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The Performance of Business School Student using Massive Open Online Courses (MOOCs) at Universiti Teknikal Malaysia Melaka (UTeM)

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ABSTRACT
Over the years, there has been a tremendous growth in online social networking which contributed to the revolution of higher education's learning environment. MOOCs is recognized to be a current evolvement in higher learning institution in Malaysia with the aim to provide quality education for the students. However, there are some challenges to identify the main factors that contribute to student performance enhancement in teaching and learning. Therefore, this study was intended to find out performance of business school students using MOOCs at Universiti Teknikal Malaysia Melaka (UTeM). A survey was conducted with 353 students from Faculty of Technology Management and Technopreneurship (FPTT), while multiple regression was employed to analyse the relationship between learning environments and students' performance enhancement in teaching and learning. This study will be beneficial to the students to find out the learning content of MOOCs that influence students' performance in the university. Hence, indirectly improve their learning style in the era of technology. Besides, MOOCs learning is important because students can implement the blended learning in their job environment, consequently improve their skills and knowledge. With this blended learning technology, it can increase the students' attraction toward study and decrease the number of unemployment rate in Malaysia.

Key words: Learning design, learning environment, learning attitude, learning outcome, MOOCs, students' performance

1. INTRODUCTION

1.1 Background

MOOCs is an online program with no fees and with no special requirement besides having access to the internet [1]. MOOCs assemble and integrates a social network, an easily accessible to online resources, and facilitated by leading practitioners in the field of study. The most significant, MOOCs build students' engagement that makes their own participation in the learning goals, prior knowledge and skills, and mutual benefit. MOOCs will enhance the learning experience and lead to quality enhancement of these types of courses [2]. In addition to traditional training materials such as videos, reading, and problem, MOOCs give users an interactive forum that helps build a community for students, professors and teaching assistants.

Nowadays, MOOCs is the most learning platform that been used at the public university in Malaysia. The Ministry of Higher Education (MOHE) announced the launch of 60 MOOCs offered by 20 public universities in Malaysia [3]. There are a lot of benefits that this platform provides such as implementation of technology in learning style for the student and also by using this platform the learning session will be more interactive and openness to learning environment. It also enhances students programming skills and diversifies their existing programming knowledge [4]. MOOCs use a variety of materials such as readings, videos and problems, to provide user build learning community for students, teaching assistants and professors [5].

1.2 Problem Statement

According to [6], MOOCs are online platform courses that provide free high-quality education to an unlimited number of learners. MOOCs learning has been integrated into several elements in campus courses in the form of blended learning to make the most of classroom time for activities such as discussions, hands-on activities or working in a group project. MOOCs systems can influence and shape or structure students' approaches to learning and may stimulate class communication [7]. It also can provide large data sets which can be analyzed by the researcher and used to investigate more deeply the processes of learning and learner behavior.

There are several problems regarding the MOOCs learning as many questions remain about student performance, MOOCs best serves and what constitute learner success [8]. Based on the problems, completion rates, a common metric of student success, remain low, averaging less than 8% and may be misleading measures of success unless the learner intention are considered. According to [9], the subjects of learning through MOOCs is one of the most discussed topics in recent higher education, with supporters stating that MOOCs can make traditional and outdated brick universities that maintain a high rate of shifts and quality measures that make MOOCs do not work on learning platforms. In addition, nowadays, many students are interested in using the electronic devices such as smart phone. They prefer to learn new knowledge by reading online than textbook as all the electronic devices are connected to the wireless internet.

MOOCs learning are the e-learning platform that provides free high-quality education to an unlimited number of learners. Although MOOCs have a large number of participants, but also have decreased participant's activity and low completion rates. Typical rates for learners who have logged into the platform at least once and then go on to complete the course is between 5 to 10 percent of active learners [10]. This is because lack of awareness regarding this platform from the university. The study findings indicate that awareness of these courses in the faculty is very limited, with only 18.52% aware in year 2015 [11].

Online discussion forum has the potential to add value to the overall learning environment in distance learning. According to [12], the main areas of problem for lecturers associated with MOOCs learning are lack of time, lack of interest or motivation, lack of co-operation, compensation system does not take into account specific MOOCs learning and lecturers worry about the quality of teaching in the virtual environment. Lecturer or tutors need to apply another technique or method of learning practice such as be more creative and combine the technology in education to attract students. Lecturers need to give exposure during teaching on how to use MOOCs. Generally, the challenge of teaching MOOCs include the following, the lack of students' attitude in online discussions, a sensation of speaking into a vacuum due to the absence of student, immediate feed-back, heavy time and money demand and issues about assessing students work [13].

