A CONCEPTUAL STUDY ON MULTIDIMENSIONAL EVALUATION OF LMS PLATFORM IN HEI'S USING BALANCE SCORECARD ON UNDERGRADUATE LEARNERS PERSPECTIVE

Umi Kalsom Binti Kassim[1]
Phuah Kit Teng[2]

[1,2]Faculty of Business, Communication and Law
INTI International University
[1](ukalsom.kassim@newinti.edu.my) [2](kitteng.phuah@newinti.edu.my)

Abstract: *The enhancement of technology has introduced new methods of how learning can be interactive and acceptable between the Gen Z populations. Students now are slowly transforming into the enhancement of this usage of E-Learning or virtual learning in their learning process. E-learning has improved the engagement between the lecturers and students to be more prominent and this automatically increasing the independent level among the students. However, even though there are study done on e-learning's characteristics and effectiveness, hence there are lack of study done to analyze at which level is the effectiveness has given an impact towards student's perception as shareholders. The primary research of the study is to perceive the effectiveness of E-learning focused on assessment for learning. In the management perspective, this study analyzes how the management can implement E-learning as the medium of delivering in higher education institutions. In order to carry out the research study, a balanced scorecard (BSC) will be designed to identify at which level did the effectiveness and the management of the e-learning to be reviewed. The population of the study are the students randomly selected from public and private universities in Malaysia. Qualitative method used to conduct in depth interview towards the respondents using Nvivo. Structured questionnaire designed to analyze the Conceptual Path Model of Unified Theory of Acceptance and Use of Technology (UTAUT). These models referred in enhancing in developing the balanced scorecard. The analysis done using Reliability analysis, Descriptive analysis, Exploratory Factor Analysis, and Structural Equation Method (SEM) using AMOS. The expected results will provide valuable information for the management staff in managing E-learning strategically and develop value for the students in their charismatic career development.*

Keywords: Balanced Scorecard, E-Learning, Undergraduate Students, Management Strategy

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Introduction
Education system in higher education institutions in Malaysia is transforming and enhancing the learning process strategically to meet the goals using online mode of learning in private higher education (Raja Maznah, 2004). The mode of teaching and learning will be more emphasizing on techno-based classroom to replace the chalk and talk method. Looking into the present development of the entire industry, employees are required to enhance their skills and knowledge for future career development looking forward of industry revolution that is presently taking place. Looking into the transformation from the primary and secondary schools with high-end internet facilities and infrastructures, government is creating this scenario from the root so that learners are familiar with the content of education using technology. The system built from the scratch to cater the students on the awareness of technology from the beginning to equip them with the standards in higher education institutions as well as their own career development in managing time and to be more responsible and independent.

Based on a research study conducted using the google consumer barometer, they have tracked the digital device owners in Malaysia for the year of 2016 as the result shows that 71% of the Malaysian own a small phone, 35% own a laptop or desktop computer and 14% own a tablet device. This statistic shows a positive impact for the education industry to implement the strategy towards E-learning since most of the population are well equipped with technology knowledge. In education, the term E-learning has concurred the entire system by providing a new set of tools using technology enhancement that can add value to the entire traditional learning model from classroom experience to learning from a book. E-learning define as a way to demonstrate, with computer through internet and is not about using technology to replace classroom whereby the uploaded notes and activities can be downloaded before hence of class. It can view that most of higher education institution now implementing technology-based learning platform (Owston 2000) and start using Course Management System (CMS) or Learning Management System (LMS) such as WebCT, Blackboard, Moodle and other platform as the mode of learning (Mazza and and Dimitrova 2004).

