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Factors Influencing Continuance Intention to Use Online Learning Management System Platform

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ABSTRACT

Information technology (IT) developments and the COVID-19 pandemic have impacted learning processes, and all educational and organizational systems have adopted e-learning methods. A learning management system (LMS) is one of the most popular systems to support the e-learning process. This ubiquity, recent mass adoption, along with labor population trends in self-development, motivates us to investigate the factors involved in the continuance intention of LMS. Quantitative research was performed on a sample of 239 workers with LMS experience through an online questionnaire developed based on literature. We have found that the continuance intention was influenced by satisfaction and Task-Technology Fit (TTF). Furthermore, satisfaction was also influenced by performance expectancy, effort expectancy, and hedonic motivation. TTF was found to be influenced by task characteristics and technology characteristics. Finally, we have also found that performance expectancy is influenced by confirmation.

Keywords: Learning management system (LMS), continuance intention, online learning platform

INTRODUCTION

The development of information technology has to lead to the mass implementation of e-Learning in organizations. E-Learning has been defined as learning or training through information technology, typically through the internet (Bakar et al., 2013). As a system that could respond to the needs of a diverse set of users (Islam & Azad, 2015), Learning Management Systems (LMS) has become one of the most adopted forms of e-learning (Cheng & Yuen, 2018). A report by the World Economic Forum (2020) has shown that nearly 40 percent of the labor force has received skill development courses along with the sentiment from employers in moving from traditional courses to e-learning. HolonIQ (2020) has predicted that the e-learning market would raise an additional 10 trillion dollars within 2030. Furthermore, the COVID-19 pandemic has led to the global shutdown of traditional face-to-face education and has led to the mass adoption of e-learning (Ch *et al.*, 2020; World Economic Forum, 2020). The pandemic, coupled with already rising employer demand for digital education (Mouakket & Bettayeb, 2015), thus presented a large market opportunity in 2020, which was fulfilled by a dramatic increase of commercial digital education platforms (Teräs *et al.*, 2020).

Although important (Panigrahi *et al.*, 2018), the adoption and implementation of electronic education is only the first portion of assessing the success of educational technologies. The continual use of such technologies is vital for long-term success (Cheng, 2020b). As such, the investigation of the factors involved in the continuation intention of digital products such as LMS presents itself as a research question. An investigation could yield results for both assessing the success of current and future e-learning products and promoting lifelong learning for the user (Joo *et al.*, 2018). Previous research on continuation intention has been rather disparate, and different papers have utilized different theories and factors in the analysis. The purpose of this research is to synthesize the themes of previous literature in an attempt to provide a comprehensive analysis of the factors of continuation intention in the use of LMS. This research uses a conceptual framework synthesized from the models popularized in literature: The Expectation-Confirmation Model (ECM), Extending Unified Theory of Acceptance and Use of Technology (UTAT2), and the Task-Technology Fit (TTF). We have attempted to identify the most significant variables from previous models and synthesized them into our Conceptual Framework. We can summarize our research aims into five main objectives:

- 1) To study the relationship between the Task Characteristics and Technology Characteristics with the Task-Technology Fit;
- 2) To study the relationship between Confirmation and Performance Expectancy;
- 3) To study the relationship between Satisfaction with Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, and Task-Technology Fit;
- 4) To study the relationship between Continuance Intention with Task-Technology Fit and Satisfaction;
- 5) To improve on the existing models of the factors influencing Continuance Intention in Learning Management Systems.

LITERATURE REVIEW

Previous research on continuance intention has been based on three quite disparate schools of thought. A major theme in this research paper is to synthesize the ideas of these three major theories in an attempt to create a more comprehensive model for the study of LMS.

The Expectation-Confirmation Theory posited by Oliver (1980) has claimed that a repurchase intention is based on satisfaction delivered from confirming a consumer expectation. The expectation is formed through the product's perceived performance. Meeting or failing this expectation is the crucial factor in deciding if the consumer would possess repurchase intention. Bhattacharjee (2001) has expanded on the ideas presented and has applied this theory on the IS Continuance Intention. In their model, Bhattacharjee framed perceived performance as perceived usefulness (Davis, 1989) and posited that the IS Continuance Intention would be formed from satisfying and confirming the particular perceived usefulness of a technology. Previous research (Cheng, 2020b; Wang *et al.*, 2019; Joo *et al.*, 2016) has identified a causal relationship between confirmation and satisfaction. Consistent satisfaction has been shown to have a positive relationship with continuance intention (Islam & Azad, 2015; Joo *et al.*, 2016).

