

A Study on Barriers Contributing to an Effective Online Learning Among Undergraduates' Students



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Abstract

The purpose of technology is to ease people's daily routines. Technology is applied everywhere, even in the field of education. The numbers of students who join at least one online course are increasing every year. This study is established to find out the factors and barriers of online learning. Barrier is defined as something (such as fence or natural obstacle) that prevents processes from being complete or running smoothly. Even before the using of online learning, it is imperative to address the barriers that can cause failure in online education. Hence, this research aims to investigate the relationships between attitude, technology skills, personal skills and interruption with the barriers contributing to effective online learning among undergraduates. Simple random sampling technique was employed to collect the data. Four hundred one undergraduates of UiTM Johor became the respondents of this study. Partial Least Squares (PLS) method was used to analyze the data. The results indicated that attitude and technology skills were significant determinants to the barriers of effective online learning among students. Findings from the study could benefit higher learning institutions to enhance and improve this platform in the future.

Keywords: *Online Learning; Technology; Education-Learning*

INTRODUCTION

Nowadays, most higher learning institutions have begun the process of establishing online learning sessions. Referring to Donoghue & Worton (2002) the use of internet has created a good market potential for higher education institution. Through online learning methods, universities can expand their potential by leveraging opportunities for students from various locations. Although there are many challenges in implementing the online learning system using online methods, many higher learning institutions have successfully developed online learning as a new platform for the delivery of knowledge. The online learning system is defined as distance learning, online learning, and network learning (Wilson, 2001). Online learning methods help promote interaction between lecturers and students (Holley, 2002) The various methods can be used in online learning such as a video, digital slide shows, digital graphic info



and others. The use of technology in learning sessions have risen more creative ideas for lecturers to convey knowledge. It causes universities to require considerable efforts to introduce online learning courses. Higher learning institutions need to keep up with technological changes if they do not want to miss out (Volery, 2000). In realizing the implementation of online learning at higher learning institutions, the roles of academics and students are important. They need to support the universities to further develop the platform, and combine this role by creating a conducive environment for online learning (O'Hearn, 2000). The successfulness of online learning is difficult to achieve without interaction and support from lecturers and students. Volery (2000) stated that interactions between lecturers and students dominate the learning environment.

PROBLEM STATEMENT

Nowadays, there is an increase in the demand to conduct online learning (Lloyd, Byrne, & McCoy, 2012). The increase in online course offerings by higher learning institutions also indicate that there is a high and positive demand for this platform. This is a good opportunity for higher education institutions to take a step in exploring the potential of online learning methods. However, not all online learning is successful, because there are obstacles that hinder their success. Higher learning institutions need to assess and control the barriers that exist when they implement online learning. Online learning development certainly requires support from the higher learning institutions' management such as training, assessment and regulation (LeBlanc, Pruchnicki, Rohdieck, Khurma, & Dasta, 2007). Nevertheless, to maximize the potential of online learning, higher learning institutions should come out with initiatives to investigate the critical success factors related to e-learning model (Fauziah Sulaiman, 2014). Hence, this study examines the barriers contributing to effective online learning among undergraduates.

RESEARCH OBJECTIVE

- a) To investigate the relationship between attitude and the barriers contributing to an effective online learning among undergraduates' students
- b) To examine the relationship between technology skills and the barriers contributing to an effective online learning among undergraduates' students
- c) To examine the relationship between personal skills and the barriers contributing to an effective online learning among undergraduates' students
- d) To investigate the relationship between interruptions and the barriers contributing to an effective online learning among undergraduates' students

LITERATURE REVIEW

ATTITUDE TOWARDS BARRIERS ON ONLINE LEARNING

Attitude towards online learning is an indication about people's feelings in the direction of the online learning usage. It is considered as a summary of evaluation whether the person likes or dislikes the usage of online learning (Sum, Hericko, Pusnik, & Polancic, 2011). With the increasing usage of this platform across time, it has now become a trend. Most studies on the practice prove that there is a positive impact in term of online learning usage across several levels of education, starting from childhood until becoming a university student (Peytcheva-Forsyth, Yovkova, & Aleksieva, 2018). Since students show good attitude towards online learning, hence it is a good sign for higher learning institutions to penetrate into this platform (Aziz, Musa, Ghul, Aziz, & Khalid, 2018).



TECHNOLOGY SKILLS TOWARDS BARRIERS ON ONLINE LEARNING

Technology skills is one of the determinants used to measure the effectiveness of online learning. It involves computer skills, online skills and computer application literacy (Fauziah Sulaiman, 2014). To succeed in online learning, lecturers and students need to develop the skills to help them use this technology (Oliver, 2001). Universities need to provide complete infrastructure facilities to support online learning activities (Pirani, 2004). Students and lecturers must have technical skills and knowledge to handle learning tools in order to be more effective. The lack of skills will make online learning sessions' learning objectives to be difficult to achieve as they need to be supported by technological knowledge to assist execution.

