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**LMS CONTINUANCE AMONG STUDENTS AND
LECTURERS IN NORTHERN MALAYSIAN PUBLIC
UNIVERSITIES THROUGH EXPANDED EXPECTATION
CONFIRMATION THEORY (ECT) PERSPECTIVE**

AGGILANDA EASWARY D/O MURUTHY



**MASTER OF SCIENCE
(TECHNOLOGY MANAGEMENT)
UNIVERSITI UTARA MALAYSIA
2017**

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LECTURERS IN NORTHERN MALAYSIAN PUBLIC
UNIVERSITIES THROUGH EXPANDED EXPECTATION
CONFIRMATION THEORY (ECT) PERSPECTIVE**

By

AGGILANDA EASWARY D/O MURUTHY



**Thesis Submitted to
School of Technology Management and Logistics
University Utara Malaysia,
In Fulfilment of the Requirement for the Degree of Master of Science**



Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

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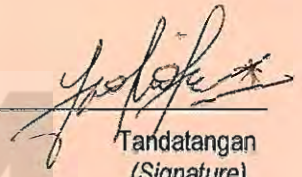
: LMS Continuance Among Students and Lecturers in Northern
Malaysian Public Universities Through Expanded Expectation
Confirmation Theory (ECT) Perspective.

Program Pengajian
(Programme of Study)

: Master of Science

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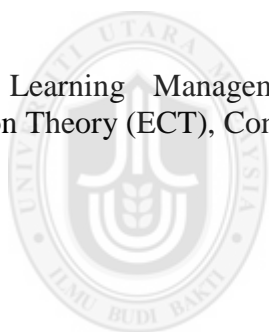


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ABSTRACT

Learning Management System (LMS) is a system that especially developed and broadly applied for teaching and learning process. This thesis aims to investigate users' expectation in using LMS for their teaching and learning process among higher education institutions. In detail, this thesis was conducted to determine students' and lecturers' expectations on using LMS and define their future need on LMS. For the purpose of this study, a survey which involved 727 students and lecturers from the northern region public university was carried out. This thesis used expanded Expectation Confirmation Theory (ECT) to find users' expectation in accepting LMS. In addition, six main variables include perceived usefulness (PU), perceived ease of use (PEOU), confirmation (CON), perceived enjoyment (PE), satisfaction (SAT) and continuance intention (CI) on LMS usage were used to find the relationship between the selected variables that influence users' intention to use LMS in their teaching and learning. A structured questionnaire was designed where data were analysed by SPSS 20.0 to determine the relationship between the selected variables. The findings show that PU, PEOU, CON, PE, SAT and CI were significantly important determinants to predict users' intention to use LMS continuously.

Keyword: Learning Management System (LMS), Students, Lecturers, Expectation Confirmation Theory (ECT), Continuance Intention



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ABSTRAK

Sistem Pengurusan Pembelajaran (LMS) merupakan satu sistem khusus yang dibina dan digunakan secara meluas dalam proses pengajaran dan pembelajaran. Tesis ini bertujuan untuk mengkaji gelagat pengguna dalam penggunaan LMS bagi proses pengajaran dan pembelajaran di institusi pengajian tinggi awam. Secara terperinci, tesis ini dilaksanakan untuk menjangka gelagat pelajar dan pensyarah dalam penggunaan LMS. Selain itu, tesis ini bertujuan untuk menentukan keperluan mereka pada masa depan dalam menggunakan LMS. Satu tinjauan telah dijalankan yang melibatkan para pelajar dan pensyarah daripada universiti awam wilayah utara. Seramai 727 orang responden telah dipilih sebagai sampel kajian. Tesis ini telah menggunakan *Expectation Confirmation Theory* (ECT) untuk melihat gelagat pengguna dalam menerima LMS. Di samping itu, terdapat enam pemboleh ubah utama termasuk kegunaan dilihat (PU), penggunaan mudah dilihat (PEOU), pengesahan (CON), keseronokan dilihat (PE), kepuasan (SAT) dan jangkaan penerusan (CI) dalam penggunaan LMS bagi mencari hubungan antara pemboleh ubah yang dipilih yang mempengaruhi jangkaan pengguna untuk menggunakan LMS dalam pengajaran dan pembelajaran mereka. Satu set soal selidik berstruktur telah digunakan. Data kajian telah dianalisis menggunakan perisian SPSS 20.0, bagi menentukan hubungan antara pemboleh ubah yang dipilih. Dapatan kajian menunjukkan bahawa PU, PEOU, CON, PE, SAT dan CI adalah pemboleh ubah penting untuk menjangka gelagat pengguna dalam penggunaan LMS secara berterusan.

