on postgraduates' use of LMS and the tendency to assume homogeneity of use behaviour between undergraduates and postgraduates.[24] In addition such investigations, especially using the adoption model, may highlight their intention to exploit LMS functions and use it effectively.[25] For this purpose,

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Students' Experiences on the Use of Moodle and Canvas Learning Management System," *E-Learning and Digital Media* 17, no. 3 (2020): 183–98. https://doi.org/10.1177/2042753020909217.

[19] Muruthy and Yamin, "The Perception and Effectiveness of Learning Management System (LMS) Usage among the Higher Education Students," *Journal of Technology and Operations Managemen* 12, no. 1 (2017): 86–98.

[20] Moreno, Cavazotte, and Alves, "Explaining University Students' Effective Use of e-Learning Platforms," *British Journal of Educational Technology* 48, no. 4 (2017): 995–1009. https://doi.org/10.1111/bjet.12469.

[21] Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Hamdard Islamicus, XLIII* (1) (2020); Zainuddin, Idrus, and Jamal, "Moodle as an ODL Teaching Tool: A Perspective of Students and Academics," *Electronic Journal of E-Learning* 14, no. 4 (2016): 282–90; Teo et al., "Factors That Influence University Students' Intention to Use Moodle: A Study in Macau," *Educational Technology Research and Development* 67, no. 3 (2019): 749–66.

[22] Mpungose and Khoza, "Postgraduate Students' Experiences on the Use of Moodle and Canvas Learning Management System," *Technology, Knowledge and Learning*, September 29, 2020. https://doi.org/10.1007/s10758-020-09475-1.

[23] Ghavifekr and Mahmood, "Factors Affecting Use of E-Learning Platform (SPeCTRUM) among University Students in Malaysia." *Education and Information Technologies* 22, no. 1 (2017): 75–100. https://doi.org/10.1007/s10639-015-9435-z.

[24] McKeown and Anderson, "UTAUT: Capturing Differences in Undergraduate versus Postgraduate Learning?" *Education and Training* 58, no. 9 (2016): 945–65. https://doi.org/10.1108/ET-07-2015-0058.

[25] Moreno, Cavazotte, and Alves, "Explaining University Students' Effective Use of e-Learning Platforms," *British Journal of Educational Technology* 48, no. 4 (2017): 995–1009. https://doi.org/10.1111/bjet.12469.

we used the Unified Theory of Acceptance and Use of Technology (UTAUT) model.

II. Unified Theory of Acceptance and Use of Technology (UTAUT) Model

UTAUT and Technology Acceptance Model (TAM) are two prominent models used in assessing users' acceptance and adoption of technology. TAM was one of the earliest models used for evaluating users' intention, acceptance, and adoption of new technology. It has been applied in much scientific research,[26] however, researchers have debated the implication of TAM due to its limited insight into users' perspectives.[27,28] Therefore, we considered UTAUT as a better alternative. UTAUT was introduced by,[29] who proposed a combination of TAM, Theory of Planned Behaviour (TPB), Social Cognitive Theory (SCT), and the model of PC utilization (MPCU). The model is predicted to be able to explain 50% of the variance in user intention[30] and is a reliable model for measuring the level of technology acceptance, adoption, and actual usage. Primarily, the model comprises six core variables, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), and behavioural intention (BI), and actual use (USE). In addition, the model also considers moderating variables such as gender, age, experience, and voluntariness. Nevertheless, moderating variables were defered and only main constructs

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[26] Chauhan and Jaiswal, "Determinants of Acceptance of ERP Software Training in Business Schools: Empirical Investigation Using UTAUT Model," *International Journal of Management Education* 14, no. 3 (2016): 248–62; Abdel-Maksoud, "The Relationship between Students' Satisfaction in the LMS 'Acadox' and Their Perceptions of Its Usefulness, and Ease of Use," *Journal of Education and Learning* 7, no. 2 (2018): 184.

[27] Šumak et al., "Differences between Prospective, Existing, and Former Users of Interactive Whiteboards on External Factors Affecting Their Adoption, Usage and Abandonment," *Computers in Human Behavior* 72 (2017): 733–56. https://doi.org/10.1016/j.chb.2016.09.006; Tsai et al., "Nursing Staff Intentions to Continuously Use a Blended E-Learning System from an Integrative Perspective," *Quality and Quantity* 52, no. 6 (2018): 2495–2513. https://doi.org/10.1007/s11135-017-0540-5.

[28] Ajibade, "Technology Acceptance Model Limitations and Criticisms: Exploring the Practical Applications and Use in Technology-Related Studies, Mixed-Method, and Qualitative Researches," *Library Philosophy and Practice* 00, no. 00 (2018): 1–13.

[29] Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *Journal of the Association for Information Systems* 17, no. 5 (2016): 328–76.

[30] Venkatesh et al.. "Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead," *Journal of the Association for Information Systems* 17, no. 5 (2016): 328–76.

were used to determine behavioural intention as validated in other empirical LMS studies conducted in Malaysian HEI.[31,32,33]

III. Hypotheses development

The hypotheses development is discussed based on the main latent variables used to predict behavioural intention

III.1. Behavioural Intention (BI)

BI is defined as intentions or motivational factors that reflect efforts to perform a behaviour.[34] In terms of technology usage, BI can be refered to as the users' intention to use technology.[35] For this study, BI is defined as the postgraduates' interest in using the LMS. Previous studies had shown that LMS provided a convenient avenue for higher education students to access online learning materials and improve their academic performance.[36,37]

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[31] Raman and Rathakrishnan, "Blended Learning via Google Classroom: English Language Students Experience Based on UTAUT Model and Flow Theory," *Hamdard Islamicus, XLIII* (1) (2020).

[32] Annamalai et al., "Investigating the Use of Learning Management System (Lms) for Distance Education in Malaysia: A Mixed-Method Approach," *Contemporary Educational Technology* 13, no. 3 (2021). https://doi.org/10.30935/cedtech/10987.

[33] Kumar and Bervell, "Google Classroom for Mobile Learning in Higher Education : Modelling the Initial Perceptions of Students," *Education and Information Technologies*, 2020. https://doi.org/10.1007/s10639-020-10163-x.

[34] Fishbein and Ajzen, *Belief, Attitude, Intentions and Behavior: An Introduction to Theory and Research*. Reading, WA: Addison-Wesley, 1975.

[35] Teo, "A Comparison of Non-Nested Models in Explaining Teachers' Intention to Use Technology," *Educational Technology Research and Development* 67, no. 3 (2019): 749–66. https://doi.org/10.1007/s11423-019-09650-x.