Problem Statement
In present education system, e-learning has a competitive advantage among many higher education institutions (HEI's). HEIs have implementing this strategy and the strategy has vital impacts on students' performance in increasing their creativity and innovation and independent in learning process. The concept of E-learning is not still very new to Malaysian student and instructors but the readiness to accept this learning is being new for them although Malaysia has been encouraging ICT education in HEI's. However, still there are other HEIs that use very low interactive technology that is not enough to contribute to the intention to use e-learning for the students. In contrary to that, other higher educational institutions use highly interactive technology that directly improves students' intention to use e-learning in their learning process. In today's routine, technology is a tool used to remove geographical barriers and facilitates everybody to learn anytime and anywhere without the presence of the lecturer. Hence, there is still little is known about the effects of individual commitment towards e-learning effectiveness upon performance, either lecturers or students. To be successful, lecturers must have a breathe life into courses so that they engage students, regardless of the course delivery medium such as in a traditional classroom, online, or some combination. Therefore, they must have technical knowledge and skills to operate and incorporate the technology used in the classroom and then be able to 'sell' the use of that technology to students. However, majority of the lecturers still having less frequency of accessing the e-learning system and quarter of lecturers and students

did not think that e-learning system is effective to them, especially on integration with the other systems.

E-Learning in a blended learning environment designed to ensure students are motivated to learn effectively and efficiently. Therefore, there is a need to examine whether the deployment of E-learning in higher education system would increase the performance and to analyze the mode of learning preferred by the student. The rationale for the choosing of this measure is that entrepreneurs are commercializing the entire education as a business by implementing the E-learning as a distance learning course. The main reason for this implementation is when education has become a distance learning; easily it has its own flexible time and mode of learning. Students can pass their exams without attending to classroom. Therefore, the research objectives of this study are:

i. To improve the prominence of HEI's processes to all stakeholders; management, students and lecturers.
ii. To investigate students "satisfaction, behavioral intentions and the effectiveness of using E- learning.
iii. To identify how the university stabilized the infrastructure to support the E-learning platform to use as the teaching and learning technology.

Literature Review

There are wide range of E-Learning definitions, for example, defined it was use of network technologies to create, foster, deliver and facilitate learning anytime and anywhere (Owston 2000). E-Learning is also known as educational and learning instruction supported by the use of ICT adapting students to learn the new way of learning process by managing their time with consistent.

The higher education institutions in Malaysia are offering e-learning through use Learning Management System (LMS) in teaching e-learning applications in their campus portal. There are various types of LMS used as a platform in higher education institution for delivering courses. The list of universities and the LMS platform tool used by the higher education institution in Malaysia are as follows:

Public and Private HEI's	LMS Tool
University Putra Malaysia (UPM)	PutraLMS
University Tuanku Abdul Rahman (UTAR)	WBLE
Multimedia University (MMU)	MMLS
Open University Malaysia (OUM)	LMS
Nilai University	Moodle
INTI International University	Blackboard

Table 1: List of Public and Private Universities engaging with LMS tool in Malaysia

As per the data obtained from Ministry of Education (Embi and Adun 2010), the current LMS is widely used by the administrators on posting announcement, course delivery and content development tool for their teaching and learning interaction. In the context of management, it said that E-learning benefits both learners and organization. Innovation has corporate in this system whereby changing the entire mechanism of delivering method using ICT that gives a new life for the distance learning (Raja Maznah, 2004). As industries are moving towards Industries 4.0, this is the time for the education industry to evolve and segregate the entire mode of teaching and learning. Today's demographics, which are from the Gen Y and Z, are the major contributors to the technology enhancement. Their needs on the revolution gives an opportunity for the government to look forward and future the learner's ability in education

system. In the present world, most of the population in HEI are family committed whom are married, part-time workers and students. This characteristic have opportunity to management of the HEI's to offer programs which caters this group of people and slowly moving forward to some extend to offer as a fully electronics programs.

Assessments can be delivered to students and for instance, the instructors is expected to regularly check students' progress by visiting the landing page and using different tools within Learning Management System to verify student progress and participation and evaluate them accordingly. The assessment provide may test the learners understanding towards the subject.