INTERRUPTIONS TOWARDS BARRIERS ON ONLINE EARNING

Online learning methods require a good internet access. However, the interruption may come in many forms. Most of the students do not have full technological access for online learning to due to limitations such as living in rural areas, indigenous learners, students with disabilities, and mature age learners (Oliver & Towers, 2000). For them, moves to online learning often carry more barriers than opportunities. Access to online courses is also very important and need to be supported with a complete infrastructure (Oliver, 2001). Access networks need to be able to be reached, not only by the students but to all parties. Hence, interruptions in various forms should be avoided so that the objective of achieving a successful online learning method can be achieved.

PERSONAL SKILLS TOWARDS BARRIERS ON ONLINE EARNING

The online learning method has transformed the original method of learning from face to face into contemporary ways. In fact, there are still many students who do not have skills and experiences to undertake online learning activities in their own ways (Oliver, 2001). They need to support themselves by improving personal skills in online settings and technology. According to Oliver & Towers (2000) , a study conducted by DEYTA reported that only 60% of university students specified their levels of ability and skills in the use of technology. The success of online learning depends on the skills of the students and the instructors; however, the university can assist them by providing training and skill development courses (Oliver, 2001).

BARRIERS ON ONLINE LEARNING

The purpose of technology is to ease people's daily routines. Technology is applied everywhere and there is no exception even to the field of education. The number of students who join at least one online course increases every year (Allen & Seaman, 2013). This study is established to find out the factors and barriers of online learning. Barrier is defined as something (such as fence or natural obstacle) that prevents a process from being complete or running smoothly. This study highlights some of the barriers like institution mission, hardware and software limitation, internet speed and professional support system, which are needed to ensure the success in delivering online courses. A study conducted by Muilenburg & Berge (2005) and Abramenska, (2015) highlighted some of the common barriers that contribute to effective online learning among students.

METHODOLOGY/MATERIALS

The data was analyzed using Partial Least Squares Model Analysis (PLS). Abdul, Yusserrie, & Ramayah (2014) and Akter, D'Ambra, & Ray (2011) recommended the PLS is suitable to test theoretical



conceptualization and the empirical validation. The data were analysed using the two steps which are confirmatory factor analysis and the structural model measurement. It was measured by examining the standard path coefficient and t-statistics ($t > 1.96$). Questionnaires were personally administered to ensure a high response rate. Using simple random sampling, a total of 401 respondents, comprising undergraduates' students from UiTM Johor participated in this survey.

RESULTS AND FINDINGS

SAMPLE PROFILES

The profiles of respondents presented the majority were females (77.3%), and only 22.7% is males. It also stated that 66.8% of the respondents in the range of 21 to 30 years old. Moreover, 28.2% of the respondents age is between 18 to 20 years old, which signified the second highest group. Majority of them was a bachelor degree student (72.3%), while 27.7% were a diploma student. From the results, it showed that 73.8% were a fulltime student and the rest were part time students (26.2%). 85.8% of respondents is from business management study background followed by IT and computer Science (9.7%).

MEASUREMENT MODEL

As suggested by Fornell & Larcker (1981), convergent validity can validate by calculating the item reliability, internal consistency, and average variance extracted (AVE). Item reliability can measure the loadings for each individual item. Table 1 shows the detailed of item loadings. The loadings are representing the correlation of the items with their respective constructs. The results shows all items are greater than 0.7 which can be considered as acceptable (Chin, Marcolin, & Newsted, 2003).

Table 1: Measurement Model

| Construct | Item | Loading | AVE | Internal Consistency |
|--------------------------|------|---------|-------|----------------------|
| Attitude | A1 | 0.796 | 0.613 | 0.888 |
| | A2 | 0.750 | | |
| | A4 | 0.728 | | |
| | A5 | 0.815 | | |
| | A6 | 0.821 | | |
| Barriers | B1 | 0.767 | 0.656 | 0.930 |
| | B2 | 0.840 | | |
| | B3 | 0.824 | | |
| | B4 | 0.811 | | |
| | B5 | 0.706 | | |
| | B6 | 0.858 | | |
| | B7 | 0.853 | | |
| Interruptions | I1 | 0.883 | 0.705 | 0.878 |
| | I2 | 0.802 | | |
| | I3 | 0.833 | | |
| Personal Skills | P1 | 0.894 | 0.741 | 0.934 |
| | P2 | 0.867 | | |
| | P3 | 0.855 | | |
| | P4 | 0.918 | | |
| | P5 | 0.760 | | |
| Technology Skills | T1 | 0.815 | 0.662 | 0.907 |
| | T2 | 0.799 | | |
| | T3 | 0.812 | | |
| | T4 | 0.804 | | |
| | T5 | 0.837 | | |

Table 2: Discriminant Validity

| Construct | A | B | I | P | T |
|-----------------------|--------|--------|--------|--------|-------|
| Attitude (A) | 0.783 | | | | |
| Barriers (B) | 0.633 | 0.810 | | | |
| Interruptions (I) | -0.185 | -0.085 | 0.840 | | |
| Personal Skills (P) | -0.229 | -0.129 | 0.531 | 0.861 | |
| Technology Skills (T) | 0.562 | 0.484 | -0.083 | -0.250 | 0.814 |