Kata Kunci: Sistem Pengurusan Pembelajaran (LMS), Pelajar, Pensyarah, *Expectation Confirmation Theory* (ECT), Jangkaan Penerusan

ACKNOWLEDGEMENT

First and foremost, I would like to thank the one and only God for blessing and giving me strength of mind, spirit, ability, good physical condition, good health and guidance for me to complete this thesis. God is one of my motivations to keep positive in completing this thesis and by God's blessing and permission, I have succeeded in completing this thesis. Along the way in my journey to finish this thesis, there are numerous parties involved in helping me either directly or indirectly assistance in order for me to accomplish my objective.

Secondly, my deepest gratitude and thanks of course to my supervisor, Dr Fadhilah Mat Yamin for giving me sincere and committed guidance, moral support, cooperation and being helpful throughout the whole process of completing this thesis since I first got acquainted with them personally. All their valuable comments, suggestions, academic support, moral support, ideas and advices have been instrumental guidance for me in finalizing this thesis. My supervisor is very dedicated and I highly respect her as an amazing lecturer.

Thirdly, special thanks dedicated to my beloved parents, Mr Muruthy A/L Sinnathamby and Mrs Indrani A/P Subbiah for non-stop prayers for my success, endless love, support and cares during my journey in accomplishing this thesis. Both of them are also one of my motivators to be positive and working my way in the right direction all the time. I would like to extend my thanks to all my brothers and sister, Kumara Guru, Kalaivani and Shivaguru for encouraging and motivating me from start till the end.

I also would like to give my sincere thanks to all my senior and dearest fellow friends especially Thana Naidu, Yogambigai Rajentran, Leelavathy Annadurai, Manoghari Devdas and Syarifah for giving me the moral support, companionship and help in finishing my study and also being my wonderful friends. I would like to say thanks to my senior Taneshan Letchumanan for helping me especially to do the data collection process. Additionally, I would like to thank to all my fellow friends that I forget to mention who support and assist me.

Finally, I would like to thank to employees from OYA, GSB, HEA (UUM, USM and UniMap) and other UUM's lecturer and staff for their good and remarkable service and special thanks to all the respondents who had given their cooperation along the process in completing this thesis. May God repay the kindness of everyone that I have mentioned above.

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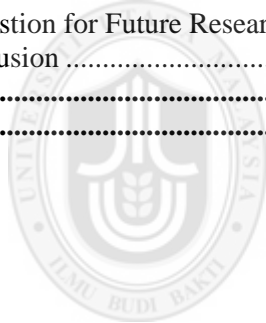
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LIST OF ABBREVIATION

LMS	= Learning Management System
ECT	= Expectation Confirmation Theory
PEOU	= Perceived Ease Of Use
PU	= Perceived Usefulness
PE	= Perceived Enjoyment
CON	= Confirmation
SAT	= Satisfaction
CI	= Continued LMS Usage Intention
IV	= Independent Variable
DV	= Dependent Variable
UUM	= Northern Malaysian University
USM	= University Science Malaysia
UniMAP	= University Malaysia Perlis
UiTM	= University Technology Mara
HEP	= Studnets Affairs Department
E-LEARNING	= Electronic Learning
DePAN	= Dasar E-Pembelajaran Negara
MOOC	= Massive Open Online Course
HEI	= Higher Education Institution
KPT	= Higher Education Ministry
PSPTN	= Pelan Strategik Tinggi Negara
GOL	= Globalised Online Learning

CHAPTER 1

INTRODUCTION

1.0 CHAPTER OVERVIEW

This section discusses the overall contents of the thesis. This chapter includes the background of study, problem description, research questions, research objectives, scope of the study, and significance of the study, plus the organisation of the thesis.

1.1 BACKGROUND OF STUDY

The e-learning system is an electronic technology that helps to develop knowledge and information, and to understand the users' behaviour. This is because the technology is able to demonstrate the users' ability and this can positively influence their behaviours. E-learning is a medium that provides paramount information and knowledge to the users. A study in Docebo (2014) that covers certain regions in the world has indicated that Asia scored the highest growth rate (17.3%) in the usage of e-learning, followed by Eastern Europe (16.9%), Africa (15.2%), and Latin America (14.6%). The statistics from Docebo showed that e-learning is under the concern of the users, where it is known as one of the important technologies among the users.