The main objective of any online course is to provide student with comprehensive knowledge on the course include main concepts, links to Web sources, examples, exercises and reminders within the stipulated time frame. In addition, an online course should include different types of self-assessment such as assignments and quizzes. This is to ensure that the students understanding and effort towards the subject that they have already read the topics done. E-learning describe the guidelines for designing interactive functions such as forum and chat rooms to facilitate student-tutor and peer interaction that encourage cooperative learning. In summary, in an e-learning element should have the following elements:

- Tutorial component - includes syllabus of modules, instructor guide and assessment.
- An interaction component - addresses interaction tools such as blogs, wikipage, journal and discussion boards.
- Management component – infrastructure such as announcement board, class management, course schedule.
- Support component - includes plagiarism tracking tool, online-library, personal pages.

This includes the analytic tools use to monitoring the forum activities log to verify student participation, consulting the drop-bin tool to see if students have submitted assignments, and regularly visiting the course activity log to monitor the magnitude of students' online activities. Performing these tasks and in addition handling hundreds of e-mail message will enhance the E-learning as a routine operation for most instructors. The expectations have increased where a smart learning environment that offers personal services with capabilities to learn, reason, have autonomy, and very dynamic is needed. Balanced scorecard is one of the effective way used in the management to address the challenges faced and identify solutions for the challenges. Adapting to Balanced Scorecard strategies enable the management to link strategies with actions and see the outcome. Managers are able to view and review critical issues and work out to take corrective actions and foster continuous improvement. In this research, the management is able to identify the preferred learning strategies preferred by the undergraduates at the same time identify will it be a good strategy to transform to fully online as in education businesses in terms of looking from Return on Investment (ROI).

Methodology
Conceptual Framework
In management, balanced scorecard used as a tool to help managers to translate the organizations strategy into operational vision and implementing the strategy. The BSC evaluate the organizations performance in terms of growth, financial, customer and internal business processes. (Kaplan and Norton, 2008) used balanced scorecard helps the management to identify the customer's need and management growth by aligning the goals towards the strategy implementation. A conceptual framework designed to carry out the research study as follows:
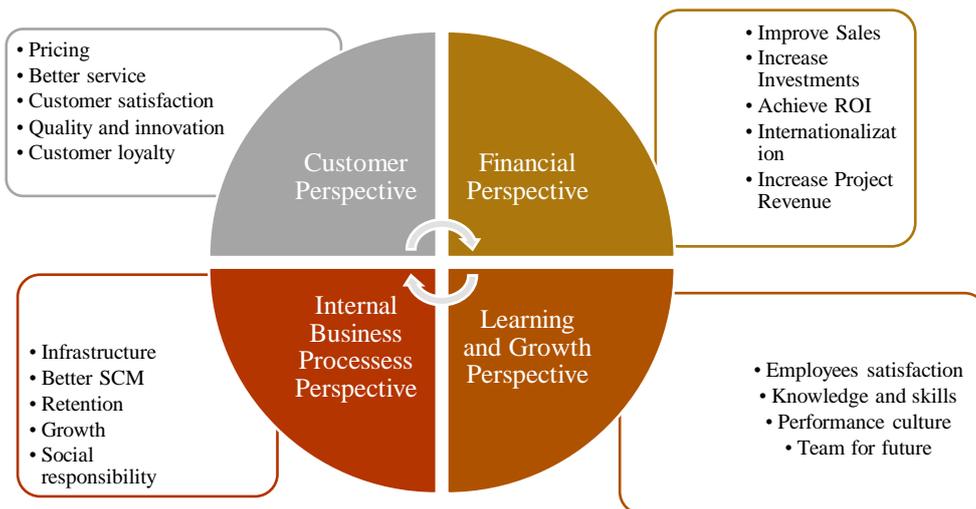
Figure 2: Conceptual Framework
Source: Adapted from Kaplan and Norton, 1996

Perspective	Research Question	Research Objective
Financial	How do we view the stakeholders?	-How do we increase earnings and decrease costs? -How do we view the taxpayer?
Customer	How do the customers view us?	-How do the people using the public services view us?
Internal Process	What superiority should we get?	-How do we build superiority?
Learning and growth	How do we keep on creating new values and improving?	-How do we keep adding and improving our values to the stakeholders?