[36] Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186; Zainuddin, Idrus, and Jamal, "Moodle as an ODL Teaching Tool: A Perspective of Students and Academics," *Electronic Journal of E-Learning* 14, no. 4 (2016): 282–90; Ghavifekr and Mahmood, "Factors Affecting Use of E-Learning Platform (SPeCTRUM) among University Students in Malaysia," *Education and Information Technologies* 22, no. 1 (2017): 75–100. https://doi.org/10.1007/s10639-015-9435-z.

[37] Zainuddin and Perera, "Supporting Students' Self-Directed Learning in the Flipped Classroom through the LMS TES BlendSpace," *On the Horizon* 26, no. 4 (2018): 281–90. https://doi.org/10.1108/OTH-04-2017-0016.

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III.2. Performance Expectancy (PE)

Performance expectancy has been one of the core constructs of the UTAUT model and refers to the extent to which people are convinced that technology helps enhance their activities and improve their job performance.[38] Previous literature indicated that PE and BI were correlated in both intended and compulsory settings[39,40] Furthermore, PE was found to strongly influence learners' intention to use technology.[41] Besides, PE has been found to effect postgraduate students' BI,[42] but[43,44] claimed otherwise. Nevertheless, due to the novelty of this study, we hypothesized a significant effect on BI as the use of the LMS is an important aspect that facilitates teaching and learning. Hence, this study projected the following hypothesis:

H1: Performance expectancy has a significant effect on postgraduate students' behavioural intention to use LMS.

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[38] Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540.

[39] Dwivedi et al., "A Meta-Analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT)," *Governance and Sustainability in Information Systems. Managing the Transfer and Diffusion of IT*, 2011, 155–70; Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540.

[40] Eraslan Yalcin and Kutlu, "Examination of Students' Acceptance of and Intention to Use Learning Management Systems Using Extended TAM," *British Journal of Educational Technology* 50, no. 5 (2019): 2414–32. https://doi.org/10.1111/bjet.12798.

[41] Chao, "Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model," *Frontiers in Psychology* 10, no. July 2019 (July 16, 2019): 1–14. https://doi.org/10.3389/fpsyg.2019.01652; Khechine et al., "UTAUT Model for Blended Learning: The Role of Gender and Age in the Intention to Use Webinars," *Interdisciplinary Journal of E-Skills and Lifelong Learning* 10 (2014): 033–052. https://doi.org/10.28945/1994; Samsudeen and Mohamed, "University Students' Intention to Use e-Learning Systems," *Interactive Technology and Smart Education* 16, no. 3 (2019): 219–38. https://doi.org/10.1108/ITSE-11-2018-0092.

[42] Moreno

[43] Bakar, Razak, and Abdullah, "Assessing the Effects of UTAUT and Self-Determination Predictor on Students Continuance Intention to Use Student Portal," *World Applied Sciences Journal* 21, no. 10 (2013): 1484–89. https://doi.org/10.5829/idosi.wasj.2013.21.10.2920.

[44] Raman et al., "Investigating the Influence of Intrinsic Motivation on Behavioral Intention and Actual Use of Technology in Moodle Platforms," *International Journal of Instruction* 15, no. 1 (2022): 1003–24. https://doi.org/10.29333/iji.2022.15157a.

III.3. Effort Expectancy (EE)

Effort expectancy is a critical factor cited in the UTAUT model. It has been defined as "the degree of ease associated with the use of the system".[45] It is an important variable that profoundly contributes towards determining users' behaviour to use technologies[46] and significantly correlated with students' use of LMS.[47] In contrast, EE has also been found to have no significant effect on postgraduates' behavioural intention to use LMS as reported by.[48] Nevertheless,[49,50,51] described EE as the core determinant of behavioural intention to use an information system. Therefore, we stipulate the need to explore this relationship based on the original context of the UTAUT model based on the following hypothesis is proposed:

H2: Effort expectancy has a significant effect on the postgraduate students' behavioural intention to use LMS.

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[45] Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540.

[46] Ifinedo, "Acceptance and Continuance Intention of Web-Based Learning Technologies (WLT) Use among University Students in a Baltic Country," *The Electronic Journal of Information Systems in Developing Countries* 23, no. 1 (2006): 1–20. https://doi.org/10.1002/j.1681-4835.2006.tb00151.x.

[47] Lwoga and Komba, "Antecedents of Continued Usage Intentions of Web-Based Learning Management System in Tanzania," *Education and Training* 57, no. 7 (2015): 738–56. https://doi.org/10.1108/ET-02-2014-0014; Samsudeen and Mohamed, "University Students' Intention to Use e-Learning Systems," *Interactive Technology and Smart Education* 16, no. 3 (2019): 219–38. https://doi.org/10.1108/ITSE-11-2018-0092.

[48] Khechine et al., "UTAUT Model for Blended Learning: The Role of Gender and Age in the Intention to Use Webinars," *Interdisciplinary Journal of E-Skills and Lifelong Learning* 10 (2014): 033–052. https://doi.org/10.28945/1994; Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186.

[49] Venkatesh, Thong, and Xu, "Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead," *Journal of the Association for Information Systems* 17, no. 5 (2016): 328–76.

[50] Chao, "Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model," *Frontiers in Psychology* 10, no. July 2019 (July 16, 2019): 1–14. https://doi.org/10.3389/fpsyg.2019.01652; Chauhan and Jaiswal, "Determinants of Acceptance of ERP Software Training in Business Schools: Empirical Investigation Using UTAUT Model," *International Journal of Management Education* 14, no. 3 (2016): 248–62. https://doi.org/10.1016/j.ijme.2016.05.005.

[51] Annamalai et al., "Investigating the Use of Learning Management System (Lms) for Distance Education in Malaysia: A Mixed-Method Approach," *Contemporary Educational Technology* 13, no. 3 (2021). https://doi.org/10.30935/cedtech/10987.

III.4. Social Influence (SI)

Social influence is a crucial determinant for predicting users' behavioural intention to use technology. It is referred to as the extent to which a person perceives colleagues/superiors can influence him or her to use technology.[52] SI significantly impacted the adoption and acceptance of technology in both intended and compulsory settings.[53] Furthermore, SI was among the core factors that influenced postgraduates' use of LMS[54] and boosted their intention to use it.[55] Study reported that SI had a strong relationship with users' technology usage and strongly influenced students' intention to use technology in HEI.[56] Consequently, the following hypothesis was formulated:

H3: Social influence has a significant effect on postgraduate students' behavioural intention to use LMS.

III.5. Facilitating condition (FC)

Facilitating condition (FC) is defined as the extent to which a person trusts that technical and organizational infrastructure exists to encourage the use of technology.[57] It has been found to influence postgraduates' intention to use technology.[58] Nonetheless, FC was also found to not significantly affect

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[52] Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78.