Additionally, e-learning is also listed as an advanced technology that is actively developed from time to time; especially in the area of information and communications technology (ICT). E-learning, at the early stage, is concerned more about spreading information around the world. However, in this 21st century, e-learning is emphasised on the construction of knowledge through the collaboration between the students via social network (Ishak, Yamin, & Ibrahim, 2015; Asia e-University, 2010). In short, e-learning is really beneficial to its

The contents of
the thesis is for
internal user
only

REFERENCES

- Adams, D., Nelson, R., & Todd, P. (1992). Perceived Usefulness, Ease of Use, and Usage of Information Technology: A Replication. *MIS Quarterly*, 16(2), 227-247.
- Adzharuddin, N. & Ling (2013). Learning Management System (LMS) among University Students: Does It Work?. *IJEEEE*.
- Al-Adwan, A., Al-Adwan, A., & Smedley, J. (2013). Exploring students acceptance of e-learning using Technology Acceptance Model in Jordanian universities. *International Journal of Education and Development using Information and Communication Technology*, 9(2), 4.
- Al-alak, B. A., & Alnawas, I. A. (2011). Measuring the acceptance and adoption of e-learning by academic staff. *Knowledge Management & E-Learning: An International Journal (KM&EL)*, 3(2), 201-221.
- Al-Maghrabi, T., Dennis, C., & Halliday, S. (2010). Adapting TAM and ECT: Continuance Intention of E-Shopping in Saudi Arabia. *European and Mediterranean Conference on Information Systems*, 1-20.
- Almahamid, S., & Rub, F. (2011). Factors that determine continuance intention to use e-learning system: an empirical investigation. *International Conference on Telecommunication Technology and Applications Proc .Of CSIT*, 5, 242-246.
- Almarabeh, T. (2014). Students' Perceptions of E-learning at the University of Jordan. *Int. J. Emerg. Technol. Learn.*, 9(3), 31.
- Amir, A. (2015). Pembelajaran Dalam Talian Malaysia Bertaraf Global, Kata KPT • UKM News Portal. Ukm.my. Retrieved 24 June 2016, from http://www.ukm.my/news/Latest_News/pembelajaran-dalam-talian-malaysia-bertaraf-global-kata-kpt/
- Anandarajan, M., Igbaria, M., & Anakwe, U. (2002). IT acceptance in a less-developed country: a motivational factor perspective. *International Journal of Information Management*, 22(1), 47-65,
- Andesson, A. (2008). Seven major challenges for e-learning in developing countries: Case study eBIT, Sri Lanka. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT)*, 4(3), 45-62.
- Arabasz P., IDC. Pirani J. A., Fawcett D. (2003), Chaper 6: Impact and Challenges of E-Learning, In EDUCAUSE Center for applied Research, *Supporting E-learning in Higher Education*, 3, 39-47.
- Arbaugh, J. (2000). Virtual Classroom Characteristics and Student Satisfaction with Internet-Based MBA Courses. *Journal of Management Education*, 24(1), 32-54.
- Armstrong, S., (2013). *Advantages and Disadvantages of Online Learning - eLearning Industry. eLearning Industry*. Retrieved 12 March 2016, from <http://elearningindustry.com/advantages-and-disadvantages-of-online-learning>

- Asad, S., Al Mamun, M. A., & Clement, C. K. (2012). The Effect of Social Networking Sites to the Lifestyles of Teachers and Students in Higher Educational Institutions. *International Journal of Basic and Applied Sciences*, 1(4), 498-510.
- Asia e-University. Dasar e-Pembelajaran Negara (DePAN) untuk Institusi Pengajian Tinggi. (2010). *Kementerian Pengajian Tinggi Malaysia*, 12-14. Retrieved from <https://meipta.files.wordpress.com/2011/06/dasar-e-pendidikan-negara.pdf>
- Asirvatham, D. (2009). *E-Learning in Malaysia. Slideshare.net*. Retrieved 26 May 2015, from <http://www.slideshare.net/davidasirvatham/elearning-in-malaysia>
- Ayanso, A., Herath, T., & O'Brien, N. (2015). Understanding continuance intentions of physicians with electronic medical records (EMR): An expectancy-confirmation perspective. *Decision Support Systems*, 77, 112-122.
- Balog, A., & Pribeanu, C. (2010). The role of perceived enjoyment in the students' acceptance of an augmented reality teaching platform: a structural equation modelling approach. *Studies in Informatics and Control*, 19(3), 319-330.
- Bettayeb, A. (2014). Factors Affecting the Intention to use E-Learning Systems in Middle East (Master of Science in Information Technology Management). The British University in Dubai.
- Bhattacharjee, A. (2001). Understanding Formation of System Continuance: An Expectation Confirmation on DEL 1. *Information Systems and Decision Sciences*, 25(3), 351-370.
- Bhattacharjee, A., Perols, J., & Sanford, C. (2008). Information technology continuance: a theoretic extension and empirical test. *Journal of Computer Information Systems*, 49(1), 17-26.
- Bickford, A., 2013. 12 Common Complaints about Learning Management Systems (LMS). *CONNECT THINKING*. Retrieved from <http://connectthinking.com.au/12-common-complaints-about-learning-management-systems-lms/>
- Bolliger, D., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. *Distance Learning*, 30(1), 103-116.
- Brahmasrene, T., & Lee, J. W. (2012). Determinants of intent to continue using online learning: A tale of two universities. *Interdisciplinary Journal of Information, Knowledge, and Management*, 7, 1-20.
- Bugembe, J. (2010). Perceived Usefulness, Perceived Ease of Use, Attitude and Actual Usage of a New Financial Management System: A Case Study of Uganda National Examinations Board (MSc). Makerere University.
- Calisir, F., & Calisir, F. (2004). The relation of interface usability characteristics, perceived usefulness, and perceived ease of use to end-user satisfaction with enterprise resource planning (ERP) systems. *Computers in Human Behavior*, 20(4), 505-515.
- Cavana, R.Y., Delahaye, B.L., & Sekaran, U. (2000). Applied research: Qualitative and quantitative methods. Sydney: John Wiley & Sons Inc.