Table 1: The overall summary of the research analyzed by using the BSC summarized in the table above

The primary purpose of this study is to develop a reliable general instrument capable of measuring E-learning course management system success in various higher learning institution and how the student acceptance. This research study has three significant benefits. First, the research findings assist to gain an additional understanding of students and staff perceptions of interacting E-Learning as an online teaching tool in terms of the organizational capacity. Second, this research outcome will help the management to identify issues of decision on integration of E-Learning with traditional classroom teaching. Third, this research study may bring changes in student and staff preferences of using course tools in traditional classroom in flexible environment. The last is the most important tool for management is how to identify how this can help to increase their ROI (Return on Investment) by implementing the courses.
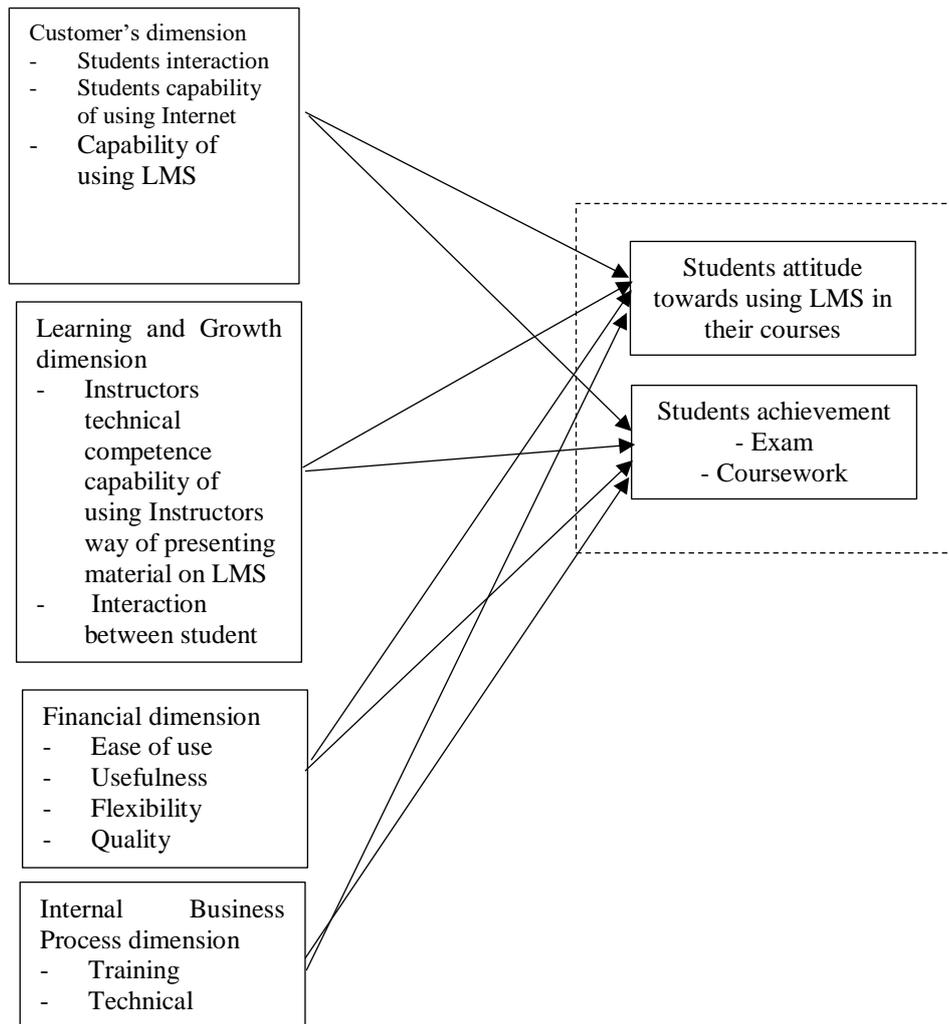
Figure 2.1: Illustrates the model (research framework) used in this study.