[53] Pardamean and Susanto, "Assessing User Acceptance toward Blog Technology Using the UTAUT Model," *International Journal of Mathematics and Computers in Simulation* 6, no. 1 (2012): 203–12; Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78.

[54] Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186.

[55] Samaila, Abdulfattah, and Amir, "Learning Management System Usage with Postgraduate School : An Application of UTAUT Model," *International Journal of Education and Evaluation* 3, no. 12 (2017): 38–49.

[56] Binyamin, Rutter, and Smith, "The Students' Acceptance of Learning Management Systems in Saudi Arabia: A Case Study of King Abdulaziz University," *INTED2017 Proceedings* 1, no. 3 (2017): 9324–33; Samsudeen and Mohamed, "University Students' Intention to Use e-Learning Systems," *Interactive Technology and Smart Education* 16, no. 3 (2019): 219–38. https://doi.org/10.1108/ITSE-11-2018-0092.

[57] Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540.

[58] Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186.

students' intention to use LMS[59] but was not specific for postgraduate students. Therefore, the present study hypothesized that facilitating conditions could significantly affect students' behavioral intention to use of LMS. Therefore, the following hypothesis was proposed:

H4: Facilitating condition has a significant effect on the postgraduate students' behavioural intention to use LMS.

Consequently, this study aims to investigate postgraduate students' use of LMS in Malaysia's public university, based on PE, EE, SI, and FC towards BI. Therefore, we decided to exclude moderating variables as we focus the study on the intention to use the LMS. Various studies did not include moderating variables to identify use behaviour as these factors were uncontrollable aspects of usage in their context.[60,61] Therefore, we adopted the same strategy as we deemed these factors unreasonable as a future consideration towards the platform's design, especially when the use is compulsory. The conceptual model proposed in this study is represented in Figure 1.

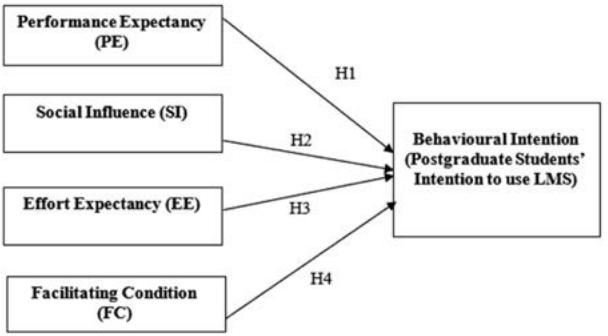

Figure 1
Conceptualised Model

[59] Lwoga and Komba, "Antecedents of Continued Usage Intentions of Web-Based Learning Management System in Tanzania," *Education and Training* 57, no. 7 (2015): 738–56. https://doi.org/10.1108/ET-02-2014-0014.

[60] Efiloğlu Kurt and Tingöy, "The Acceptance and Use of a Virtual Learning Environment in Higher Education: An Empirical Study in Turkey, and the UK," *International Journal of Educational Technology in Higher Education* 14, no. 26 (2017): 1–15. https://doi.org/10.1186/s41239-017-0064-z.

[61] Blut et al., "Meta-Analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT): Challenging Its Validity and Charting a Research Agenda in the Red Ocean." *Journal of the Association for Information Systems* 2, no. 5 (2021): 1–128.

IV. Methodology

In this study, we define the postgraduate students as mandatory users of the university's LMS to complete compulsory courses for their Master of Education. This study adopts a quantitative approach where the survey questionnaire was distributed electronically to all postgraduate students in the education faculty through email using Google Forms. In the email, students were informed about the research purpose, and by answering the questionnaire, they provide consent to be part of the study. Furthermore, all participation is based on a voluntary basis, and we explained that the study abides by the university's ethical standards to ensure anonymity and confidentiality. The study was conducted based on the approval of the research committee of the institute.

Table 1

Cronbach's Alpha Coefficient of the Variables

Construct	Cronbach's Alpha Value
Behavioural intention	.932
Performance expectancy	.954
Effort expectancy	.930
Social influence	.876
Facilitating condition	.884

The questionnaires were distributed twice with an interval of three weeks to ensure a better response rate. There were two sections in the questionnaire where the first section was related to the demographic details of the respondents, whereas the second part reflected the factor influencing the intention to use LMS. The items for PE, EE, SI, FC, and BI were adapted from.[62] The 41-item questionnaire was measured based on a Likert scale ranging from 1-*strongly disagree* to 5-*strongly agree* and will take 15 to 20 minutes to complete. The data collected were analysed using the Statistical Package for the Social

[62] Lwoga and Komba, "Antecedents of Continued Usage Intentions of Web-Based Learning Management System in Tanzania" *Education and Training* 57, no. 7 (2015): 738–56. https://doi.org/10.1108/ET-02-2014-0014; Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540; Wang and Wang, "An Empirical Study of Instructor Adoption of Web-Based Learning Systems." *Computers and Education* 53, no. 3 (2009): 761–74. https://doi.org/10.1016/j.compedu.2009.02.021.

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Sciences version 22 (SPSS), in which the 297 respondents showed high reliability[63] based on the Cronbach's alpha value (Table 1). Next, to predict factors influencing postgraduate BI to use LMS, a multiple regression analysis was employed to investigate the influence of PE, EE, SI, and FC relationship with the intention to use LMS. Multiple regression is able to analyse the relationship between BI and the other factors simultaneously.[64]

V. Results

Based on the total population of 921 postgraduate students, 297 students participated in this study. As shown in Table 2, the majority of the students were female (n = 211, 76.2%), while the rest were male (n = 66, 23.8%). 52.0% of the respondents were between the ages of 26-35 years old (n=144), while 3.6%, the smallest group, were above 46 years old.

Table 2

Demographic profile of the respondents

Demographic Information	Frequency (f)	Percentage (%)
Gender		
Male	66	23.8
Female	211	76.2
Age		
25 and below	79	28.5
26- 35 years old	144	52.0
36-45 years old	44	15.9
46 and above	10	3.6

Based on the analysis, PE (β = .436, p <.000) was the most crucial factor in predicting postgraduate students' intention to use LMS, followed by SI (β = .232, p <.000) and EE (β = .193, p <.003) (Table 3). The value of the standardized beta coefficient (β) determines the strength of the relationships between both variables. Meanwhile, the result also showed that FC had no

[63] Abbott, *Understanding Educational Statistics Using Microsoft Excel and SPSS*. New Jersey: JohnWiley & Sons, Inc, 2011.

[64] Muijs, *Doing Quantitative Research in Education with SPSS*. London, Thousand Oaks and New Delhi: Sage Publications, 2004.

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impact on postgraduate students' intention to use LMS (β = -.037, p <.505). Figure 2 reflects graphical representation of the standard regression analysis. The model was also found to be highly significant at F(1, 4) = 2490.753, p < 000 as reflected in Table 4.