- Cheng, Y. (2014). Why do users intend to continue using the digital library? An integrated perspective. *Aslib Journal Of Info Mgmt*, 66(6), 640-662.
- Cheung, C. M., Chiu, P. Y., & Lee, M. K. (2011). Online social networks: Why do students use facebook?. *Computers in Human Behavior*, 27(4), 1337-1343.
- Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2002). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of retailing*, 77(4), 511-535.
- Chiu, C., Hsu, M., Sun, S., Lin, T., & Sun, P. (2005). Usability, quality, value and e-learning continuance decisions. *Computers & Education*, 45(4), 399-416.
- Cho, V., Cheng, T. E., & Lai, W. J. (2009). The role of perceived user-interface design in continued usage intention of self-paced e-learning tools. *Computers & Education*, 53(2), 216-227.
- Chou, S., Min, H., Chang, Y., & Lin, C. (2010). Understanding continuance intention of knowledge creation using extended expectations confirmation theory: an empirical study of Taiwan and China online communities. *Behaviour & Information Technology*, 29(6), 557-570.
- Chow, W., & Shi, S. (2014). Investigating Students' Satisfaction and Continuance Intention toward E-learning: An Extension of the Expectation Confirmation Model. *Procedia - Social And Behavioral Sciences*, 141, 1145-1149.
- Cooper, D. R., Schindler, P. S., & Sun, J. (2003). *Business research methods*: McGraw-Hill International.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.
- Davis, F. (1989). Perceived Usefulness, Perceived Ease of use and user acceptance of information technology. *MIS Quarterly*, 319-340.
- Davis, F., Bagozzi, R., & Warshaw, P. (1992). Extrinsic and intrinsic motivation to use computers in the workplace 1. *Journal of Applied Social Psychology*, 22(14), 1111-1132.
- Doll, W., & Torkzadeh, G. (1988). The Measurement of End-User Computing Satisfaction. *MIS Quarterly*, 12(2), 259.
- Educationsinmalaysia.blogspot.com, (2009). *Education in Malaysia: Developing ICT in Education Policies and Master Plans: Malaysia Ministry of Education Open Source Learning Management System in Schools*. Retrieved 24 October 2014, from <http://educationsinmalaysia.blogspot.com/2009/12/developing-ict-in-education-policies.html>
- EduTech Wiki., (2014). *Learning Management System*. Retrieved 14 December 2014, from http://edutechwiki.unige.ch/en/Learning_management_system
- Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in libyan higher education: A structural equation modeling analysis. *International Journal of Information and Education*

Technology, 6(3), 192.

- Elkhani, N., & Bakri, A. (2012). Review on an Expectancy Disconfirmation Theory (EDT) Model in B2C E-Commerce. *Journal of Information System Research and Innovation (JISRI)*, 2(a), 95-102.
- Emelyanova, N. & Voronina, E., (2014), Introducing a Learning Management System at a Russian University: Students' and Teachers' Perception, *The International Review of Research in Open and Distance Learning*, 15(1).
- Eveleth, D., Baker-Eveleth, L., & Stone, R. (2014). Potential applicants' expectation-confirmation and intentions. *Computers In Human Behavior*, 44, 183-190.
- Ferriman, J. (2012). *10 Most Desired LMS Features Released | LearnDash*. *Learndash.com*. Retrieved 10 November 2014, from <http://www.learndash.com/10-most-desired-lms-features-released/>
- Fidani, A. & Idrizi, F. (2012), Investigating Students' Acceptance of a Learning Management System in University Education: A structural Equation Modeling Approach, *ICT Innovations*, ISSN: 1857-7288.
- Flavián, C., Guinalú, M., & Gurrea, R. (2006). The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management*, 43(1), 1-14.
- Forkosh-Baruch, A., & Hershkovitz, A. (2011). The use of social networks by higher-education institutes in Israel. In *Proceedings of the Chair conference on instructional technologies research* (pp. 14-20).
- Gefen, D., & Straub, D. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. *Journal of the Association For Information Systems*, 1(1), 1-28.
- Goyal, E. & Purohit, S. (2010). Study of Using Learning Management System in a Management Course, *SIES Journal of Management*, 6(2), 11-20.
- Gutschmidt, A. M. (2012). A Case Study Investigating the Use of Facebook as a Learning Management System in Higher Education, Doctoral dissertation, North Carolina State University. (ERIC Document Reproduction Service No. 3538269).
- Hackbarth, G., Grover, V., & Yi, M. (2003). Computer playfulness and anxiety: positive and negative mediators of the system experience effect on perceived ease of use. *Information & Management*, 40(3), 221-232.
- Hair Jr, J. F., Anderson, R. E., Tatham, R. L., & William, C. (1995). *Multivariate data analysis with readings*. 4.
- Hair Jr, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis with readings*. 7th ed.
- Han, Z., & Quan Liu, Y. (2010). Web 2.0 applications in top Chinese university libraries. *Library Hi Tech*, 28(1), 41-62.
- Hashim, M. (2011). Factors affecting the adoption of web-based Learning Management System by students in higher education: The case of Jordan (PHD). The George