The framework design developed to study from various perspective in order to capture the effectiveness from various criteria. Here the study is focused from 4 dimensions adapted from the Robert and Kaplan (1996) in terms of customer dimension, learning and growth dimension, financial dimension and internal business process dimension. (Hammoud, 2011) describe the learners dimension measured through the three factors such as

- Interaction of student with their classmates
- The capability of student using the Internet
- Students capability using LMS tool in university

The learning and growth dimension measured by focusing on the instructors' competence and the materials used in the LMS tool. The financial dimension measures the user friendly of the entire system and how to improve the quality of the system that may require cost in upgrading. The last criteria measured through the training and technical to enhance the competence level of the users of the entire system.

Data Collection Methods

The study is expected to be carried out at three (3) randomly selected Public and Private University in Malaysia. A qualitative and quantitative research are use in the research study. The qualitative study will measure by delivering a general subject module to the respective

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students. There will be total of 90 students selected from different level starting from the first semester students, third and fourth semester and the final semester and the working adults enrolled in the selected university. The student will be break into 3 categories as five (5) students for the face to face session, another group of five (5) students for the blended and the rest five (5) for the fully online course. In this research, the target population are the student enrolled from various programs from Foundation studies, Diploma, Degree and Postgraduate studies. On the other hand, for quantitative measure, the target population is the students randomly selected from Public and Private Universities in Malaysia. The sample size taken is 3000 to achieve the aim of this study so that we can explore the perceptions and acceptance of the students on the usefulness and effectiveness of the E-learning adapted in their teaching and learning process.

As for the quantitative method, reliability analysis used to determine the extent to which the items in the questionnaire related to each other. Cronbach alpha is use in this study to estimate the proportion of variance that is systematic or consistent in a set of test scores. Descriptive analysis is use to summarize the quantitative data into a simpler summary to make it easier to understand and measure. It was use to describe the population in this study. Frequency distribution are used to show clearly how the data values such as demographic which include management level, age, income, education level, race and many more can affect the variables in this research. Distributions were also displayed by using percentage. Exploratory Factor Analysis (EFA) will be used to refine and validate the obtained data. In second stage, Structural Equation Method (SEM) will be utilized to validate each construct to find explore the students and instructor attitude and perception. SEM will provide a clearer conceptualization of the theory under study as it pictorially modelled the relationships among multiple variables.

Phenomenological study chosen as one of the qualitative method to achieve the objective of this study. A combination method such as conducting interviews, focus group and reading documents to understand the meaning participants place on e-learning. It will be relying on the participants' own perspectives to provide insight into their motivations. In a phenomenological study, a few in-depth interviews and focus group will be conducted on the 3 groups of respondents which had mention above to build a sufficient dataset to look for emerging themes for e-learning and to use other participants to validate the findings.

Expected Results
The Malaysian education system is strengthening the education system in Malaysia to meet the expectation of the industry revolution. Hence, many initiatives taken into consideration in order to improve the teaching and learning quality in HEI's. hence this research is done on a conceptual basis to identify the effectiveness used of the LMS tool in university in order to increase the Return on Investment (ROI). The quality education system in also reviewed based on the accreditation to improve the quality management to improve the system implemented. To perform all this quality and performance management there are many challenges to overcome in the process. To encourage the challenges drastic changes on the education policies and infrastructures need to be overview to enhance the teaching and learning process. Staff development in order to master the platform has to be monitor from the university level. The main outcome of the research study will have determined core of the theoretical framework for the further phase of the research study in producing skilled graduate to meet the expectation of the Industry 4.0 revolution. This conceptual study research can enable us to study further on the stakeholders and shareholders perception and policy towards the quality education system in the universities. At the same time, the research study enables the stakeholders to provide the preferred quality learning methods required for the present Gen of populations whom to be

independent and interdependent worker in future. We are able to identify the strength and weaknesses of the present LMS platform and identify the areas of improvement using the balanced scorecard by analyzing the cost involve strategically on how to create the Return on Investment (ROI) or generated profit from the stakeholder's perspective. The research also enables us to identify the expertise of knowledge required for both learners and educators in being a charismatic leader in decision-making. The emphasized should be more practical and focusing on identifying how the entire LMS system used as assessment for learning rather than assessment of learning. This helps us to study the effectiveness of E-leaning and produce quality in higher education institutions in Malaysia for future undertakings.