Parallel research (Venkatesh *et al.*, 2003) has been performed with themes from cognitive theory and has given rise to another model for the use of technology, the Unified Theory of Acceptance and Use of Technology (UTAUT). This model defines use behavior as a function of behavioral intention and places focus on analyzing the factors behind the behavioral intention. Venkatesh *et al.* (2012) later extended this theory (UTAUT2) and identified five main factors of behavioral intention: performance expectancy, effort expectancy, social influence, facilitating conditions, and hedonic motivations. These factors positively influence the user behavior of technology. Use behavior has been linked to continuance intention through satisfaction (Joo *et al.*, 2016; Mouakket & Bettayeb, 2015; Cheng, 2020b).

Goodhue and Thompson (1995) have provided another conceptual model of the utilization of technology. In their Task Technology Fit model (TTF), importance is placed on the relationship between the daily tasks performed by the worker and how the technology directly impacts the performance of such tasks. This fit between technology and task is measured by assessing the characteristics of the task and the characteristics of the technology. Further research (Wang *et al.*, 2016; Ouyang *et al.*, 2017; Bere, 2019) has shown that task-technology fit is positively correlated to satisfaction which in turn leads to continuance intention.

Organizational education has shifted towards e-learning, which typically involves an online connection between educator and student (Aldiab *et al.*, 2019). LMS is a web-based software that could be used to facilitate online teacher-student relations. LMS allows institutions to create and plan courses or certifications and provide students with learning tools, share knowledge, and receive examinations. A lot of LMS are open source, which allows institutions to modify and adapt the software according to their specification. Some LMS are also bundled as commercial options. A comprehensive review of LMS (Kasim & Khalid, 2016) has revealed that institutions have been providing initiatives for all educational institutions to adopt a form of e-learning as a way to improve on the quality education framework. The LMS has thus seen massive adoption in recent times with some of the most popular options, including massive open online courses (MOOCs) such as Udacity, Coursera, and Edx. A learning management system allows institutions to deliver educational content regardless of temporal or physical considerations, and any lesson can be given at any time and any place to anyone with internet access (Joo *et al.*, 2016). Furthermore, the COVID-19 pandemic has put a stop to all traditional forms of face-to-face learning, and many educational and industrial institutions have adopted LMS for employee development. Bhatt & Silva (2020) has shown that LMS holds a very natural integration with more modern systems of online communication that have experienced dramatic growth during the times of the pandemic, such as Zoom, Google Meet, Google Hanging, and Skype. As of the time of writing, the pandemic is still ongoing, and the future of online education remains unclear. Thus, it is natural to ponder upon what sort of factors would allow for an LMS to see continual use post-pandemic.

The purpose of this research would be to synthesize a model based on the previous three theories in order to understand the factors that influence the continuous intention of LMS in Thailand. We would study users of popular LMS (Udacity, Coursera, Edx, Moodle, Blackboard) along with users of simpler forms of online education (Zoom, Google Meet, Google Hangout, Skype). We would also be surveying users of the ThaiMOOC, a massive open online course mandated by the Thailand Cyber University aimed at improving the Thai labor force and more academic users of popular open e-learning services (Khan Academy, Udem, Canvas, and FutureLearn).