Washington University.

- Heijden, V.N. H. (2004). User acceptance of hedonic information systems. *MIS quarterly*, 695-704.
- Hermans, C., Haytko, D., & Stenerson, B. (2009). Student Satisfaction in Web-enhanced Learning Environments. *Journal of Instructional Pedagogies*, 1(1), 1-19.
- Hew, K. (2011). Students' and instructors' use of Facebook. *Computers in Human Behavior*, 27(2), 662-676. Retrieved from <http://portal.acm.org/citation.cfm?id=1937203.1937626>
- Hsu, C., & Lin, J. (2014). What drives purchase intention for paid mobile apps? An expectation confirmation model with perceived value. *Electronic Commerce Research And Applications*, 14(1), 46-57.
- Hsu, J., Lin, T., Fu, T., & Hung, Y. (2015). The effect of unexpected features on app users' continuance intention. *Electronic Commerce Research And Applications*, 14(6), 418-430.
- Hurt, N. E., Moss, G. S., Bradley, C. L., Larson, L. R., Lovelace, M., Prevost, L. B., ... & Camus, M. S. (2012). The 'Facebook'effect: college students' perceptions of online discussions in the age of social networking. *International Journal for the Scholarship of Teaching and Learning*, 6(2), 10.
- Hwang, Y., & Kim, D. (2007). Customer self-service systems: The effects of perceived Web quality with service contents on enjoyment, anxiety, and e-trust. *Decision Support Systems*, 43(3), 746-760.
- Irwin, C., Ball, L., Desbrow, B., & Leveritt, M. (2012). Students' perceptions of using Facebook as an interactive learning resource at university. *Australasian Journal of Educational Technology*, 28(7), 1221-1232.
- Ishak, W.H.W., & Yamin, F.M. (2016). Student Acceptance on Document Sharing: Learning Management System vs Online Storage. *Journal of Education and Social Sciences*, 4, 57-61
- Ishak, W.H.W., Yamin, F.M., & Ibrahim, A. (2015). Teknologi Web 2.0 Dalam Menyokong Pembelajaran & Pengajaran. *Prosiding Seminar Kebangsaan Transformasi Sosio-Ekonomi NCER Kali ke 2*, pp.: 312-323.
- ITViz Multimedia,. (2012). *Understanding Learning Management Systems, Basic Functions and Benefits*. Retrieved 16 November 2014, from <http://itviz.com/2012/07/understanding-learning-management-systems-basic-functions-and-benefits/>
- Jakpar, S., Sze Na, A., Johari, A., & Myint, K. (2012). Examining the Product Quality Attributes That Influences Customer Satisfaction Most When the Price Was Discounted: A Case Study in Kuching Sarawak. *International Journal of Business and Social Science*, 3(23), 221-236.