Therefore, in this study, students' performance among technology entrepreneurship students was explored with the aim to identify the effects of MOOCs learning content on the students' grade. This study is important to determine the relationship between the MOOCs learning content and students' performance. Moreover, this research is intended to find out the performance of technology entrepreneurship student using MOOCs at UTeM.

2. LITERATURE REVIEW

2.1 MOOCs in Entrepreneurship Subject

Through talents and practices, entrepreneurship is often aligned with creativity, technological advancement, economic growth, and job creation. This view is expressed mainly by policy makers [14] and therefore there has been general government support and encouragement to deliver entrepreneurship courses in different academic programs [15].

Entrepreneurship is also conceptualized and viewed in its broader and more common nature as a collection of global skills and attitudes that can be used in all ways such as new business, corporate initiative, social venture or international cultural exhibition [16]. The skills and attitudes of entrepreneurship are important at all stages of professional career and add great value to all human activities. Over the past decade, entrepreneurship has received considerable academic and non-academic interest [17]. This is an important area of research, especially those related to the crisis and economic challenges.

According to [18], education in entrepreneurship is increasingly important because it affects a country's level of entrepreneurial activity and has a positive impact on entrepreneurial intentions or positive entrepreneurial influence MOOCs open a new era in entrepreneurial education [19]. Business education is very popular and accessible today, but it is diverse, dynamic and engaging [20].

According to [21], a user-friendly MOOCs platform called LORE is built into MOOCs virtual environment, including social network aspects and helping participants to interact easily through LORE forums. Others research, found that Universiti Teknologi Mara (UiTM) introduced entrepreneurship module by using MOOCs in 2014 to foster innovative teaching and learning approaches [22].

2.2 Learning Design

Learning design is a pedagogical model for implementing specific learning goals, target groups, and specific context or knowledge of the domain [23]. The teaching-learning process is determined by the learning design. Most precisely, it defines where the students and teachers need to do an event to allow students to achieve the desired learning goals [24]. Accordingly, learning design is the official description of the individual involved in the learning process, the resources and the environment used to achieve specific learning goals, and the sequence of learning activities to be carried out. The curriculum structure defines the teaching and learning process and the circumstances under which it takes place, as well as the tasks carried out by teachers and students to accomplish the learning goals needed [25].

Such tasks may refer to multiple learning objects used to execute activities such as books, documents, software programs, images, and may refer to tools such as blogs, conversations, wikis used to interact and connect in the teaching process [26]. It aims at designing learning environments based on learning theories and facilitating the process of learning and improving learning quality [27]. For example, consider the need for versatility in learning design preparation, such as how specific professional models are affected by their specialty and teaching background to increase the likelihood of implementing adaptive methods [28]. In the typical face-to-face setting, as part of daily lesson planning, most educators may be conscious of and represent the instructional design process. In general, learning design is an approach that let us understand all the variables necessary for designing online activities or courses such as offender criteria, situational training objectives, training contexts, resources and integrated reuses, other courses involved, basic learning and teaching strategies [29].

Researchers believe that MOOCs will provide students with new opportunities to enroll in MOOCs from anywhere in the world without any preconditions, paving the way for new higher education innovations. Nonetheless, less is known about the design of this course and the use of the template of learning design in this course creation [30].

The use of IT facilities attracts people to educational programs [31]. Thus, it is important to have specialized knowledge and demonstrated academic skills in the area of traditional education such as college and skilled workforce in order to plan successful MOOCs will not be enough [32] and to avoid bad design, the course planner needs a set of concepts to direct decision-making and course content planning, technologies, procedures, organization. Although there is significant research on e-learning design principles [33], little effort has been made to extract the principles of instructional design from MOOCs.

2.3 Learning Attitude

Attitude refers to individual orientation, concepts, institutions, social processes, or circumstances, and demonstrates their beliefs and perceptions based on direct experience or observational learning [34]. Attitudes, including their education, can change every aspect of one's life. Learning behaviors of students determine their ability and willingness to learn [35]. Changing in mindset approaches to change a person's perspective could be designed and enforced [36]. Knowledge in behaviors helps people to understand other people and events surrounding them better.

According to [37], learning attitude is a very basic thing and also a very important thing to accomplish one's goals and to succeed in life. The design of learning attitude plays an important role in our lives, such as remaining interested, students should always be curious about things they do not know or know less. Consciousness, they should always be well aware of what's going on around them [38]. Always be ready to learn, anybody can be an instructor, a little boy, an old man, or anyone else, something, everywhere. Share the knowledge, people are going to ask the question about it, so we came across something we have doubts about as well.