Table 3

Multiple Regressions for Dependent Variable

Model		Unstandardized Coefficients		Standardized Coefficients β	t	Sig.
		β	Std. Error			
1	(Constant)	.976	.166		5.880	.000
	Performance Expectancy	.367	.049	.436	7.469	.000
	Social Influence	.237	.060	.232	3.966	.000
	Effort Expectancy	.199	.067	.193	2.985	.003
	Facilitating Condition	-.035	.053	-.037	-.668	.505

Table 4

Model significance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5547.311	4	1386.828	2490.753	.000[b]
	Residual	151.447	272	.557		
	Total	5698.758	276			

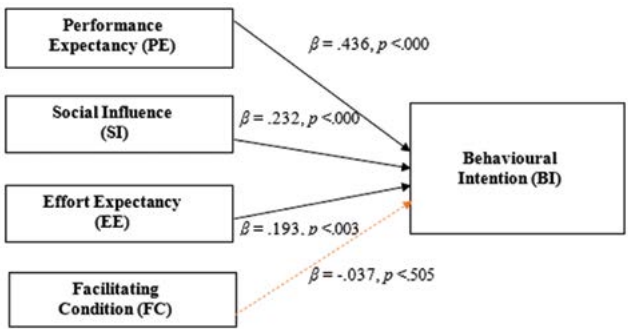

Figure 2

Result of standard regression analysis

Next, a stepwise regression analysis (Table 5) describes model 1 representing PE as explaining 48% of the variance (R^2 change = .483), model 2 representing SI explained 5% of the variance (R^2 change = .050), and model 3 representing EE explaining less than 2% of the variance (R^2 change = .015). Finally, the conceptual model was found to explained 54% of the variance (adjusted R^2 = .541). According to,[65] the total variance values can be categorized as weak (0.25), medium (0.5) and substantial (0.75). Therefore, the model's in-sample explanatory power has been found to be moderate. Furthermore, Table 6 showed that the three variables predicted the students' intention to use LMS at a 0.05 level of significance. Therefore, the absolute values of the standardized estimate (β) of these predictors were presented as follows: PE (β = .695, t =16.015, p <.05), SI (β = .291, t = 5.392p <.05), and EE (β = .174, t = 2.997, p <.05). The predictor that explained the highest variance in postgraduate students' intention to use LMS was PE, followed by SI and lastly EE.

Table 5

Stepwise Regression Result

Mo-del	R	R^2	Adj-usted R^2	Std. Error Estimate	Change Statistics				
					R^2 Change	F Change	df^1	df^2	Sig. F Change
1	.695[a]	.483	.481	.56787	.483	256.479	1	275	.000
2	.730[b]	.532	.529	.54093	.050	29.074	1	274	.000
3	.740[c]	.547	.542	.53322	.015	8.983	1	273	.003

Table 6

Multiple Regressions on the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients	*T*
	B	Std. Error	*B*	
Performance expectancy (PE)	.584	.036	.695	16.015
Social influence (SI)	.298	.055	.291	5.392
Effort expectancy (EE)	.179	.060	.174	2.997

[65] Hair, Ringle, and Sarstedt, "Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance," *European Business Review* 31, no. 1 (2019): 2–24. https://doi.org/10.1108/EBR-11-2018-0203.

Figure 3 demonstrates that PE has the maximum influence in predicting postgraduate students' intention (BI) to use LMS. In the same vein, postgraduate students' intention to use LMS was influence by SI. The figure further explains that EE is the third factor that significantly affects the postgraduates' decisions on using LMS.

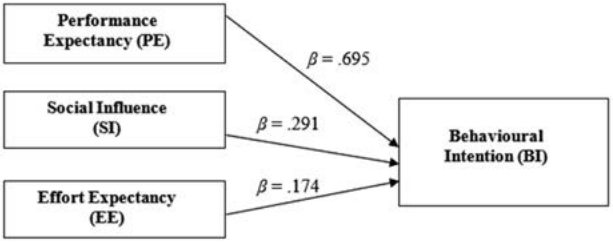

Figure 3

Model of Postgraduate Students Intention to Use LMS

VI. Discussion

This study reveals that not only PE but SI and EE are also among the factors that contribute to postgraduate students' intention to use LMS. These findings indicate that postgraduate students relate the platform's usefulness to access learning content as their main reason to use the LMS. The findings of this study correspond with that in,[66] who argued that PE plays a vital role in determining students' intention to use technology. As for LMS, empirical findings have also indicated that PE cannot be overlooked as an important factor.[67] It is understood that postgraduate students perceived the LMS as an essential instrument that can enhance their collaboration, learning activities, efficiency, and effectiveness in completing their course work.

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[66] Dwivedi et al., "A Meta-Analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT)," *Governance and Sustainability in Information Systems. Managing the Transfer and Diffusion of IT*, 2011, 155–70; Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540.

[67] Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186; Samaila, Abdulfattah, and Amir, "Learning Management System Usage with Postgraduate School : An Application of UTAUT Model."

At the same time, SI was the second strongest influencer for postgraduate students' intention to use LMS. SI relates to postgraduates perception of their peers and lecturers need to use the LMS. According to,[68] LMS should not only be viewed as a database of learning contents but also as a platform that supports interaction and collaboration, especially as postgraduate are autonomous learners. In this study, the weak significant relationship may have been attributed to less awareness of their peers' need for using the platform for teaching and learning. Moreover, postgraduates have been found to welcome the idea of independent learning due to the flexibility that fits with their work and family schedule[69,70] which may have contributed towards the insignificant relationship. Furthermore, empirical findings also described postgraduate students as not having emotional relationship or connectedness when using the LMS and tend to ignore such non-formal relationships.[71] Hence, they tend to view the LMS as just a learning tool and not a tool for socialising and communicating with their peers. However, such relationships are more successfully built through social media platforms such as WhatsApp or Facebook, where there is the ease of accessibility through mobile devices that permits non-restricting and informal communication compared to a Moodle-based LMS.[72]

Subsequently, EE, which denotes ease of using the LMS to achieve their learning goals, was also found to influence postgraduate students' intention to use LMS. We deemed this outcome as related to the mandatory nature of using the LMS and not having a choice in selecting the learning platform. The results of this study are in congruence with the findings in,[73] indicating a

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[68] Moreno, Cavazotte, and Alves, "Explaining University Students' Effective Use of e-Learning Platforms," *British Journal of Educational Technology* 48, no. 4 (2017): 995–1009. https://doi.org/10.1111/bjet.12469.

[69] McKeown and Anderson, "UTAUT: Capturing Differences in Undergraduate versus Postgraduate Learning?" *Education and Training* 58, no. 9 (2016): 945–65. https://doi.org/10.1108/ET-07-2015-0058.