- Jeong, M., & Lambert, C. (2001). Adaptation of an information quality framework to measure customers' behavioral intentions to use lodging Web sites. *International Journal Of Hospitality Management*, 20(2), 129-146.
- Joo, Y., Lim, K., & Kim, E. (2011). Online university students' satisfaction and persistence: Examining perceived level of presence, usefulness and ease of use as predictors in a structural model. *Computers & Education*, 57(2), 1654-1664.
- Juhary, J. (2014). Perceived usefulness and ease of use of the learning management system as a learning tool. *International Education Studies*, 7(8), 23.
- Kadir, A. Z. A., & Aziz, N. S. (2016). Learning Management System of Higher Education Institution. *Indian Journal of Science and Technology*, 9(9).
- Karahanna, E., & Straub, D. (1999). The psychological origins of perceived usefulness and ease-of-use. *Information & Management*, 35(4), 237-250.
- Kassim, N., & Asiah Abdullah, N. (2010). The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in e-commerce settings. *Asia Pac Journal of Marketing & Log*, 22(3), 351-371.
- Khalid, N. (2014). The role of perceived usefulness and perceived enjoyment in assessing students' intention to use LMS using 3-TUM, (pp. 425-432). Kuala Lumpur: Proceeding of the Global Summit on Education GSE 2014.
- Kim, B. (2010). An empirical investigation of mobile data service continuance: Incorporating the theory of planned behavior into the expectation confirmation model. *Expert Systems With Applications*, 37(10), 7033-7039.
- Kim, Y., & Crowston, K. (2011). Technology Adoption and Use Theory Review for Studying Scientists Continued Use of Cyber-infrastructure. *Proceedings of the American Society for Information Science and Technology*, 48(1), 1-10.
- Kokensparger, B. (2013). Using Compositional Writing Samples to Explore Student Usage Patterns in a Learning Management System (PHD). University of Nebraska.
- Lam, P., Lee, J., Chan, M., & McNaught, C. (2011). Students' use of eLearning strategies and their perceptions of eLearning usefulness. *In Global Learn*, 1379-1388.
- Lampe, C., Wohn, D. Y., Vitak, J., Ellison, N. B., & Wash, R. (2011). Student use of Facebook for organizing collaborative classroom activities. *International Journal of Computer-Supported Collaborative Learning*, 6(3), 329-347.
- Ledesma, R. D., & Valero-Mora, P. (2007). Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis. *Practical assessment, research & evaluation*, 12(2), 1-11.
- Lee J. (2014), An Exploratory Study of Effective Online Learning: Assessing Satisfaction Levels of Graduate Students of Mathematics Education Associated with Human and Design Factors of an Online Course, *The International Review of Research in Open and Distance Learning*, 15(1).
- Liao, C., Tsou, C., & Shu, Y. (2008). The Roles of Perceived Enjoyment and Price Perception in Determining Acceptance of Multimedia-on-Demand. *International*

Journal of Business and Information, 3(1), 27-52.

- Liaw, S., & Huang, H. (2003). An investigation of user attitudes toward search engines as an information retrieval tool. *Computers in Human Behavior, 19(6), 751-765.*
- Limayem, M., & Cheung, C. (2008). Understanding information systems continuance: The case of Internet-based learning technologies. *Journal of Information & Management, 45(4), 227-232.*
- Lin, C., Wu, S., & Tsai, R. (2005). Integrating perceived playfulness into expectation-confirmation model for web portal context. *Information and Management, 42, 638-693.*
- Lin, T., Wu, S., Hsu, J., & Chou, Y. (2012). The integration of value-based adoption and expectation-confirmation models: An example of IPTV continuance intention. *Decision Support Systems, 54(1), 63-75.*
- Lu, H., & Gustafson, D. (1994). An empirical study of perceived usefulness and perceived ease of use on computerized support system use over time. *International Journal of Information Management, 14(5), 317-329.*
- Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: 'It is more for socialising and talking to friends about work than for actually doing work'. *Learning, Media and Technology, 34(2), 141-155.*
- Maher, P. (2005). Confirmation Theory. *The Encyclopedia of Philosophy 2Nd Ed. Macmillan, 1-18.*
- Mahmood M.A, Burn J.M, GEMOETS L.A, & JACQUEZ, C. (2000). Variables affecting information technology end-user satisfaction: a meta-analysis of the empirical literature, *International Journal of Human-Computer Studies, 52(4), 751-771.*
- Mahmood, K. & Jr J. (2011). Adoption of Web 2.0 in US academic libraries: a survey of ARL library websites. Program: *Electronic library and information system, 45(4), 365-375.*
- McCroskey, J. C., & Young, T. J. (1979). The use and abuse of factor analysis in communication research. *Human Communication Research, 5(4), 375-382.*
- Meishar-Tal H., Kurtz G. & Pieterse E. (2012). Facebook Groups as LMS: A Case Study, *The International Review of Research in Open and Distance Learning, 13(4).*
- Mendoza, A., Carroll, J., & Stern, L. (2008). Influences on Continued Use of an Information System: A Longitudinal Study. *European Conference on Information Systems (ECIS).*
- Min, K.S., Yamin, F.M., & Ishak, W.H.W. (2012). The Usage of LMS Among Undergraduate Students. *International Journal of Computer and Information Technology, 1(2), pp.: 2279-0764*
- Mobbs, R., 2003. *Disadvantage of e-learning. Le.ac.uk.* Retrieved 12 March 2016, from <https://www.le.ac.uk/users/rjm1/etutor/elearning/disadvofelearning.html>

