The Acceptance of Blackboard Open LMS in LPU-Laguna: An Empirical Study Based on UTAUT

Julliah Capuchino, Regina Eunice Lim, Christopher Dennis Catapang
Bachelor of Science in Business Administration major in Marketing Management

ABSTRACT

Blackboard Open Learning Management System (LMS) is the online learning and teaching platform of Lyceum of the Philippines – Laguna. While school has initiated efforts to introduce blended learning among its students, faculty adoption has been a challenge. It is in this light that this research is aimed to investigate users acceptance and use of Blackboard Open LMS among academics. It is composed of 58 college teachers in different department as respondents. This study adopts the Unified Theory of Acceptance and use of Technology (UTAUT) Model which developed by Venkatesh et al. (2003) to assess the perception of teachers in this technology. Quantitative and correlation methods were used in this study to collect the data information needed. The data were analyzed using Structural Equation Modelling (SEM) method to examine the hypothesized research model. The findings of the study found that the best predictor to behavioural intention of teachers to use Blackboard Open LMS is based on the facilitating condition. Another variable that has to be considered that influence the intention of teachers in using Blackboard Open LMS is the social influence. Effort Expectancy has a minimal factor that influence the teachers to use Blackboard Open LMS and the performance expectancy suggests that it does not influence to the behavioural intention of teachers in using the Blackboard Open LMS.

Keywords: *Blackboard Open Learning Management System, Unified Theory of Acceptance and Use of Technology, Facilitating Condition, Social Influence, Performance Expectancy*

INTRODUCTION

The use of LMS in the Philippines may still be considered to be in the growth stage. The availability of open source platforms have democratized the use of learning management. However, several past studies discovered slow internet connectivity as one of the major obstacles of LMS adoption in the Philippines. According to Akamai's State of the 2017 Internet report, Philippines is among the country that have slowest internet speed in the world with an average internet connection speed of 5.5 Mbit/s, which is the lowest average connection speeds among surveyed Asia Pacific countries/regions (Belson, 2016). The state of digital connectedness of may affect the extent of LMS adoption, as this technology is dependent on access to hardware and internet connectivity. Furthermore, the lack of experience and exposure to technology incite both teachers and students to reluctantly use the technology, and see it as additional work rather than extension of the learning environment.

In early 2018 Lyceum of the Philippines Laguna (LPU), adopted Blackboard Open LMS (BB LMS) to improve the quality of teaching and learning. The institution offering blended programs, where both content and assessments were accessible solely using BB. The school initiated a plan to simplify, standardize and measure LMS use primarily among its faculty members, believing that as long as teachers bring their online modules to life, then students who are inherently more adapt to technology, will follow suit. But adoption did not come instantaneous, as resistance was felt across the demographics of the teaching personnel. Using analytics, LPU was able to measure real time adoption among teachers, and the result was less than acceptable. This lead to a direct inquiry through series of dialogues which revealed interesting concerns such as, lack of confident on use of technology, low internet connection, and even strong perception of LMS being just duplication of work. It is in this light that this research was conducted, to verify the factors that affect individual motivation to use the learning management system in teaching and learning.

The Unified Theory of Acceptance and Use of Technology is a unified model offered by Venkatesh, Morris, David and David in the year 2003. "UTAUT is a definitive model that synthesized what is known and provides a foundation to guide future research in this area" (Venkatesh et al., 2003). UTAUT was developed through a review and consolidation of eight models that were used to predict and explain behaviors (Theory of Reasoned Action, Technology Accepted Model, Motivational Model, Theory of Planned Behavior, a combined Theory of Planned Behavior/Technology Acceptance Model, Model of Personal Computer Use, Diffusion of Innovations Theory, and Social Cognitive Theory) (Venkatesh et al., 2003; Samaila et al., 2017). Using three points of measurement, Venkatesh et al (2003) found that UTAUT exceed all the eight models explained about 70% of variance in behavioral intention. According to Venkatesh et al. (2003), the UTAUT model consists of four constructs (Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Condition) that have impacts in predicting user's intention and behaviors relating to technology acceptance and use. Furthermore, UTAUT had one major difference to its precursors was that UTAUT proposed four moderators (gender, age, experience, and voluntariness) to enhance the predictive model (Bouznif 2018; Dwivedi et al., 2019).