[70] Kite et al., "Exploring Lecturer and Student Perceptions and Use of a Learning Management System in a Postgraduate Public Health Environment," *E-Learning and Digital Media* 17, no. 3 (2020): 183–98. https://doi.org/10.1177/2042753020909217.

[71] Mpungose and Khoza, "Postgraduate Students' Experiences on the Use of Moodle and Canvas Learning Management System," *Technology, Knowledge and Learning*, September 29, 2020. https://doi.org/10.1007/s10758-020-09475-1.

[72] Kumar, Silva, and Prelath, "Implementing Studio-Based Learning for Design Education: A Study on the Perception and Challenges of Malaysian Undergraduates." *International Journal of Technology and Design Education* 31, no. 3 (July 15, 2021): 611–31. https://doi.org/10.1007/s10798-020-09566-1.

[73] Chauhan and Jaiswal, "Determinants of Acceptance of ERP Software Training in Business Schools: Empirical Investigation Using UTAUT Model"; Abdel-Maksoud, "The

significant relationship between EE and learners' intention to use technology.[74] added that even if postgraduate students appreciate LMS's flexibility, ease of navigation, and managing their learning, they still favour face-to-face teaching and view the LMS only as a supplementary learning tool. We also agree with,[75] indicating that the mandatory use of e-learning platforms acts as a conditioning of behaviour that may have influenced how they perceive EE's relationship with intention. Furthermore, questioning if EE or habit is a better predictor of BI in a mandatory setting.[76]

We also observed that FC, which was significant in determining BI,[77] was non-significant in our study. Nevertheless, the findings of this study did not differ from,[78] indicating that FC was ineffective in determining students' use of modern technology. Subsequently, even if evidence shows that technical infrastructures, Internet, computer, and wireless facilities are the primary resources to access LMS,[79] it did not influence postgraduate students' intention to use LMS. Furthermore, according to,[80] FC determines behavioral

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Relationship between Students' Satisfaction in the LMS 'Acadox' and Their Perceptions of Its Usefulness, and Ease of Use"; Chao, "Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model," *Journal of Education and Learning* 7, no. 2 (2018): 184; Lwoga and Komba, "Antecedents of Continued Usage Intentions of Web-Based Learning Management System in Tanzania," *Education and Training* 57, no. 7 (2015): 738–56. https://doi.org/10.1108/ET-02-2014-0014.

[74] Kite et al., "Exploring Lecturer and Student Perceptions and Use of a Learning Management System in a Postgraduate Public Health Environment," *E-Learning and Digital Media* 17, no. 3 (2020): 183–98. https://doi.org/10.1177/2042753020909217.

[75] Annamalai and Kumar, "Understanding Smartphone Use Behavior among Distance Education Students in Completing Their Coursework in English: A Mixed-Method Approach," *Reference Librarian* 61, no. 3–4 (2020): 199–215. https://doi.org/10.1080/02763877.2020.1815630.

[76] Kumar et al., "Behavioral Intention to Use Mobile Learning : Evaluating the Role of Self-Efficacy, Subjective Norm, and WhatsApp Use Habit," *IEEE Access* 8 (2020): 208058–74. https://doi.org/10.1109/ACCESS.2020.3037925.

[77] Moreno, Cavazotte, and Alves, "Explaining University Students' Effective Use of e-Learning Platforms," *British Journal of Educational Technology* 48, no. 4 (2017): 995–1009. https://doi.org/10.1111/bjet.12469.

[78] Lwoga and Komba, "Antecedents of Continued Usage Intentions of Web-Based Learning Management System in Tanzania," *Education and Training* 57, no. 7 (2015): 738–56. https://doi.org/10.1108/ET-02-2014-0014; Hsu, "The Acceptance of Moodle: An Empirical Study Based on UTAUT," *Creative Education* 3, no. 8 (2012): 44–46. https://doi.org/10.4236/ce.2012.38b010.

[79] Mpungose and Khoza, "Postgraduate Students' Experiences on the Use of Moodle and Canvas Learning Management System," *Technology, Knowledge and Learning*, September 29, 2020. https://doi.org/10.1007/s10758-020-09475-1.

[80] Maruping et al., "Going beyond Intention: Integrating Behavioral Expectation into the Unified Theory of Acceptance and Use of Technology," *Journal of the Association for*

expectation and not BI. Besides, the demographic profile indicated that most respondents were above 26 years old, indicating mature students who may also have better financial standing in supporting their technical needs than undergraduates. Additionally, they might have the means to obtain these functionalities on their own by purchasing a laptop and subscribing to internet access independently. Nevertheless, FC is not always related to technology access and computers; it also relates to academic support that the student perceives that they receive to support their learning. Another study conducted by,[81] also indicated that undergraduates do not relate FC towards BI but towards the actual use of the system.

Therefore, based on these findings, the original model indicated that 54% of students' behavioural intention to use LMS to be influenced by PE, SI, and EE but not FC. While the study indicated medium predictive power, this did not vary from another study similar study in the Malaysian context indicating 52% of variance.[82] PE strength was further strengthened when FC was removed from the model where the path coefficient value increased from $\beta = .436$ to $\beta = .695$, indicating that the primary influence is the usefulness in the mandatory setting. Nevertheless,[83] claim that postgraduate students usually have better acceptance of LMS than undergraduates due to having high regards on the value of the LMS regardless of EE. Nevertheless,[84] added that the LMS value is only seen as a repository for course material without pedagogical implications. When compared to undergradute's intention to use LMS, a study by[85] indicated that SI followed by FC were better predictors compared to PE in which the model predicted 70.1% of BI. The difference can be attributed towards the perceived value that the postgraduates have on

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Information Science and Technology 68, no. 3 (2017): 623–37. https://doi.org/10.1002/asi.23699.

[81] Ain, Kaur, and Waheed, "The Influence of Learning Value on Learning Management System Use: An Extension of UTAUT2," *Information Development* 32, no. 5 (2016): 1306–21. https://doi.org/10.1177/0266666915597546.

[82] Raman et al., "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model," *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186.

[83] McKeown and Anderson, "UTAUT: Capturing Differences in Undergraduate versus Postgraduate Learning?" *Education and Training* 58, no. 9 (2016): 945–65. https://doi.org/10.1108/ET-07-2015-0058.

[84] Kite et al., "Exploring Lecturer and Student Perceptions and Use of a Learning Management System in a Postgraduate Public Health Environment" *E-Learning and Digital Media* 17, no. 3 (2020): 183–98. https://doi.org/10.1177/2042753020909217

[85] Haron et al., "MOOC : A Technology Adoption Using UTAUT Model at Public Universities." *Test Engineering and Management* 83, no. 3146 (2020): 3146–51.

the LMS compared to the undergraduates. Nevertheless, the R^2 value is often determined by the number of predictive variables[86] and medium predictive variance may stipulate the need for additional variables to be added towards the model.