- Mohamed Amin Embi (2011). *E-Learning in Malaysian higher education institutions* (pp. 29-50). Department of Higher Education.
- Mohamed, N., Hussein, R., Hidayah Ahmad Zamzuri, N., & Haghshenas, H. (2014). Insights into individual's online shopping continuance intention. *Industr Mngmnt & Data Systems*, 114(9), 1453-1476.
- Mosahab, R., Mahamad, O., & Ramayah, T. (2010). Service Quality, Customer Satisfaction and Loyalty: A Test of Mediation. *International Business Research*, 3(4), 72-80.
- Moses, P., Wan Ali, W., & Eric Krauss, S. (2014). Cause Analysis of Learning Management System: Role of Moderator in Improving Students' Performance. *Research and Practice in Technology Enhanced Learning*, 9(1), 83-105.
- Najmul Islam, A. (2013). Sources of satisfaction and dissatisfaction with a learning management system in post-adoption stage: A critical incident technique approach. *Computers In Human Behavior*, 30, 249-261.
- Nasser R., Cherif M. & Romanowski M., (2011). Factors that Impact Students Usage of the Learning Management System in Qatari Schools, *The International Review of Research in Open and Distance Learning*, Vol. 12 (6).
- Naveh, G., Tubin, D., & Pliskin, N. (2010). Student LMS use and satisfaction in academic institutions: The organizational perspective. *Internet and Higher Education*, 13(3), 127-133.
- Nor, R.M., & Yamin, F.M. (2015). Satisfaction of Learning Management System Using EUCS Model. *Proceeding of International Conference on e-Commerce, e-Administration, e-Society, e-Education and e-Technology*, pp: 513-522.
- Nunnally, J. C. (1978). *Psychometric theory*: New York: McGraw-Hill.
- Oghuma, A., Libaque-Saenz, C., Wong, S., & Chang, Y. (2015). An expectation-confirmation model of continuance intention to use mobile instant messaging. *Telematics And Informatics*, 33(1), 34-47.
- Oliver, R., & Swan, J. (1989). Equity and Disconfirmation Perception as Influences on Merchant and Product Satisfaction. *Journal of Consumer Research*, 16(3), 372-383.
- Oliver, R., Rust, R., & Varki, S. (1977). Customer Delight: Foundations, Findings, and Managerial Insight. *Journal of Retailing*, 73(3), 311-336.
- Ong, C. H. & Lai, J. Y. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behavior* 22(5), 816-829.
- Orehovački, T., & Babić, S. (2014, January). Predicting students' continuance intention related to the use of collaborative Web 2.0 applications. In *23rd International Conference on Information Systems Development*.
- Ozturk, A. B., Bilgihan, A., Nusair, K., & Okumus, F. (2016). What keeps the mobile hotel booking users loyal? Investigating the roles of self-efficacy, compatibility, perceived ease of use, and perceived convenience. *International Journal of Information Management*.

- Pallant, J. (2010). *SPSS survival manual*. Maidenhead: Open University Press/McGraw-Hill Education (UK).
- Palvia, P. (1996). A model and instrument for measuring small business user satisfaction with information technology. *Information & Management*, 31(3), 151-163.
- Pappas, C. (2015). *The Top eLearning Statistics and Facts for 2015 You Need To Know - eLearning Industry*. *E-Learning Industry*. Retrieved 26 May 2015, from <http://elearningindustry.com/elearning-statistics-and-facts-for-2015>
- Park, S. (2009). An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning. *Journal of Educational Technology & Society*, 12(3), 150-162.
- Paul, J. A., Baker, H. M., & Cochran, J. D. (2012). Effect of online social networking on student academic performance. *Computers in Human Behavior*, 28(6), 2117-2127.
- Pereira, F., Ramos, A., Gouvêa, M., & da Costa, M. (2015). Satisfaction and continuous use intention of e-learning service in Brazilian public organizations. *Computers In Human Behavior*, 46, 139-148.
- Premkumar, G., & Bhattacharjee, A. (2008). Explaining information technology usage: A test of competing models. *Omega*, 36(1), 64-75.
- Ramayah, T., & Ignatius, J. (2005). Impact of Perceived usefulness, Perceived ease of use and Perceived Enjoyment on Intention to shop online. *ICFAI Journal of Systems Management (IJSM)*, 3(3), 36-51.
- Reliant (on demand HR technology),. (2009). Learning Management System Functions/Features, pp. 1-3.
- 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.
- Rocker, C. (2009). Perceived Usefulness and Perceived Ease-of-Use of Ambient Intelligence Applications in Office Environments. In: M. Kuroso (Ed.): *Human-Centered Design, HCII*, 1052-1061.
- Rouse, M. (2005). *What is learning management system (LMS)? - Definition from WhatIs.com*. *Searchcio.techtarget.com*. Retrieved 23 October 2014, from <http://searchcio.techtarget.com/definition/learning-management-system>
- Saadé, R., & Bahli, B. (2005). The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: an extension of the technology acceptance model. *Information & Management*, 42(2), 317-327.
- Sahin, O. (2014). An Investigation of Student Satisfaction Factors. *Journal of Research in Business And Management*, 2(6), 8-12.
- Santos, J. (1999). Cronbach's Alpha: A Tool for Assessing the Reliability of Scales. Joe.org. Retrieved 5 April 2016, from <http://www.joe.org/joe/1999april/tt3.php?ref>
- Sekaran, U. (2003). *Research Methods for Business: A Skill Building Approach*. 4th Ed. John

Wiley & Sons, Inc.