Conceptual Framework

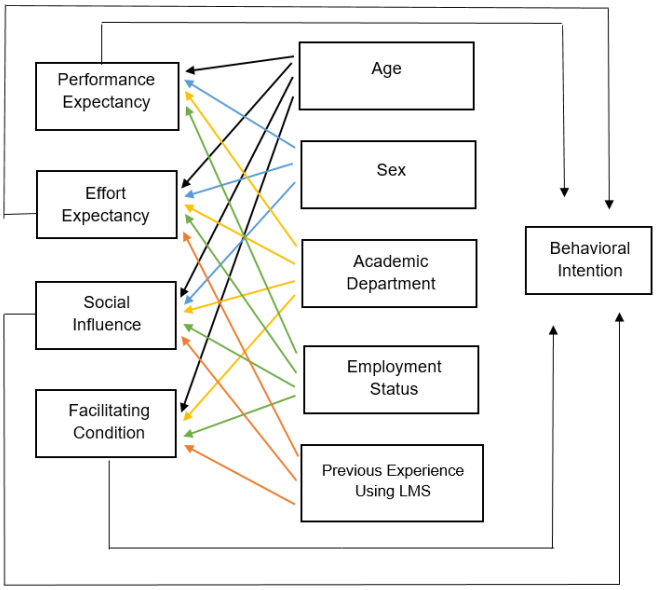


Figure 1. Conceptual Framework of the Study

This conceptual framework was inspired by the UTAUT Model (Figure 1) proposed by Venkatesh et al., (2003). UTAUT framework is well suited to the context of this study since it is very popular and widely used to predict behavioural intention for the adoption of technology. Venkatesh along with many other researchers illustrated that user's behavioural intention are likely to be predicted by performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). These four constructs significantly predict the behavioural intention of the respondents. Age, sex, academic department, employment status and previous experience using LMS are the moderators, which have no direct influence on behavioural intention, but have direct effect on independent variables. In the study of Venkatesh et al., (2003) sex has no effect in facilitating condition and previous experience using LMS has no effect in performance expectancy. PE shows the degree to which teachers considered that using BB Open LMS will help them to do well-professionally. PE is the most important indicator of behavioral intention, regardless of whether or not technology use is intentional. The EE is teachers' belief

level on how to use the technology in BB Open LMS easily, or whether this technology is user-friendly. SI is defined the degree of individual teacher sees that his or her coworkers and others perceive that the usage of BB Open LMS as important. FC is the teacher's opinions that an organizational and technical infrastructure happens to support the use BB Open LMS. To put it simply, this is an individual's view of the respondents if they have the open resources (tools, equipment, expertise, etc.) that is needed to use the system. The dependent variable in this model include behavioural intention, which represents teachers' intention of using BB Open LMS in the future.

Objectives of the Study

This research study is to understand user's acceptance of LMS, and to examine the relationship among the four constructs in the UTAUT model. The researchers aim to determine the demographic profile of the respondents in terms of age, sex, academic department, employment status and previous experience using Blackboard Open LMS, to determine the level of agreement to constructs of the UTAUT model, to determine which among the constructs in the UTAUT can influence the behavioural intention of teachers, and to determine which among the demographic variables age, sex, academic department, employment status and previous experienced using LMS influence the behavioural intention of teachers.

METHODOLOGY

Quantitative and correlation methods were used in this study to collect the necessary data information needed. Descriptive method is used to describe data and characteristics about the population. The researchers selected the college teachers of Lyceum of the Philippines – Laguna to be the respondents of the study, preferably all the college teachers per department both part time and full time. Due to changes in employees and semester, out of 102 teachers as respondents only 58 teachers responded: 6 respondents from Health Sciences (BSN, BSRT, BSMT, BS Pharma), 19 respondents from Arts and Sciences (Gen. Education, Communication and Multimedia Arts, Psychology, Social Sciences, Natural Sciences), 8 respondents from Business Courses (Business, Accountancy, Customs), 11 respondents from Engineering and Computer Studies and 14 respondents from Tourism & Hospitality (HRA,CAKO,CLOHS,ITTM) of Academic Department of LPU – Laguna.