Research has been carried out in post-compulsory education on the views of staff and students in independent learning [39]. For example, some graduates become individual learners depending on living conditions and modes of education. The good news is that teacher-dependent students will begin to develop self-study properties regardless of age [40]. Individual learners' features require interest where individual learners want to know more about the environment [41].

2.4 Learning Outcome

Learning outcome are reports explaining the knowledge or skills that should be learned by students at the completion of particular tasks, lectures, courses or services, and helping students understand that their knowledge and skills are valuable to them. We concentrate on the meaning and implementation of knowledge and skills ability, helping students interact and assess learning in different contexts [42]. Instead of relying on content exposure, learning outcome demonstrate how the information can be used by learners both in the context of the classroom and in a wider context.

To students, educators, and staff, learning outcome are important [43]. Learning outcome are more than just a few sentences added to current lesson plans or textbooks. Instead, designing learning outcomes and using them in a classroom system is an assessment of training and behavior that can improve student participation and learning. An academic scientist who led the development of results-based education, argues that the key point is the opportunity to explain reading [44]. Through concentrating on the use of knowledge and skills gained in classes and combining knowledge and skills with other areas of their lives, students are more interested in their tools for studying and reading.

The learning outcome package provides them with a consistent foundation for students to direct their studies and help them plan for their assessment, a point of articulation of degree characteristics at the course and university level. From this, statements on effective learning outcomes should identify important learning needs such as learning content, the range and type of knowledge, skills and values required. In fact, to be realistic and assessable, use clear language, accessible by students and other potential clients, and also connect to the qualities of standard and course graduates. Training climate beliefs can have a direct influence on learning outcomes, but research methodology can also

indirectly affect perceptions of learning outcome. Study by [45] confirmed both of these interactions with empirical results.

2.5 Student Performance Enhancement in Teaching and Learning

Measuring performance and productivity have benefited significantly amongst other both academicians and practitioners over the last two decades. Much progress has been made creating a performance measurement system [46]. To devise a measure of successful performance, one must first question the criteria for which performance measures should be met to be considered successful. Students are the main asset of different universities. Universities and students play an important role in their academic achievement in producing high-quality graduates. Academic achievement in results is the level of achievement of the academic target of the students that can be assessed and evaluated by assessment, appraisal, and other measures [47].

The performance of the student is an essential part of higher educational institutions. This is because one of the requirements for a high-quality university is based on its outstanding academic record [48]. In addition, students' performance prediction helps to provide students with the necessary learning support and guidance. Predicting student performance success, which are predictive features and methods. The first section would reflect on the key attributes used to assess students' performance, the most widely used attribute being students' demographic variables such as age and students courses [49].

MOOCs are an effective teaching resource and must have a strong bearing on the subject of student performance. The large quantities of data collected in MOOCs, allow large, heterogeneous classes of learners to evaluate online learning habits [50]. For MOOCs, various meanings are used to define the performance of students. Researchers also differentiate between completion and drop-off, where completion is identified as final examination students. A new typology has recently been developed, based on the student's initial intentions, to define student performance in MOOCs [52]. Students who do as much or even more than they originally intended will be considered successful in this typology. We therefore describe students' performance as meeting the student's original intentions or learning target.

2.6 Information Technology Theory

Since MOOCs are primarily technically based, the philosophy of design of information systems can provide a basis for understanding the criteria required for successful implementation of the program. Four stages of organizing, assessing, constructing and executing, including methods for system development [51]. Planning reflects on how far this issue can be addressed by its development, debating whether the program should be installed. The process of research decides the program that needs to be implemented to satisfy the user's desires and thus be successful.

The development process reflects on how these targets can be met by the system. The new program is being developed and introduced in the design phase. The emphasis of this research is on the system development design phase, which means the new system structure and evaluation of what the system needs to do and makes the path targets. According to [53], there are several computer and interface design principles that have two basic goals for using new systems.

First, the process must be user-friendly and second is device reliability, so it can be used with minimum levels of human input. It has been shown that this model extends to learning environments [54]. Perceived utility can be defined as a new system's ability to help people accomplish a specific outcome.

Transformative change can occur with the MOOCs. Moreover, they not only change the roles and relationships involved, but they also provide the technology to change the higher education infrastructure and landscape. Through creative destruction and technological creativity, MOOCs has the potential to transform learning.