CONCEPTUAL FRAMEWORK

As stated in the Literature Review, this research is an attempt to synthesize the three extant models of continuance intention in order to provide a comprehensive analysis of the continuance intention of LMS in Thailand. The foundation of our model is the ECM of Bhattacharjee (2001). Previous research (Ifinedo, 2017; Ouyang *et al.*, 2017; Wang *et al.*, 2019; Cheng, 2020a; Zhang *et al.* (2019); Cheng and Yuen, 2018; Chen *et al.*, 2018; Alraimi *et al.*, 2015; Guo *et al.*, 2016) has shown positive relationships between the factors involved in the behavioral intention of the UTAUT2 with the satisfaction of the ECM. However, since most LMS is provided free of charge (Lai *et al.* 2016; Bhatt & Shiva, 2020), we have elected to remove price value as a factor from the behavioral factors under consideration. Furthermore, confirmation has been shown to have a relationship with the performance expectancy of technology (Ifinedo, 2017; Ouyang *et al.*, 2017; Wang *et al.*, 2019). Past research has also shown

links between the TTF with satisfaction and continuance intention. Gan et al. (2017) has also noted that TTF receives a positive by both task and technology characteristics. Figure 1 illustrates our conceptual model.

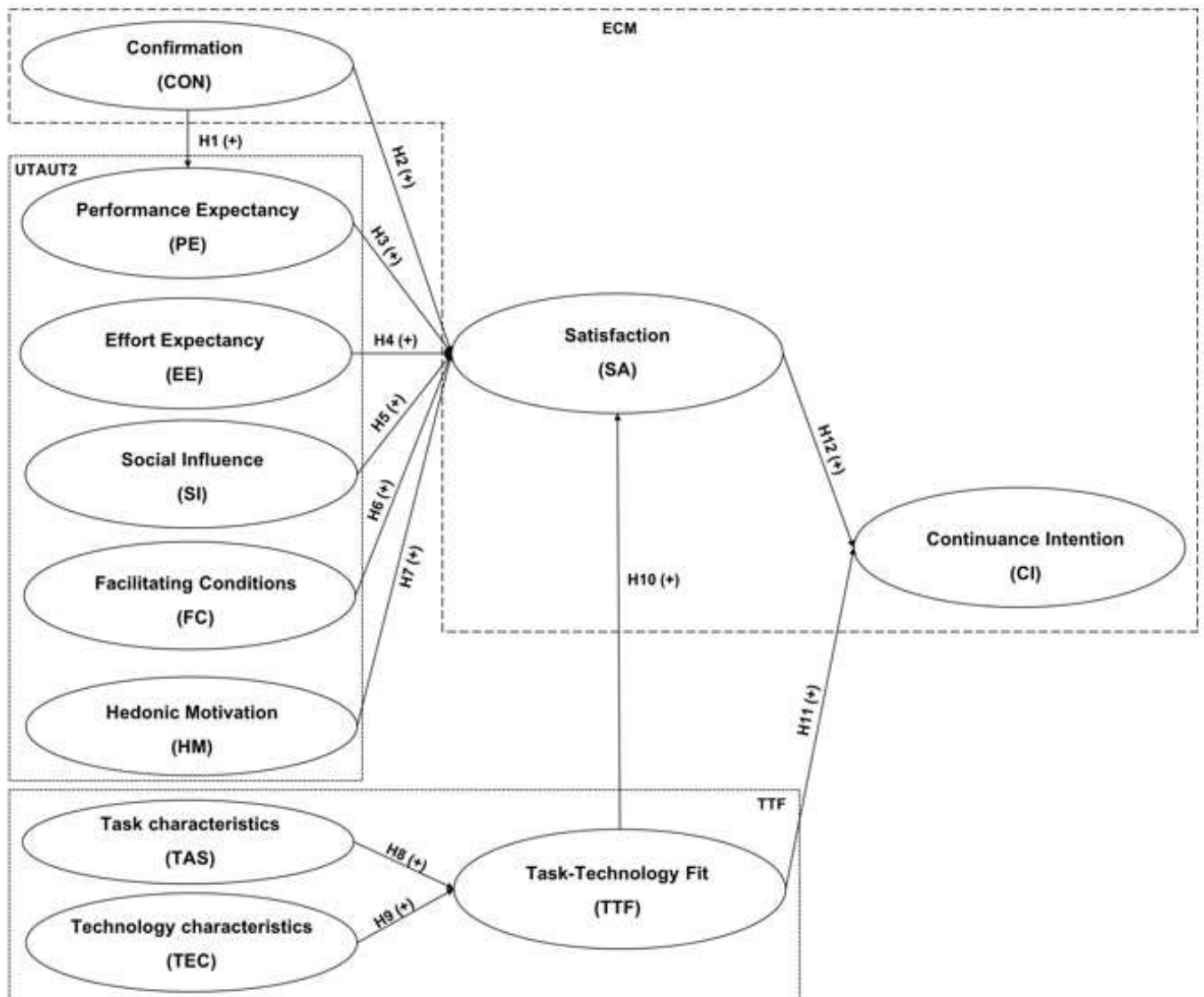


Figure 1: Conceptual Framework.