Data was gathered by the researchers with the help of survey questionnaire as a tool that is composed of demographic profile and survey questions. Part one which is the demographic profile contains the basic characteristics of a teacher such as age, sex, academic department, employment status and previous experience using LMS of the respondents because this will help the researchers to determine which among the demographic variables influence the behavioral intention of teachers and if there is a significant difference in the responses of teachers to constructs according to demographic variables. In part two, it is a set of questions in a Likert's Four-point scale that was formulated measuring either positive or negative response to a statement and to measure the frequency of experience of the respondents towards the Blackboard Open LMS of LPU – Laguna; 1 represents Strongly disagree, 2 represents Disagree, 3 represents Agree, and 4 represents Strongly Agree responses. The questionnaire contained 20 questions in performance expectancy, effort expectancy, social influence, facilitating condition and behavior intention. This area pinpoints the four constructs of UTAUT. This will give more justification to determine if which among the constructs in the UTAUT can influence the behavioral intention of teachers and to know if there is a significant relationships between the four constructs and behavior intention. Cronbach's Alpha reliability as used in the questionnaire, the essence of data must be analyzed beforehand any test or survey to guarantee reliability. (Tavakol and Dennick, 2011) The value in the Cronbach's Alpha result of the survey was .894, therefore, the survey questionnaire was acceptable and reliable. Different statistical tools were used by the researchers to measure the data and information collected from the respondents. Frequency Distribution and Percentage Method were used to determine the demographic profile of the target respondents according to age, sex, academic department,

employment status and previous experience using LMS. Weighted Mean was used to determine the level of agreement to constructs of the UTAUT model. Moreover, Regression was used to determine if which among the four constructs in the UTAUT can influence the behavioral intention of teachers and to determine if there is also significant relationship between the four constructs of the UTAUT model and behavioral intention. Structural Equation Modelling (SEM) was used by the researchers to examine if which among the moderating variables: age, sex, academic department, employment status and previous experience using LMS influence the behavioral intention of teachers.

RESULTS AND DISCUSSIONS

The demographic profile of the respondents is looked upon in terms of sex, age, academic department, employment status and previous experience using LMS. Table 1 shows the demographic profile of the respondents. The data gathered shows that male is more engaged in answering the survey and also ages 20 to 29 years old. In the study of Wang, Wu, and Wang (2009) majority of their respondents are ranging between 21 – 30 years old, the researchers found out that 21 – 30 years old were significant in all determinants of behavioural intention, other than social influence and effort expectancy.

Table 1. Demographic profile of respondents

Category	Frequency	Percent
Sex		
Male	28	48.28
Female	30	51.72
Age		
20-29	33	56.90
30-39	11	18.96
40-49	7	12.07
50-59	4	6.90
60-69	3	5.17
Academic Department		
Health Science	6	10.34
Arts and Sciences	19	32.76
Business Courses	8	13.79
Engineering and Computer Courses	11	18.97
Tourism and Hospitality	14	24.14
Employment Status		
Full Time	34	58.62
Part Time	24	41.38
Previous experience		
With experience	39	67.24
Using LMS		
Without previous experience	19	32.76

Table 2 shows the performance expectancy of the respondents in blackboard open LMS. The data gathered shows that the respondents strongly agreed that they find blackboard open LMS are useful in their teaching with a mean of 3.33. The respondents which is the teachers of King Saud University agreed that it is easy to access and use the LMS Blackboard e-learning software (Alturki and Aldraiweesh, 2016).

Followed by with a mean of 3.03, the respondents agreed that blackboard open LMS enables the teachers to have faster communication with their students, through blackboard open LMS the communication of the teachers and students are improving and also, the respondents agreed that through blackboard open LMS, it is easier for the teachers to communicate with their students. Blackboard LMS have several features in terms of communicating with students. Four of them are announcements, discussions, virtual classroom and emails. Teachers can use blackboard LMS to post announcement, send class discussion, virtual classroom and send emails to their students, it can be individual, group, or to all students (Bradford et al., 2007).