2.7 Research Framework

A research framework has been developed by researcher for easier review and understanding the path of research. After reviewing the previous studies on the factors affecting the student performance, the research framework shown in the Figure 1, was designed for investigating the performance of business school students using MOOCs at UTeM.

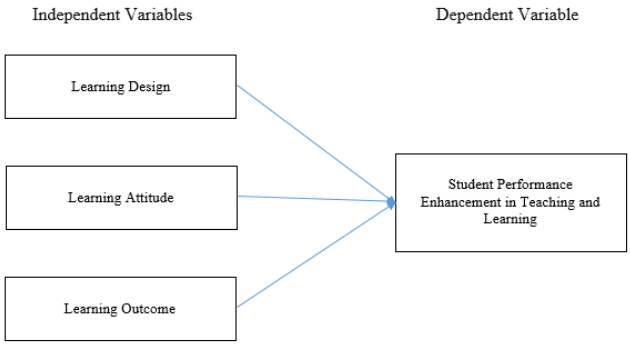

Figure 1: Proposed Conceptual Framework

Based on the proposed research framework, there are some hypotheses have been constructed to solve the research questions and to achieve the research objectives as following:

Hypothesis 1: There is a significant relationship between learning design and student performance enhancement in teaching and learning

Hypothesis 2: There is a significant relationship between learning outcome and student performance enhancement in teaching and learning

Hypothesis 3: There is a significant relationship between learning attitude and student performance enhancement in teaching and learning.

3. METHODOLOGY

Generally, quantitative research is associated with survey research strategy and will be conducted through questionnaires. In this research, the quantitative research has been chosen because the requirement of quantitative questionnaires was public social response and could provide enough data for research to make a generalization regarding the findings [56].

This research made use of quantitative research design to collect and evaluate data. As compared to qualitative data, quantitative data are more accurate and more statistically method that can be used in data analysis. The researcher collected primary data through questionnaires to large number of respondents of the research. On the other hand, quantitative research is testing objective theories by examining the relationship among variables which can be measured, typically on instruments, and that numbered data can be analyzed using statistical procedures.

In this survey, primary data collection was executed through questionnaires with the respondents who study in FPTT, UTeM. Therefore, the information from questionnaires are related to the investigation of the performance of business school student using MOOCs in FPTT respondents. The secondary data also contributed to the whole study. Researcher had browsed the website for the MOOCs learning content related to the students' performance, reading books, journal, article, research paper and news for further findings.

4. RESULTS

4.1 Reliability Analysis

Reliability analysis is to measure and examine the data reliability in order to produce good and accurate results. In this research, SPSS version 23 is used to run the reliability test and the result was used to evaluate the reliability of the independent variable. The reliability test with Cronbach's Alpha test below 0.50 is considered unacceptable, 0.5 to less than 0.6 is poor, 0.6 to less than 0.7 is questionable, 0.7 to less than 0.8 is acceptable, 0.8 to less than 0.9 is good and 0.9 and above is excellent. Furthermore, the Cronbach's Alpha coefficient which is below 0.50 will be rejected in this research.

Table 1: Reliability Test

Variable	No. of items	Item deleted	Cronbach's Alpha
Learning Design	4	-	0.810
Learning Outcome	6	-	0.835
Learning Attitude	8	-	0.916
Student Performance Enhancement in Teaching and Learning	8	-	0.951

Based on the results shown at Table 1, it indicates all the variables that has been chosen in this study are reliable. This is because all the Cronbach's Alpha value of all the variable are greater than 0.70. There is none of the items have to be deleted in this test as the reliability of inter-items are high. The highest level of Cronbach's Alpha is student performance enhancement in teaching and learning (0.951) while the lowest level of Cronbach's Alpha is learning design (0.810).

4.2 Multiple Linear Regression (MLR)

4.2.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.853[a]	0.727	0.725	0.31240

a. Predictors: (Constant), Learning Design, Learning Outcome, Learning Attitude.

b. Dependent Variable: Student Performance Enhancement in Teaching and Learning.

Table 2: Model Summary of Multiple Regression

Model of MLR is used to apply and describe a dependent variable and independent variables which are strived to the model of the relationship between two or more explanatory variables and response variable by fitting linear equation to observed data. Table 2 demonstrates the relationship between dependent and independent variables in this study. According to the model summary of regression analysis, it shows that R value is 0.853 and the value for R square is 0.727 which means it presents 72.7% of total influence on students' performance enhancement in teaching and learning that was explained by the three independent variables in this study which are learning design, learning outcome and learning attitude; while there also still left 0.273 (27.3%) are influenced by other independent variables. Besides that, adjusted R square only indicates 0.725 and the value is hold for 72.5%. Last but not least, the standard error of this study is estimated for 0.312.