VII. Practical and theoretical implication

This study provides findings that LMS managers, faculty members, and university management might use to improve LMS for lifelong learning. While, postgraduate students' behavioural intention to use LMS is influenced mainly by PE and not EE or SI, there is a need to consider how the system's usefulness can be further improved to aid postgraduate students in achieving their learning goals. Undoubtedly, most lecturers and students view the LMS as a repository of learning contents; however, with the availability of new integrations and APIs, the possibilities of creating an engaging learning experience is more realistic.

Moreover, there is no doubt that social influence contributes positively to determining postgraduates' behavioural intention to use LMS. The LMS is capable of providing access to developing an online learning community. Therefore, university management should introduce policies that will encourage both course instructors and students to use the LMS to promote cognitive, social, and affective learning outcomes. Next, with respect to the theoretical implication, this study identified that only 54% of the variance in the dependent variable is explained by the three predictors (i.e., performance expectancy, social influence, and effort expectancy). This implies that other elements such as convinence, personal innovativeness, and technology fit could be explored in the future as it relates to PE.

VIII. Conclusion, limitation, and future research

The result highlighted that PE, SI, and EE as factors that influence behavioural intention to use LMS among postgraduate students. While, FC had no significant influence, we deduced this to the expected positive financial standing of a postgraduate student and the affordance of technology and mobile learning. However, we also recommend further investigation by exploring other factors such as perceived enjoyment, family support, and other constructs in influencing their intention. Next, as this study only reflects postgraduates from

[86] Hair et al., "When to Use and How to Report the Results of PLS-SEM," *European Business Review* 31, no. 1 (2019): 2–24. https://doi.org/10.1108/EBR-11-2018-0203.

one faculty and does not compare the use of LMS between full-time and part-time students, future studies should include various backgrounds and compare the different learning modes. The authors also recommend that for students to fully understand the importance of LMS and accept the use of LMS, teachers/instructors play a significant role in promoting the successful use of the platform. Furthermore, a mixed-method approach comprising observation and interviews could be employed in further studies to obtain data in dissimilar ways. We also agree with[87] that research should also look into the personal experience and socio-economic background and warrants further exploration. As such, the result of this study may not be generalized to all backgrounds.

Bibliography

Abbott, Martin L. *Understanding Educational Statistics Using Microsoft Excel and SPSS*. New Jersey: JohnWiley & Sons, Inc, 2011.

Abdel-Maksoud, Nahed F. "The Relationship between Students' Satisfaction in the LMS 'Acadox' and Their Perceptions of Its Usefulness, and Ease of Use." *Journal of Education and Learning* 7, no. 2 (2018): 184. https://doi.org/10.5539/jel.v7n2p184.

Ain, Noor Ul, Kiran Kaur, and Mehwish Waheed. "The Influence of Learning Value on Learning Management System Use: An Extension of UTAUT2." *Information Development* 32, no. 5 (2016): 1306–21. https://doi.org/10.1177/0266666915597546.

Ajibade, Patrick. "Technology Acceptance Model Limitations and Criticisms: Exploring the Practical Applications and Use in Technology-Related Studies, Mixed-Method, and Qualitative Researches." *Library Philosophy and Practice* 00, no. 00 (2018): 1–13.

Al-Hunaiyyan, Ahmed, Salah Al-Sharhan, and Rana AlHajri. "Prospects and Challenges of Learning Management Systems in Higher Education." *International Journal of Advanced Computer Science and Applications* 11, no. 12 (2020): 73–79. https://doi.org/10.14569/IJACSA.2020.0111209.

Al-Zaidiyeen, Naser Jamil, and Leong Lai Mei. "Teachers' Attitudes and Levels of Technology Use in Classrooms: The Case of Jordan Schools." *International Education Studies* 3, no. 2 (2010): 211–18.

Alhassan, A., A. Rashad, and K.A. Gbolagade. "An Enhanced Web-Based Platform for Mobile Learning Management System." *International Journal of Computer Applications* 124, no. 16 (2015): 30–34. https://doi.org/10.5120/ijca2015905807.

Alias, Nor, and Ahmad Zainuddin. "Innovation for Better Teaching and Learning: Adopting the Learning Management System." *Malaysian Online Journal of Instructional Technology* 2, no. 2 (2005): 27–40.

[87] Mpungose and Khoza, "Postgraduate Students' Experiences on the Use of Moodle and Canvas Learning Management System."

Annamalai, Nagaletchimee, and Jeya Amantha Kumar. "Understanding Smartphone Use Behavior among Distance Education Students in Completing Their Coursework in English: A Mixed-Method Approach." *Reference Librarian* 61, no. 3–4 (2020): 199–215. https://doi.org/10.1080/02763877.2020.1815630.

Annamalai, Nagaletchimee, T. Ramayah, Jeya Amantha Kumar, and Sharifah Osman. "Investigating the Use of Learning Management System (Lms) for Distance Education in Malaysia: A Mixed-Method Approach." *Contemporary Educational Technology* 13, no. 3 (2021). https://doi.org/10.30935/cedtech/10987.

Bakar, Azlina Abu, Fahmi Zaidi Abdul Razak, and Wan Salihin Wong Abdullah. "Assessing the Effects of UTAUT and Self-Determination Predictor on Students Continuance Intention to Use Student Portal." *World Applied Sciences Journal* 21, no. 10 (2013): 1484–89. https://doi.org/10.5829/idosi.wasj.2013.21.10.2920.

Bervell, Brandford, Jeya Amantha Kumar, Valentina Arkorful, Emmanuel Manu Agyapong, and Sharifah Osman. "Remodelling the Role of Facilitating Conditions for Google Classroom Acceptance: A Revision of UTAUT2." *Australasian Journal of Educational Technology* 38, no. 1 (2021): 115–35. https://doi.org/10.14742/ajet.7178.

Binyamin, Sami, Malcolm Rutter, and Sally Smith. "The Students' Acceptance of Learning Management Systems in Saudi Arabia: A Case Study of King Abdulaziz University." *INTED2017 Proceedings* 1, no. 3 (2017): 9324–33. https://doi.org/10.21125/inted.2017.2205.

Blut, Markus, Loong Chong, Zayyad Tsiga, and Viswanath Venkatesh. "Meta-Analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT): Challenging Its Validity and Charting a Research Agenda in the Red Ocean." *Journal of the Association for Information Systems* 2, no. 5 (2021): 1–128.