Table 2. Performance expectancy of the respondents in Blackboard Open Learning Management System

Performance Expectancy	Weighted Mean	Verbal Interpretation
I find Blackboard Open LMS (BB LMS) useful for my teaching.	3.34	Strongly Agree
Using BB LMS enables me to have faster communication with my students.	3.03	Agree
Using BB LMS improves my communication with my students.	3.03	Agree
If I use BB LMS, it will make it easier for me to communicate with students.	3.03	Agree
Composite Mean	3.11	Agree

Legend: 1.00 – 1.75 strongly disagree; 1.76 – 2.50 Disagree; 2.56 – 3.25 Agree; 3.26 – 4.00 Strongly Agree

Table 3 shows the effort expectancy of the respondents in blackboard open LMS. The data gathered shows that the respondents agreed in the interaction with blackboard open LMS service is clear and understandable with a mean of 3.19. Chow et al., (2015) found out that most of their respondents agreed that the interaction with the mobile application was clear and understandable. The respondents agreed that it is easy for the teachers to develop the skills needed to use blackboard open LMS with a mean of 3.03. Lastly, the respondents agreed that blackboard open LMS are easy to use and easy to learn how to operate with a mean of 2.93. Based on the researchers (Alkhaldi and Abualkishik, 2019) the respondents agreed that blackboard is easy to use, the researchers also reported a positive impact of effort expectancy on the intention to adopt blackboard LMS.

Table 3. Effort Expectancy of the respondents in Blackboard Open Learning Management System

Effort Expectancy	Weighted Mean	Verbal Interpretation
My interaction with BB LMS service is clear and understandable.	3.19	Agree
It was easy for me to develop the skills needed to use BB LMS.	3.03	Agree
I found BB LMS easy to use.	2.93	Agree
It was easy to learn how to operate BB LMS.	2.93	Agree
Composite Mean	3.02	Agree

Legend: 1.00 – 1.75 strongly disagree; 1.76 – 2.50 Disagree; 2.56 – 3.25 Agree; 3.26 – 4.00 Strongly Agree

Table 4 shows the social influence of the respondents in blackboard open LMS. The data gathered shows that the respondents agreed in people who are important to the teachers would think that teachers should use blackboard open LMS with a mean of 3.17. Followed by people who influence in the behaviour of the teachers would think that teachers should use blackboard open LMS with a mean of

3.15. Teachers have been supported in the use of blackboard open LMS with a mean of 3.14. And lastly, few of the respondents agreed that the program administrators have been helpful in the use of blackboard open LMS with a mean of 3.10.

Table 4. Social influence of the respondents in Blackboard Open Learning Management System

Social Influence	Weighted Mean	Verbal Interpretation
People who influence my behavior would think that I should use BB LMS.	3.15	Agree
People who are important to me would think that I should use BB LMS as it would help me to teach.	3.17	Agree
The program administrators have been helpful in the use of BB LMS.	3.10	Agree
In general, I have been supported in the use of BB LMS.	3.14	Agree
Composite Mean	3.14	Agree

Legend: 1.00 – 1.75 strongly disagree; 1.76 – 2.50 Disagree; 2.56 – 3.25 Agree; 3.26 – 4.00 Strongly Agree

Table 5 shows the facilitating condition of the respondents in blackboard open LMS. LPU teachers are aware to the new technology and trust that the technical infrastructure does exist to support them when using blackboard open LMS. The data gathered shows that majority of the respondents were strongly agreed in having a basic computer knowledge to use in blackboard open LMS with a mean of 3.36. Followed by with a mean of 3.27, the respondents strongly agreed in blackboard open LMS fits well in teaching and courses that they teach. While some of the respondents agreed on having a resources necessary to use (Wifi connection, laptop, computer and cellphone) with a mean of 3.15 and availability of the specific person for assistance in terms of Blackboard open LMS difficulties (MIS support) with a mean of 3.14.