METHODOLOGY

Selection of Respondents

Purpose sampling was applied in order to target the primary research group of members of the workforce with experience with LMS. We have chosen only the members who have completed at least one course and are aged 15 or over with either a salary or at least one hour of work per week. We have sent a total of 303 questionnaires and received a total of 239 valid respondents who fulfill the selection criterion.

Research Instrument

The research gathered data through the distribution of an online questionnaire. The questionnaire was divided into four sections: screening questionnaires, an explanation of the LMS used, a survey based on the research variables, and personal respondent questions. The answer format of the third part was a 5-point Likert scale (5 – Strongly Agree, 1 – Strongly Disagree). The questionnaire was pretested to analyze reliability with Cronbach's Alpha to ensure reliability.

DATA ANALYSIS

The questions were analyzed using exploratory factor analysis (EFA) for internal reliability through Varimax rotation. We have found our results to be within acceptable ranges based on the literature review. We present the factor loading values in the table below.

Table 1: Exploratory factor analysis.

Construct	Item Description	Factor Loading
Confirmation	CON2	0.859
	CON3	0.835
	CON1	0.799
Satisfaction	SA3	0.798
	SA4	0.777
	SA2	0.771
	SA1	0.725
Continuance Intention	CI2	0.811
	CI3	0.804
	CI1	0.784
	CI4	0.692
Performance Expectancy	PE1	0.741
	PE2	0.734
	PE3	0.675
	PE4	0.667
Effort Expectancy	EE2	0.716
	EE1	0.703
	EE3	0.695
Social Influence	SI2	0.862
	SI3	0.756
	SI1	0.738
Facilitating Conditions	FC2	0.862
	FC3	0.756
	FC1	0.738
Hedonic Motivation	HM2	0.838
	HM1	0.822
	HM3	0.809
Task Characteristics	TAS2	0.863
	TAS3	0.825
	TAS5	0.659
Technology characteristics	TEC4	0.865

	TEC1	0.716
	TEC5	0.709
Task-Technology Fit	TTF2	0.869
	TTF3	0.836
	TTF1	0.809
	TTF4	0.806

The questionnaire possessed relatively high Cronbach Alpha values, and all factors had Cronbach's alpha exceeding 0.7. This suggests that the measurement items were reliable. We present Cronbach's alpha values in Table 2.

Table 2: Cronbach's Alpha test results.

Construct	Cronbach's Alpha	Number of Questions
Confirmation	0.897	3
Performance Expectancy	0.838	4
Effort Expectancy	0.789	3
Social Influence	0.849	3
Facilitating Conditions	0.813	3
Hedonic Motivation	0.940	3
Task Characteristics	0.7.8	3
Technology Characteristics	0.747	3
Task-Technology Fit	0.887	4
Satisfaction	0.924	4
Continuance Intention	0.918	4

Hypothesis Testing

We then performed a regression analysis on the hypotheses defined by the conceptual framework. We illustrate our findings in the following table. We observe in our regression analysis that all our values for the Standardized Coefficient β was positive, which suggests that our model was quite accurate in predicting a positive relationship between the variables of the three models. However, some hypotheses were not supported by the regression analysis at the desired significance level.

Table 3: Hypothesis testing.