Castro, Robin. "Blended Learning in Higher Education: Trends and Capabilities." *Education and Information Technologies* 24, no. 4 (2019): 2523–46. https://doi.org/10.1007/s10639-019-09886-3.

Chao, Cheng-Min. "Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model." *Frontiers in Psychology* 10, no. July 2019 (2019): 1–14. https://doi.org/10.3389/fpsyg.2019.01652.

Chauhan, Sumedha, and Mahadeo Jaiswal. "Determinants of Acceptance of ERP Software Training in Business Schools: Empirical Investigation Using UTAUT Model." *International Journal of Management Education* 14, no. 3 (2016): 248–62. https://doi.org/10.1016/j.ijme.2016.05.005.

Dwivedi, Yogesh K, Nripendra P Rana, Hsin Chen, and Michael D Williams. "A Meta-Analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT)." *Governance and Sustainability in Information Systems. Managing the Transfer and Diffusion of IT*, 2011, 155–70.

Efiloğlu Kurt, Özlem, and Özhan Tingöy. "The Acceptance and Use of a Virtual Learning Environment in Higher Education: An Empirical Study in Turkey, and the UK." *International Journal of Educational Technology in Higher Education* 14, no. 26 (2017): 1–15. https://doi.org/10.1186/s41239-017-0064-z.

Eraslan Yalcin, Muyesser, and Birgul Kutlu. "Examination of Students' Acceptance of and Intention to Use Learning Management Systems Using Extended TAM." *British Journal of Educational Technology* 50, no. 5 (2019): 2414–32. https://doi.org/10.1111/bjet.12798.

Fishbein, M., and I. Ajzen. *Belief, Attitude, Intentions and Behavior: An Introduction to Theory and Research*. Reading, WA: Addison-Wesley, 1975.

Ghavifekr, Simin, and Hazline Mahmood. "Factors Affecting Use of E-Learning Platform (SPeCTRUM) among University Students in Malaysia." *Education and Information Technologies* 22, no. 1 (2017): 75–100. https://doi.org/10.1007/s10639-015-9435-z.

Hair, Joseph F., Christian M. Ringle, and Marko Sarstedt. "Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance." *Long Range Planning* 46, no. 1–2 (2013): 1–12. https://doi.org/10.1016/j.lrp.2013.01.001.

Hair, Joseph F., Jeffrey J. Risher, Marko Sarstedt, and Christian M. Ringle. "When to Use and How to Report the Results of PLS-SEM." *European Business Review* 31, no. 1 (2019): 2–24. https://doi.org/10.1108/EBR-11-2018-0203.

Haron, Hafiza, Supyan Hussin, Ahmad Rizal Mohd Yusof, Hafiza Samad, and Hafidzan Yusof. "MOOC : A Technology Adoption Using UTAUT Model at Public Universities." *Test Engineering and Management* 83, no. 3146 (2020): 3146–51.

Hsu, Hsiao-hui. "The Acceptance of Moodle: An Empirical Study Based on UTAUT." *Creative Education* 3, no. 8 (2012): 44–46. https://doi.org/10.4236/ce.2012.38b010.

Ifinedo, Princely. "Acceptance and Continuance Intention of Web-Based Learning Technologies (WLT) Use among University Students in a Baltic Country." *The Electronic Journal of Information Systems in Developing Countries* 23, no. 1 (2006): 1–20. https://doi.org/10.1002/j.1681-4835.2006.tb00151.x.

Juhary, Jowati. "Perceived Usefulness and Ease of Use of the Learning Management System as a Learning Tool." *International Education Studies* 7, no. 8 (2014): 23–34. https://doi.org/10.5539/ies.v7n8p23.

Khechine, Hager, Sawsen Lakhal, Daniel Pascot, and Alphonse Bytha. "UTAUT Model for Blended Learning: The Role of Gender and Age in the Intention to Use Webinars." *Interdisciplinary Journal of E-Skills and Lifelong Learning* 10 (2014): 033–052. https://doi.org/10.28945/1994.

Kite, James, Timothy E. Schlub, Ying Zhang, Silvia Choi, Sarah Craske, and Michelle Dickson. "Exploring Lecturer and Student Perceptions and Use of a Learning Management System in a Postgraduate Public Health Environment." *E-Learning and Digital Media* 17, no. 3 (2020): 183–98. https://doi.org/10.1177/2042753020909217.

Korhonen, A. M., S. Ruhalahti, and M. Veermans. "The Online Learning Process and Scaffolding in Student Teachers' Personal Learning Environments." *Education and Information Technologies* 24, no. 1 (2019): 755–79. https://doi.org/10.1007/s10639-018-9793-4.

Kumar, Jeya. Amantha., Brandford Bervell, Nagaletchimee Annamalai, and Sharifah Osman. "Behavioral Intention to Use Mobile Learning : Evaluating the Role of Self-Efficacy, Subjective Norm, and WhatsApp Use Habit." *IEEE Access* 8 (2020): 208058–74. https://doi.org/10.1109/ACCESS.2020.3037925.

Kumar, Jeya. Amantha., Segar Rajamanickam, and Sharifah Osman. "Exploring the Use of Mobile Apps for Learning : A Case Study on Final Year Engineering Undergraduates in Malaysia." *ASM Science Journal* 13, no. Special Issue 3 (2020): 63–67.

Kumar, Jeya. Amantha., Paula Alexandra Silva, and Renugha Prelath. "Implementing Studio-Based Learning for Design Education: A Study on the Perception and Challenges of Malaysian Undergraduates." *International Journal of Technology and Design Education* 31, no. 3 (2021): 611–31. https://doi.org/10.1007/s10798-020-09566-1.

Kumar, Jeya Amantha, and Brandford Bervell. "Google Classroom for Mobile Learning in Higher Education : Modelling the Initial Perceptions of Students." *Education and Information Technologies* 24 (2019): 1793–1817. https://doi.org/10.1007/s10639-018-09858-z.

Kumar, Jeya Amantha, Brandford Bervell, and Sharifah Osman. "Google Classroom: Insights from Malaysian Higher Education Students' and Instructors' Experiences." *Education and Information Technologies*, 2020. https://doi.org/10.1007/s10639-020-10163-x.

Lwoga, Edda Tandi, and Mercy Komba. "Antecedents of Continued Usage Intentions of Web-Based Learning Management System in Tanzania." *Education and Training* 57, no. 7 (2015): 738–56. https://doi.org/10.1108/ET-02-2014-0014.

Maruping, Likoebe M., Hillol Bala, Viswanath Venkatesh, and Susan A. Brown. "Going beyond Intention: Integrating Behavioral Expectation into the Unified Theory of Acceptance and Use of Technology." *Journal of the Association for Information Science and Technology* 68, no. 3 (2017): 623–37. https://doi.org/10.1002/asi.23699.