- Sharma, A., & Vatta, S. (2013). Role of Learning Management Systems in Education. *International Journal of Advanced Research in Computer Science and Software Engineering*, 3(6), 997-1002.
- Shen, D., Laffey, J., Lin, Y., & Huang, X. (2006). Social Influence for Perceived Usefulness and Ease-of-Use of Course Delivery Systems. *Journal of Interactive Online Learning*, 5(3), 270-282.
- So, H. J., & Brush, T. A. (2008). Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. *Computers & Education*, 51(1), 318-336.
- Socialbakers.com,. (2015). *Most popular Facebook pages in Malaysia*. Retrieved 26 May 2015, from <http://www.socialbakers.com/statistics/facebook/pages/total/malaysia/>
- Socialbakers.com,. (2015). *Most popular Twitter accounts in Malaysia*. Retrieved 26 May 2015, from <http://www.socialbakers.com/statistics/twitter/profiles/malaysia/>
- Solechan, A. (2012). Antecedents Perceived Usefulness, Confirmation, Perceived Ease of Use terhadap Kepuasan dan Minat Pemanfaatan Teknologi Informasi sebagai Variabel Konsekuensi. *Journal of Information and Communication Technology*, 3(2), 9-19.
- Song, S. M. (2010). E-learning: Investigating students' acceptance of online learning in hospitality programs.
- Sorebo, O., Halvari, H., Gulli, V. F., & Kristiansen, R. (2009). The role of self-determination theory in explaining teachers' motivation to continue to use e-learning technology. *Computers & Education*, 53(4), 1177-1187.
- Steel, C. (2007). What do university students expect from teachers using an LMS?. *Proceedings Ascilite Singapore*, (pp. 942-950).
- Suki, N., & Suki, N. (2011). Exploring the Relationship between Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude and Subscribers' Intention towards using 3G Mobile Services. *Journal of Information Technology Management*, 22(1), 1-7.
- Sun, H., & Zhang, P. (2004). An empirical study of the roles of affective variables in user adoption of search engines. *Special Interest Group on Human-Computer Interaction: AIS Electronic Library (Aisel)*, 24-29.
- Susarla, A., Barua, A., & Whinston, A. (2003). Understanding the service component of application service provision: empirical analysis of satisfaction with ASP services. *Mis Quarterly*, 27(1), 91-123.
- Tabachnick, B. G., & Fidell, S. S., (1996). *Using Multivariate Statistics*, 3rd ed, New York:Harper Collins.
- Tabak, F., & Nguyen, N. T. (2013). Technology acceptance and performance in online learning environments: Impact of self-regulation. *Journal of Online Learning and Teaching*, 9(1), 116.

- Tatiparthi, P. (2014). *6 Amazing Statistics on Learning Management Systems – An Infographic*. Blog.commlabindia.com. Retrieved 13 December 2014, from <http://blog.commlabindia.com/lms-hosting/learning-management-system-statistics-infographic>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, 2(53).
- Teo, T., & Noyes, J. (2011). An assessment of the influence of perceived enjoyment and attitude on the intention to use technology among pre-service teachers: A structural equation modeling approach. *Computers & Education*, 57(2), 1645-1653.
- Teo, T., Lim, V., & Lai, R. (1999). Intrinsic and extrinsic motivation in Internet usage. *Omega*, 27(1), 25-37.
- Thong, J., Hong, S., & Tam, K. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. *International Journal of Human Computer Studies*, 64(9), 799-810.
- Van Der Heijden, H. (2004). User Acceptance of Hedonic Information system. *MIS Quarterly*, 28(4), 695-704.
- Venkatesh, V., & Davis, F. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204.
- Venkatesh, V., & Goyal, S. (2010). Expectation Disconfirmation and Technology Adoption: Polynomial Modeling and Response Surface Analysis. *MIS Quarterly*, 34(2), 281-303.
- Wang, W., Butler, J., Hsieh, J., & Hsu, S. (2008). Innovate with complex information technologies: A theoretical model and empirical examination. *Journal of Computer Information System*, 49(1), 27-36.
- Wu, J.-H., Tennyson, R. D., & Hsia, T.-L. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers & Education*, 55(1), 155-164.
- Zaidieh, A. J. Y. (2012). The use of social networking in education: Challenges and opportunities. *World of Computer Science and Information Technology Journal (WCSIT)*, 2(1), 18-21.
- Zviran, M., Glezer, C., & Avni, I. (2006). User satisfaction from commercial web sites: The effect of design and use. *Information & Management*, 43(2), 157-178.