Hypothesis	Conclusion	Standardized Coefficient β
H1 (Confirmation \rightarrow Performance Expectancy)	Supported	0.677**
H2 (Confirmation \rightarrow Satisfaction)	Not Supported	0.047
H3 (Performance Expectancy \rightarrow Satisfaction)	Supported	0.189**
H4 (Effort Expectancy \rightarrow Satisfaction)	Supported	0.147**
H5 (Social Influence \rightarrow Satisfaction)	Not Supported	0.052

H6 (Facilitating Conditions → Satisfaction)	Not Supported	0.061
H7 (Hedonic Motivation → Satisfaction)	Supported	0.414**
H8 (Task Characteristics → Task-Technology Fit)	Supported	0.117*
H9 (Technology Characteristics → Task-Technology Fit)	Supported	0.525*
H10 (Task-Technology Fit → Satisfaction)	Supported	0.140*
H11 (Task-Technology Fit → Continuance Intention)	Supported	0.289**
H12 (Satisfaction → Continuance Intention)	Supported	0.581**

* $p < .05$ ** $p < 0.01$

We have found largely positive correlations during our hypothesis testing. It should be noted that the positive relationship between Confirmation and Expectancy was considerably strong ($p < 0.01$). Furthermore, we have found that the factor that had the largest impact on Satisfaction was Hedonic Motivation. Both Task Characteristics ($\beta = 0.117$, $p = 0.037$) and Technology Characteristics ($\beta = 0.525$, $p = 0.000$) had significant positive relationships with the Task-Technology Fit. Satisfaction ($\beta = 0.581$, $p = 0.000$) was also found to be the most important factor in Continuance Intention.

DISCUSSION

Our results suggest that a complete analysis of the continuance intention of LMS is supported by our synthesized model. We hope that future research on continuance intention will find utility in our proposed model.

However, some results did not perform as expected. Hypothesis 1 (Confirmation → Satisfaction), 5 (Social Influence → Satisfaction), and 6 (Facilitating Conditions → Satisfaction) were not supported. Similar insignificant relationships between confirmation and satisfaction when trying to use Bhattacharjee's model (2001) on technology have been found (Eren, 2021). We believe that the level of knowledge users have of the product might not be coincident with the actual features of the product. That is to say, users

might not be expecting (and thus not confirming) what could the product could do hence remaining unsatisfied when using the product. Research yielding similar results as Hypothesis 5 and 6 (Teo & Wong, 2013; Roca *et al.*, 2006; Ooi *et al.*, 2018) has been found.

CONCLUSION

The purpose of this research was to create a synthesized model of the variables under study in the continuance intention of learning management systems. We have synthesized a model-based the Expectation-Confirmation Model (ECM), Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), and the Task-Technology Fit (TTF). This research has shown a significant positive relationship between the factors of these models. We can support Task and Technology Characteristics as large factors of the Task-Technology Fit. We have found that Confirmation had a significant effect on Performance Expectancy. Performance Expectancy, Effort Expectancy, Task-Technology Fit, and Hedonic Motivation were also heavily correlated with Satisfaction, with Hedonic Motivation being the factor with the most impact. Lastly, Satisfaction and Task-Technology Fit can be used as important determinants of Continuance Intention.

We hope that this research could inspire future work using the model presented. The synthesized model given in the conceptual framework was an attempt to create the most comprehensive view of the variables proposed by other researchers, and we hope that the model would be adopted or further improved by future generations.

We have practical suggestions from our result on Continuance Intention being a function of Satisfaction and Task-Technology Fit. Educational divisions in organizations and firms should focus on making sure potential learners know and are informed of what the LMS can provide to the user, along with how much effort the user is expected to give when using the software. Investments in tutorial sessions or training seminars would impact continuance intention. Furthermore, LMS developers should focus on making the software as enjoyable as possible with a focus on simple hedonic pleasure, making the software as enjoyable, interesting, and fun as possible. Particular technology must be used on particular tasks. Specialized software would hold greater continuance intention than a one-size-fits-all approach in education.

Unfortunately, there are some limitations to this research. This research had a majority response rate of college-educated females, which limits the applicability of the research for future workforce demographic shifts. Future work using our model on the

different or more specific forms of LMS should also be performed due to the ever-changing nature of educational technology. Our analysis should also be expanded with the inclusion of more factors from other theories and models.