Table 5. Facilitating conditions of the respondents in Blackboard Open Learning Management System

Social Influence	Weighted Mean	Verbal Interpretation
I have the resources necessary to use BB LMS (electricity e.g., WiFi/laptop/computer/cellphone).	3.15	Agree
I have the knowledge necessary to use BB LMS (e.g., basic computer knowledge).	3.36	Strongly Agree
I think using BB LMS fits well with my teaching, and courses that I teach.	3.27	Strongly Agree
A specific person is available for assistance with BB LMS difficulties (MIS Support)	3.14	Agree
Composite Mean	3.23	Agree

Legend: 1.00 – 1.75 strongly disagree; 1.76 – 2.50 Disagree; 2.56 – 3.25 Agree; 3.26 – 4.00 Strongly Agree

Table 6 shows the behavioral intention of the respondents in blackboard open LMS. The data gathered shows that majority of the respondents were strongly agreed that the teaching staff of LPU-L are intent to use blackboard open LMS to create online tasks (quizzes, assignments and online forums) very soon and intent to explore other learning tools and capabilities of blackboard open LMS near future with a mean of 3.36. This result confirmed by the study of Hsu (2012) that majority of the respondents have

intention to use learning management system. Also, it shows that there is significant determinant of actual use of LMS in behavioral intention. The respondents were strongly agreed on the teaching staff of LPU-L are intent to use blackboard open LMS to share content with their students very soon with a mean of 3.29. Lastly, the respondents agreed that the teaching staff of the LPU-L are tent to fully use the blackboard open LMS with a mean of 3.22.

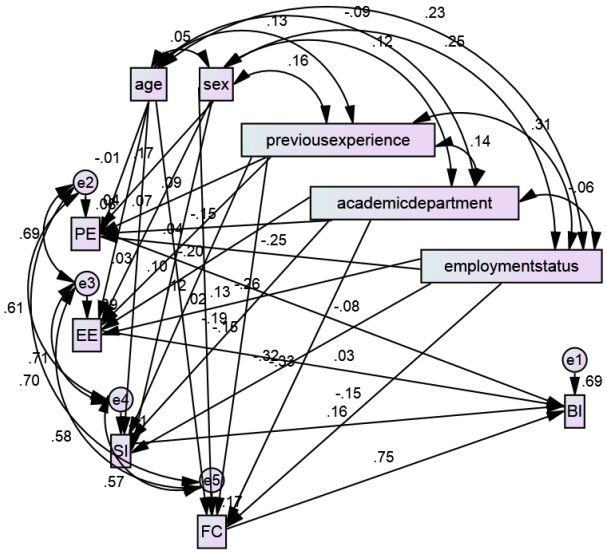
Table 6. Behavioral intention of the respondents in Blackboard Open Learning Management System

Social Influence	Weighted Mean	Verbal Interpretation
As a member of the teaching staff of LPU-L, I intend to full use BB LMS very soon.	3.22	Agree
As a member of the teaching staff of LPU-L, I intend to use BB LMS to share content with my students very soon.	3.29	Strongly Agree
As a member of the teaching staff of LPU-L, I intend to create online tasks like quizzes, assignments, and online forums very soon.	3.36	Strongly Agree
As a member of the teaching staff of LPU-L, I intend to explore other learning tools and capabilities of BB LMS in the near future.	3.36	Strongly Agree
Composite Mean	3.31	Strongly Agree

Legend: 1.00 – 1.75 strongly disagree; 1.76 – 2.50 Disagree; 2.56 – 3.25 Agree; 3.26 – 4.00 Strongly Agree