Conclusions

The end user of people using technology is increasing day by day. The evolution of technology enhanced too many various applications used as mode of business. Hence, it is the trend now people prefer to work using apps in simplifying their work. The implementation of E-learning from the management point of view can optimize the development of cost and time. Enhancing this method can enhance the quality of education industry in measuring the effectiveness and the efficiency of the internal processes. Shareholders pool of choices in selecting the mode of education prior to the institution is high. They are subjected number of limitation expected from the study is in getting information from the management staff prior to their time. The recommendation for future study is required to maintain the quality education in terms of Total Quality Management (TQM).

References

Byrne, B. M., 1998, *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.

Chai Lee Goi & Poh Yen Ng. (2009). E-learning in Malaysia: Success Factors in Implementing E-learning Program. Paper presented at *International Journal of Teaching and Learning in Higher Education*. 20(2), pp 237-246.

Embi, M. A., & Adun, M. N., 2010, *e-Learning in Public Institutes of Higher Learning Malaysia*. Kuala Lumpur: Ministry of Higher Education Malaysia.

Kaplan R. S. & Norton D. P., 2008, The Execution Premium: Linking Strategy to Operations for Competitive Advantage; New York: Harvard Business School Press.

Mazza, R. & V. Dimitrova (2004). "Visualising Student Tracking Data to Support Instructors in Web-Based Distance Education." *9th IEEE Conference on Information Visualisation IV05*, London, UK.

Mbarek, R.& F. Zaddem, 2013, The examination of factors affecting e-learning effectiveness, *International Journal of Innovation and Applied Studies*, 2(4).

Mohd Taib, D., H. Hanipah, and S. Safiah. 2012. "Impacts of training on knowledge dissemination and application among academics in Malaysian institutions of higher education." *Asian Social Science* 8(1): 146–55. [Google Scholar]

Morshidi, S. 2010. "*Strategic planning directions of Malaysia's higher education: University autonomy in the midst of political uncertainties.*" Higher Education 59: 46173. [Crossref], [Web of Science ®]. [Google Scholar]

Okazaki, S. and L. Santos (2012). "Understanding E-Learning Adoption in Brazil: Major Determinants and Gender Effects." *The International Review of Research in Open and Distance Learning (IRRODL)* 13(4): 91-106.

OUM (2004). KTKM-OUM Research on E-Learning Readiness in Malaysia concept paper.

Raja Maznah Raja Hussin.(2004). *E-Learning in Higher Education Institutions in Malaysia*. University of Malaya, Kuala Lumpur.

Rossett, A., Douglis, F., & Frazee, R.V. (2003). Strategies for Building Blended Learning. Learning Circuits. http://www.learningcircuits.org/2003/jul2003/rossett.html

Sohail, S. M., R. Jegatheesan, and A. R. Nor Azlin. 2003. "Managing quality in higher education: A Malaysian case study." *International Journal of Educational Management* 17(4): 141–6. [Crossref], [Google Scholar]

Suhaiza Z., J.Junaimah, O.Rosli, and L. Y.Ng. 2006. A comparison between ISO-certified and non-ISO-certified colleges on service quality in higher education: Students' perception. *Paper presented at the 6th Annual Hawaii International Conference on Business*, Honolulu, May 25-28. http://eprints.usm.my/. [Google Scholar]

Walker, M. 2001. Reconstructing professionalism in university teaching: Teachers and learners in action. Buckingham: *Open University Press*. [Google Scholar]

Walsh, L., and P. Kahn. 2010. *Collaborative working in higher education*. New York: Routledge. [Google Scholar]

Wan Fatimah Bt Wan Ahmad, Afza Bt Shafie, Josefina Barnachea Janier. *Students 'Perceptions Towards Blended Learning in Teaching and Learning Mathematics*: Application of Integration. Petronas University of Technology, Malaysia.

Veeramani, M. (2010). E-learning: A Conceptual Framework. *International Journal of Educational Research and Technology*, Volume 1 (2), 20-24.