Table 2 shows that all the AVE values are above the value of 0.5. As referred to Average Variance Extracted (AVE), the largest value is 0.741 (personal skills) and the lowest is 0.613(attitude). Next, the internal consistency meets the criterion for a minimum value of 0.7. According to the revised result, it discovers the lowest internal consistency for interruptions (0.878) and the highest is personal skills (0.934). The high internal consistency values for all the constructs are confirmed by the reliability of the measurement model. Consequently, the measurement model has fulfilled all the three necessary criteria and achieved the convergent validity. Hence, these results clearly indicate that the items in each construct are highly associated and reliable. The first criteria of discriminant validity are assessed by calculating the square root of average variance extracted (AVE) and compared with the inter construct correlation. In order meet the discriminant validity criteria, the square roots of the AVE were calculated and represented in the main diagonal of Table 2. The off-diagonal elements represent the correlations among the latent variables. Barclay, Christopher Higgins, & Thompson (1995) stated a discriminant validity is achieved when the square root of the AVE of a construct is larger than its correlation with other constructs. Results from table 2 confirms the discriminant validity has been achieved. For the cross-loading matrix, it explained that all items are loaded higher on the construct. These results were measuring on any other constructs in the model. Therefore, the two criteria of discriminant validity were met.

RESULT OF HYPOTHESIS TESTING

Table 3 shows the hypothesis testing for a main model. The standardized path coefficient explains the direction of the relationship is either positive or negative. The t-value measures whether this relationship is significant or insignificant. The results of H1, H2, H3 and H4 representing the influence of attitude, interruptions, personal skills and technology skills on the barriers on online learning.

Table 3: Hypothesis Testing

| Hypothesis | Relationship | Standard Path Coefficient | t-value | P Values | Results |
|------------|-------------------------------|---------------------------|---------|----------|---------------|
| H1 | Attitude -> Barriers | 0.535 | 10.995 | 0.000 | Supported |
| H2 | Interruptions -> Barriers | 0.010 | 0.163 | 0.871 | Not Supported |
| H3 | Personal Skills -> Barriers | 0.037 | 0.722 | 0.470 | Not Supported |
| H4 | Technology Skills -> Barriers | 0.193 | 3.807 | 0.000 | Supported |

The results of hypothesis testing shows all variable for standard path coefficients are positive. The standardized path coefficient for H1 is 0.535 (t-value=10.995). The result was significance at $t > 1.96$. As for H2, the standard path coefficient is 0.010 (t-value =0.163). The result was accepted at $t < 1.96$. H3 explained the standard path coefficient is 0.037(t-value=0.722). The result was accepted at $t < 1.96$. Lastly for H4, the standard path coefficient is 0.193 (t-value=3.807). In conclusion, only two of the hypotheses were statistically significant which are H1 and H4).

CONCLUSION

The results presented through this study have shown that two significant variables of attitudes and technology skills are the main barriers of effective online learning. Attitude came out as the main barrier as most undergraduates had negative mindset towards online learning such as sudden increase in workload and having difficulties during the learning session. It is also proven as some students had issues with their time commitment, while facing the lack of confidence and anxiety of not having someone to guide them especially when the learning session involves complicated calculations or equations. Ever since grade school, most students were used with direct learning as it was the quickest way to grasp their lessons' concept and context. After knowing the basics, indirect learning or self-learning is much easier. As online learning could favor self-study, however, it might be difficult for late bloomers when they cannot cope with the others' progress. This could lead to emotional problems later on.

The lack of social interaction in online learning classes can also be troublesome. Online learning can be very dense and uninteresting to undergraduates, as the session only focuses studies. This is unlike direct learning, where the tutors sometimes swap the lessons with some stories or ideas to make the lessons become more interactive and interesting. Plagiarism, cheating and the lack of visual cues from students can be a concern. It is a part of communication and trust between a tutor and the students, and if this is left unattended and ignored, surely, it has a huge negative impact on the students in the future. It comes from a minimal two-way communication that technology offers, compared to the traditional dual communication. It lacks empathy and feelings that may defer a true concept of learning. Technologically illiterate is defined as a person who faces difficulties in operating a computer. Although nowadays computer is easier to use, but not many individuals being capable and competence to use it. A various software or applications used before the user grasps the ecosystem, also puts some effects to the effectiveness of online learning. Most of the students only can manage to perform a basic computer skill such as word processing, sending emails and search engines. Inadequate technology equipment among students who come from underprivileged families contribute to the barriers. It could toll some fortune from a family even to buy a used computer or laptop, this is not included with internet subscription if the study institution does not provide it. For the least, frequent technology failures such as program crash or corrupted operating system can be an additional problem too. Next, for a long run, online learning can be an important part to shape a student to become a successful employee, acquiring a skill set that includes both hard technical skills and soft skills, like the abilities to think critically and solving complex problems.

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