4.2.2 ANOVA

Table 3: ANOVA for Multiple Regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	90.808	3	30.269	310.157	.000[b]
	Residual	34.060	349	.098		
	Total	124.868	352			

a. Dependent Variable: Student Performance Enhancement in Teaching and Learning.

b. Predictors: (Constant), Learning Design, Learning Outcome, Learning Attitude.

ANOVA analysis is regarding the collection of statistical model which applied to analyze the differences among group means and their associated procedures such as "variation" among and between groups which are very useful for testing about three or more variable means for statistical significance towards the exact research study. Table 3 above shows ANOVA testing for all the variable. The result of F-value indicates 310.157 [F = (3,196) = 310.157] and the P-value is 0.000 (P < 0.05) which is significant at 0.05 alpha level with the degree of freedom (df) is 3. Besides, regression sum of squares is 90.808 and with mean square of 30.269. Moreover, the degree of freedom in the residual line is 349 and expressed that 349 of freedom have to be completed. Next, there is only 352 of the total number is extracted the responses minus 1.

4.2.3 Coefficients

Based on the Table 4, variable of learning design shows that Beta (β) value 0.133, t = 2.870 and p-value = 0.004. Which means p-value for the learning design is less than probability level of 0.05 (P < 0.05), therefore the hypothesis for H1 is accepted at significant level. Hence, there is a significant relationship between learning design and student performance enhancement in teaching and learning.

Next, the Beta (β) value for learning outcome indicates 0.004, t = 0.081 and p-value = 0.936. Which mean p-value for the learning outcome was more than probability level of 0.05, therefore there is no significant relationship between learning outcome and student performance enhancement in teaching and learning and the hypothesis of H2 is rejected.

Table 4: Coefficients for Multiple Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.255	0.131		1.949	0.052
	Learning Design	0.133	0.046	0.126	2.870	0.004
	Learning Outcome	0.004	0.048	0.003	0.081	0.936
	Learning Attitude	0.797	0.045	0.757	17.867	0.000

a. Dependent Variable: Student Performance Enhancement in Teaching and Learning.

Besides that, learning attitude shows that Beta (β) value 0.797, t = 17.867 and p-value = 0.000. Which mean p-value for the learning attitude was less than probability level of 0.05 (P < 0.05), therefore the hypothesis for H3 is accepted at significant level. Hence, there is a significant relationship between learning attitude and student performance enhancement in teaching and learning. The highest standardized beta value in this study is learning attitude (0.797), followed by learning design (0.133), and learning outcome (0.004).

5. DISCUSSION

Multiple Regression analysis are used to study the objective of this research which is to identify the main factors that contribute to students' performance enhancement in teaching and learning. The MLR demonstrated the relationship between dependent and independent variables. According to the model summary of regression analysis, shown R value is 0.853 and the value for R square was 0.727 which means it accounted 72.7% of total influence on student performance enhancement in teaching and learning.

The main factor that contributed to students' performance enhancement in teaching and learning is learning design and learning outcome. Learning attitude was the most significant relationship due to students' performance enhancement in teaching and learning because learning attitude showed that Beta (β) value 0.797 and p-value = 0.000. Which mean p-value for the learning attitude was less than probability level of 0.05 (P < 0.05), therefore learning attitude was the most significant relationship.

This is supported by the positive relationship studies on the relationship between learning attitudes of students and academic performance of students [57]. The impacts were the students' attitude toward their academic performance, such as follow the course and able to accomplish the course activities at their own pace.

6. CONCLUSION

Based on the findings of the research, it can be concluded that the learning attitude and learning design are the significant influencing factors on the performance of business school students using MOOCs in FPTT. Learning design effective on students' performance because learning design is the official description of the individual involved in the learning process, the resources and the environment used to achieve specific learning goals, and the sequence of learning activities to be carried out. Learning attitude also significantly related to student's performance because learning behaviors of students determine their ability and willingness to learn. Learning outcome does not have enough support to be significant to student's performance because individuals have different learning styles, traits, abilities and interests in how

the learning outcome is taken into consideration and interpreted. In a nutshell, this research will be helpful for the higher education institutions to plan what should they do to make the MOOCs course more interesting and attract lecturer and students to use it rapidly in order to increase the students' performance enhancement in teaching and learning.

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