McKeown, Tui, and Mary Anderson. "UTAUT: Capturing Differences in Undergraduate versus Postgraduate Learning?" *Education and Training* 58, no. 9 (2016): 945–65. https://doi.org/10.1108/ET-07-2015-0058.

Moreno, Valter, Flavia Cavazotte, and Isabela Alves. "Explaining University Students' Effective Use of e-Learning Platforms." *British Journal of Educational Technology* 48, no. 4 (2017): 995–1009. https://doi.org/10.1111/bjet.12469.

Mpungose, Cedric Bheki, and Simon Bheki Khoza. "Postgraduate Students' Experiences on the Use of Moodle and Canvas Learning Management System." *Technology, Knowledge and Learning*, September 29, 2020. https://doi.org/10.1007/s10758-020-09475-1.

Muijs, Daniel. *Doing Quantitative Research in Education with SPSS*. London, Thousand Oaks and New Delhi: Sage Publications, 2004.

Muruthy, Aggilanda Easwary, and Fadhilah Mat Yamin. "The Perception and Effectiveness of Learning Management System (LMS) Usage among the Higher Education Students." *Journal of Technology and Operations Managemen* 12, no. 1 (2017): 86–98.

Nurakun, Zhumagul, Rita Ismailova, and Hakan Dündar. "Learning Management System Implementation: A Case Study in the Kyrgyz Republic." *Interactive Learning Environments* 26, no. 8 (2018): 1010–22. https://doi.org/10.1080/10494820.2018.1427115.

Pardamean, Bens, and Mario Susanto. "Assessing User Acceptance toward Blog Technology Using the UTAUT Model." *International Journal of Mathematics and Computers in Simulation* 6, no. 1 (2012): 203–12.

Paulsen, M. F. "Online Education Systems : Discussion and Definition of Terms." *NKI Distance Education* 4, no. 2 (2002): 1–8.

Raman, Arumugam, Yahya Don, Rozalina Khalid, and Mohd Rizuan. "Usage of Learning Management System (Moodle) among Postgraduate Students: UTAUT Model." *Asian Social Science* 10, no. 14 (2014): 186–92. https://doi.org/10.5539/ass.v10n14p186.

Raman, Arumugam, and Mohan Rathakrishnan. "Blended Learning via Google Classroom: English Language Students Experience Based on UTAUT Model and Flow Theory." *Hamdard Islamicus, XLIII* (1) (2020).

Raman, Arumugam, Raamani Thannimalai, Mohan Rathakrishnan, and Siti Noor Ismail. "Investigating the Influence of Intrinsic Motivation on Behavioral Intention and Actual Use of Technology in Moodle Platforms." *International Journal of Instruction* 15, no. 1 (2022): 1003–24. https://doi.org/10.29333/iji.2022.15157a.

Roslina, A. T., M. K. Nur Shaminah, and T. Sian-Hoon. "Students' Satisfaction on Blended Learning: A Preliminary Study." *Pertanika Journal of Social Science and Humanities* 21, no. 3 (2013): 1119-1131.

Ross, Spencer M. "Slack It to Me: Complementing LMS With Student-Centric Communications for the Millennial/Post-Millennial Student." *Journal of Marketing Education* 41, no. 2 (2019): 91–108. https://doi.org/10.1177/0273475319833113.

Samaila, Kamaludeen, Khashyaullah Abdulfattah, and Ahmad Fahimi Ibn Amir. "Learning Management System Usage with Postgraduate School : An Application of UTAUT Model." *International Journal of Education and Evaluation* 3, no. 12 (2017): 38–49.

Samsudeen, Sabraz Nawaz, and Rusith Mohamed. "University Students' Intention to Use e-Learning Systems." *Interactive Technology and Smart Education* 16, no. 3 (2019): 219–38. https://doi.org/10.1108/ITSE-11-2018-0092.

Šumak, Boštjan, Maja Pušnik, Marjan Heričko, and Andrej Šorgo. "Differences between Prospective, Existing, and Former Users of Interactive Whiteboards on External Factors Affecting Their Adoption, Usage and Abandonment." *Computers in Human Behavior* 72 (2017): 733–56. https://doi.org/10.1016/j.chb.2016.09.006.

Teo, Timothy. "A Comparison of Non-Nested Models in Explaining Teachers' Intention to Use Technology." *British Journal of Educational Technology* 44, no. 3 (2013): 81–84. https://doi.org/10.1111/j.1467-8535.2012.01350.x.

Teo, Timothy, Mingming Zhou, Andy Chun Wai Fan, and Fang Huang. "Factors That Influence University Students' Intention to Use Moodle: A Study in

Macau." *Educational Technology Research and Development* 67, no. 3 (2019): 749–66. https://doi.org/10.1007/s11423-019-09650-x.

Tsai, Yueh Ying, Cheng Min Chao, Hong Mau Lin, and Bor Wen Cheng. "Nursing Staff Intentions to Continuously Use a Blended E-Learning System from an Integrative Perspective." *Quality and Quantity* 52, no. 6 (2018): 2495–2513. https://doi.org/10.1007/s11135-017-0540-5.

Venkatesh, Viswanath, Michael G. Morris, Gordon B. Davis, and Fred D. Davis. "User Acceptance of Information Technology: Toward a Unified View." *MIS Quarterly: Management Information Systems* 27, no. 3 (2003): 425–78. https://doi.org/10.2307/30036540.

Venkatesh, Viswanath, James Y L Thong, and Xin Xu. "Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead." *Journal of the Association for Information Systems* 17, no. 5 (2016): 328–76.

Wang, Wei Tsong, and Chun Chieh Wang. "An Empirical Study of Instructor Adoption of Web-Based Learning Systems." *Computers and Education* 53, no. 3 (2009): 761–74. https://doi.org/10.1016/j.compedu.2009.02.021.

Zaidi, Nurul Nazariah Binti Mohd. "Application of E-Learning for Teaching Hadith in Higher Education Institutional Education in Malaysia: A Literature Review." *Journal of Quran Sunnah Education & Special Needs* 3, no. 2 (2019): 28–34.

Zainuddin, Nurkhamimi, Rozhan Idrus, and Ahmad Farid Mohd Jamal. "Moodle as an ODL Teaching Tool: A Perspective of Students and Academics." *Electronic Journal of E-Learning* 14, no. 4 (2016): 282–90.

Zainuddin, Zamzami, and Corinne Jacqueline Perera. "Supporting Students' Self-Directed Learning in the Flipped Classroom through the LMS TES BlendSpace." *On the Horizon* 26, no. 4 (2018): 281–90. https://doi.org/10.1108/OTH-04-2017-0016.

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