Figure 2 shows that the identified multiple model indices were satisfied and acceptable. Thus, the researcher ended up with the structural equation model illustrated in the previous page. The model shows that the best predictor to behavioural intention of teachers to use BB LMS is based on the facilitating condition because it has the highest coefficient among the four variables using the UTAUT model. Venkatesh et al. (2012) stated that facilitating condition refers to users' perception of the resources and support available to perform a behavior. This implies that if the teachers have the necessary resources like good WiFi connection, laptop etc. necessary knowledge to use BB LMS and specific person who is available for assistance with BB LMS, their intention to fully use BB LMS will materialize. It also infer in the model that facilitating condition has 69% contributory factor to behavioural intention of teachers in using BB LMS. This result are similar to the findings of Moonsamy and Govender (2018) it shows that the most significant factor is the facilitating condition and addressed for the successful adoption and use of BB LMS. Another variable that has to be considered that influence the intention of teachers in using BB LMS is the social influence. Study shows that a decision of individual including students and teachers is normally influenced by peers or by other people (Abu-al-aish & Love, 2013). It infers that teachers would have been encourage to use BB LMS if there would be some people who could influence and encourage them the importance of using BB LMS in teaching and a program administrator who should have been helpful enough and supportive in the use of BB LMS. In terms of effort expectancy, it has a minimal factor that influence the teachers to use BB LMS and the performance expectancy suggests that it doesn't influence/contributes to the behavioural intention of teachers in using the BB LMS. This findings also agreed by the study of Nicholas-Omoregbe et al., (2017) and Indipenrian et al. (2015), that performance expectancy has no significant influence on behavioural intention to use LMS. However, this result did not agree with the study of Kolog et al., (2015). In terms of the moderating variables to the relationship of the performance expectancy, effort expectancy, social influence and facilitating condition to behavioural intention of teachers in using BB LMS. The figure above showed that academic department and previous experience of the teachers mediates or contribute to the relationship between the

facilitating condition and behavioural intention of teachers in using BB LMS. Further, to improve and satisfy the model fit the structural equation model illustrated that relationship of four variables in the construct of UTAUT model. Facilitating condition has correlation to performance expectancy, effort expectancy and social influence. Similar relationship goes with performance expectancy to effort expectancy and social influence and effort expectancy to social influence.



Legend: PE – performance expectancy; EE – effort expectancy; SI – social influence; FC – facilitating condition

Figure 2. Structural Equation Model on the Behavioral Intention of Teachers in using Blackboard open LMS

CONCLUSIONS

The study identified factors that influence the acceptance of BB LMS by teachers at LPU Laguna by considering the four constructs from the UTAUT model – performance expectancy, effort expectancy, social influence and facilitating conditions. However, in the structural equation model, it shows that the best predictor to behavioural intention of teachers to use BB LMS is based on the facilitating condition since it has the highest coefficient among the four variables using the UTAUT model. Followed by the social influence that has to be considered that influence the intention of teachers in using the BB LMS. The variable that has a minimal factor that influence the teachers to use BB LMS is the effort expectancy. The study also shows that performance expectancy doesn't influence to the behavioural intention of teachers in using BB LMS. Since most of the teachers did not agree that BB LMS is easy to use and using BB LMS enables them to have faster communication with the students. This may be the reason that not all teachers use BB LMS. In addition, it shows that moderating variables – age, sex, academic department, previous experience and employment status has connection with each other. And also the independent variables – performance expectancy, effort expectancy, social influence and facilitating condition has a connection with each other. Figure 3 shows that academic department and previous experience using LMS mediates to the relationship between facilitating condition and behavioural intention of teachers using BB LMS.

Recommendations

The recommendation based on the responds of the respondents is that the admin/director must conduct a workshop or seminar about using Blackboard Open Learning Management System to provide a

knowledge that is needed in order to use it properly. They must continue to encourage the faculty to use it more often that will allow them to provide content and to easily communicate with the students. And also, LPU – Laguna should provide stable internet/Wifi connection since not all the teachers and students have their internet at home. Additionally, the future researchers could look for other variable that might contribute to the behavioural intention since the R squared is only 69% and that means there's still 31% to look in other variable. It can be performance expectancy, effort expectancy or social influence. Since the performance expectancy doesn't influence to the behavioural intention of teachers in using BB LMS and effort expectancy has a minimal factor that influence the teachers to use BB LMS. The researchers suggested that it can be social influence since it has to be considered that influence the intention of teachers in using BB LMS. It will be interesting also to conduct a research about the usability of Blackboard LMS and comparative studies to contrast the use of BB LMS in different situation like between face-to-face and virtual education. Also, future researchers could also conduct or add another variable in the model of UTAUT to study the impact of the quality in terms of information, services and instructor.