A longitudinal analysis and time-series studies on the continuance intention of LMS would further expand and support the theories proposed by this work. However, we hope that the findings of the research could be helpful for the development, adoption, and continuation of LMS in a world beyond the pandemic and encourage lifelong learning. We also suggest investigating the factors involved in these constructs, such as government support and organizational support

REFERENCES

- Aldiab, A., Chowdhury, H., Kootsookos, A., Alam, F., & Allhibi, H. (2019). Utilization of learning management systems (LMSs) in higher education system: A case review for Saudi Arabia. *Energy Procedia*, 160, 731-737. <https://doi.org/10.1016/j.egypro.2019.02.186>
- Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, 28-38. <https://doi.org/10.1016/j.compedu.2014.08.006>
- Bakar, A. A., Razak, F. Z. A., & Abdullah, W. S. W. (2013). Assessing the effects of UTAUT and self-determination predictor on students continuance intention to use student portal. *World Applied Sciences Journal*, 21 (10), 1484-1489.
- Bere, A. (2019). Applying an extended task-technology fit for establishing determinants of mobile learning: an instant messaging initiative. *Journal of Information Systems Education*, 29 (4), 4.
- Bhatt, S., & Shiva, A. (2020). Empirical examination of the adoption of Zoom software during Covid-19 pandemic: Zoom Tam. *Journal of Content, Community & Communication*, 12, 70 - 88. <https://doi.org/10.31620/JCCC.12.20/08>
- Bhattacharjee, A. (2001). Understanding information systems continuance: an expectation-confirmation model. *MIS quarterly*, 25 (3), 351-370. <https://doi.org/10.2307/3250921>
- Chen, C.-C., Lee, C.-H., & Hsiao, K.-L. (2018). Comparing the determinants of non-MOOC and MOOC continuance intention in Taiwan. *Library Hi Tech*, 36 (4), 705-719. <https://doi.org/10.1108/LHT-11-2016-0129>
- Cheng, M., & Yuen, A. H. K. (2018). Student continuance of learning management system use: A longitudinal exploration. *Computers & Education*, 120, 241-253. <https://doi.org/10.1016/j.compedu.2018.02.004>
- Cheng, Y. M. (2020a). Investigating medical professionals' continuance intention of the cloud-based e-learning system: an extension of expectation-confirmation model with flow theory. *Journal of Enterprise Information Management*, 34 (4), 1169-1202. <https://doi.org/10.1108/JEIM-12-2019-0401>
- Cheng, Y. M. (2020b). Students' satisfaction and continuance intention of the cloudbased e-learning system: roles of interactivity and course quality factors. *Education+ Training*, 62 (9), 1037-1059. <https://doi.org/10.1108/ET-10-2019-0245>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 13 (3), 319-340. <https://doi.org/10.2307/249008>
- Eren, B. A. (2021). Determinants of customer satisfaction in chatbot use: evidence from a banking application in Turkey. *International Journal of Bank Marketing*, 39 (2), 294-311 <https://doi.org/10.1108/IJBM-02-2020-0056>
- Gan, C., Li, H., & Liu, Y. (2017). Understanding mobile learning adoption in higher education. *The Electronic Library*, 35 (5), 846-860. <https://doi.org/10.1108/el-04-2016-0093>
- Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. *MIS quarterly*, 19 (2), 213-236. <https://doi.org/10.2307/249689>
- Guo, Z., Xiao, L., Van Toorn, C., Lai, Y., & Seo, C. (2016). Promoting online learners' continuance intention: An integrated flow framework. *Information & Management*, 53 (2), 279-295. <https://doi.org/10.1016/j.im.2015.10.010>
- HolonIQ. (2019). Education in 2030. Retrieved from <https://www.holoniq.com/wp-content/uploads/2020/01/HolonIQ-Education-in-2030.pdf> (accessed 30 November 2020)
- Ifinedo, P. (2017). Students' perceived impact of learning and satisfaction with blogs. *The International Journal of Information and Learning Technology*, 34 (4), 322-337. <https://doi.org/10.1108/IJILT-12-2016-0059>
- Islam, A. N., & Azad, N. (2015). Satisfaction and continuance with a learning management system. *The International Journal of Information and Learning Technology*, 32 (2), 109-123. <https://doi.org/10.1108/ijilt-09-2014-0020>
- Kasim, N. N. M., & Khalid, F. (2016). Choosing the right learning management system (LMS) for the higher education institution context: A systematic review. *International Journal of Emerging Technologies in Learning*, 11 (6), 55-61. <https://doi.org/10.3991/ijet.v11i06.5644>
- Joo, Y. J., Kim, N., & Kim, N. H. (2016). Factors predicting online university students' use of a mobile learning management system (m-LMS). *Educational Technology Research and Development*, 64 (4), 611-630. <https://doi.org/10.1007/s11423-016-9436-7>
- Joo, Y. J., So, H.-J., & Kim, N. H. (2018). Examination of relationships among students' self-determination, technology acceptance, satisfaction, and continuance intention to use K-MOOCs. *Computers & Education*, 122, 260-272. <https://doi.org/10.1016/j.compedu.2018.01.003>
- Lai, C., Wang, Q., Li, X., & Hu, X. (2016). The influence of individual espoused cultural values on self-directed use of technology for language learning beyond the classroom. *Computers in Human Behavior*, 62, 676-688. <https://doi.org/10.1016/j.chb.2016.04.039>
- Mouakket, S., & Bettayeb, A. M. (2015). Investigating the factors influencing continuance usage intention of Learning management systems by university instructors. *International Journal of Web Information Systems*, 11 (4), 491-509. <https://doi.org/10.1016/j.chb.2016.04.039>

- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research*, 17 (4), 460-469. <https://doi.org/10.2307/3150499>
- Ooi, K.-B., Hew, J.-J., & Lee, V.-H. (2018). Could the mobile and social perspectives of mobile social learning platforms motivate learners to learn continuously? *Computers & Education*, 120, 127-145. <https://doi.org/10.1016/j.compedu.2018.01.017>
- Ouyang, Y., Tang, C., Rong, W., Zhang, L., Yin, C., & Xiong, Z. (2017). Task-technology fit aware expectation-confirmation model towards understanding of MOOCs continued usage intention. Proceedings of the 50th *Hawaii International Conference on System Sciences*, 174-183. <https://doi.org/10.24251/HICSS.2017.020>
- Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management*, 43, 1-14. <https://doi.org/10.1016/j.ijinfomgt.2018.05.005>
- Roca, J. C., Chiu, C.-M., & Martínez, F. J. (2006). Understanding e-learning continuance intention: An extension of the Technology Acceptance Model. *International Journal of Human-computer Studies*, 64 (8), 683-696. <https://doi.org/10.1016/j.ijhcs.2006.01.003>
- Teo, T., & Wong, S. L. (2013). Modeling key drivers of e-learning satisfaction among student teachers. *Journal of Educational Computing Research*, 48 (1), 71-95. <https://doi.org/10.2190/EC.48.1.d>
- Teräs, M., Suoranta, J., Teräs, H., & Curcher, M. (2020). Post-Covid-19 education and education technology ‘solutionism’: A seller’s market. *Postdigital Science and Education*, 2 (3), 263-878. <https://doi.org/10.1007/s42438-020-00164-x>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 27 (3), 425-478. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36 (1), 157-178. <https://doi.org/10.2307/41410412>
- Wang, Y. S., Li, C.-R., Yeh, C.-H., Cheng, S.-T., Chiou, C.-C., Tang, Y.-C., & Tang, T.-I. (2016). A conceptual model for assessing blog-based learning system success in the context of business education. *The International Journal of Management Education*, 14 (3), 379-387. <https://doi.org/10.1016/j.ijme.2016.09.002>
- Wang, Y. T., Lin, K.-Y., & Huang, T. (2019). Exploring the antecedents of mobile application usage in the context of english learning. Paper presented at the Proceedings of the 52nd Hawaii International Conference on System Sciences, 5691-5700 World Economic Forum. (2020). The future of jobs report 2020. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf (accessed 14 November 2020)
- Zhang, L., Shao, Z., Pan, Z., & Feng, Y. (2019). Examining individuals' utilization of SPOC: extending the task-technology fit model with online and offline perspective. Paper presented at the PACIS, China.