REFERENCES

Abanilla-Del Mundo, S. J. (2019). Community Involvement in the Beach Tourism Industry in the Province of Batangas, Philippines. *International Journal of English Literature and Social Sciences (IJELS)*, *4*(2).

Abu-Al-Aish, A., & Love, S. (2013). Factors influencing students' acceptance of m-learning: An investigation in higher education. *The International Review of Research in Open and Distributed Learning*, *14*(5).

Alkhaldi, A. N., & Abualkishik, A. M. (2019). Predictive Factors for the Intention to Adopt a Mobile Blackboard Course Management System: The Case Study of University of Hai'l in Saudi Arabia. Indian Journal of Science and Technology, 12(19), 1-12.

Alturki, U. T., & Aldraiweesh, A. (2016). Evaluating the usability and accessibility of LMS "Blackboard" at King Saud University. Contemporary Issues in Education Research (CIER), 9(1), 33-44.

Belson, D. (2016). Akamai's State of the Internet: Q1 2016 Report. Retrieved on May, 29, 2017.

Bouznif, M. M. (2018). Business students' continuance intention toward Blackboard usage: An empirical investigation of UTAUT model. International Journal of Business and Management, 13(1), 120.

Bradford, P., Porciello, M., Balkon, N., & Backus, D. (2007). The Blackboard learning system: The be all and end all in educational instruction?. Journal of Educational Technology Systems, 35(3), 301-314.

Chow, E. H., Thadani, D. R., Wong, E. Y., & Pegrum, M. (2015). Mobile technologies and augmented reality: early experiences in helping students learn about academic integrity and ethics. International Journal of Humanities, Social Sciences and Education, 2(7), 112-120.

Dudovskiy, J. (n.d.). Descriptive Research. Retrieved 05 24, 2018, from www.research-methodology.net/: https://research-methodology.net/descriptive-research/

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2017). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. Information Systems Frontiers, 1-16.

Hsu, H. H. (2012). The acceptance of Moodle: An empirical study based on UTAUT. *Creative Education*, *3*, 44.

Indipenrian, B. N. V., Subroto, B., & Rahman, A. F. (2015). Analysis of behavioral intention on ABC system adoption: Model of information systems technology and success acceptance. *Journal of Economics, Business, & Accountancy Ventura*, *18*(3), 403-416.

Kolog, E. A., Sutinen, E., Vanhalakka-Ruoho, M., Suhonen, J., & Anohah, E. (2015). Using unified theory of acceptance and use of technology model to predict students' behavioral intention to

adopt and use E-counseling in Ghana. *International Journal of Modern Education and Computer Science*, *7*(11), 1-11.

Moonsamy, D., & Govender, I. (2018). Use of Blackboard Learning Management System: An Empirical Study of Staff Behavior at a South African University. *EURASIA Journal of Mathematics, Science and Technology Education*, *14*(7), 3069-3082.

Nicholas-Omoregbe, O. S., Azeta, A. A., Chiazor, I. A., & Omoregbe, N. (2017). Predicting the adoption of e-learning management system: A case of selected private universities in Nigeria. *Turkish Online Journal of Distance Education*, *18*(2), 106-121.

Samaila, K., Abdulfattah, K., & Amir, A. F. I. Learning Management System Usage with Postgraduate School: An Application of UTAUT Model.

Solutions, S. (2016). Correlation (pearson, kendall, spearman). *Statistics Solutions*, *accessed June*, *3*, 2016.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, *2*, 53.

Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. 2003. "User Acceptance of Information Technology: Toward a Unified View," MIS Quarterly (27:3), pp. 425-478

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Infotrmtion Technology: Extending the Unified Theory of Acceptance and use of Technology. MIS Quarterly, 36, 1, 157-178.

Wang, Y. S., Wu, M. C., & Wang, H. Y. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British journal of educational technology*, *40*(1), 92-118.