

The copyright © of this thesis belongs to its rightful author and/or other copyright owner. Copies can be accessed and downloaded for non-commercial or learning purposes without any charge and permission. The thesis cannot be reproduced or quoted as a whole without the permission from its rightful owner. No alteration or changes in format is allowed without permission from its rightful owner.



**PERCEPTION OF STUDENT'S SATISFACTION
TOWARDS ONLINE LEARNING: A STUDY AMONG
SBMS' STUDENTS IN UUM**



MASTER OF SCIENCE (MANAGEMENT)

UNIVERSITI UTARA MALAYSIA

JUNE 2016

**PERCEPTION OF STUDENT'S SATISFACTION TOWARDS ONLINE
LEARNING: A STUDY AMONG SBMS' STUDENTS IN UUM**



By
AMIRA RAFHAN BINTI JAFRI

UUM
Universiti Utara Malaysia

**Thesis Submitted to
School of Business Management,
Universiti Utara Malaysia,
In Partial Fulfillment of the Requirement for the Master of Sciences
(Management)**



**Pusat Pengajian Pengurusan
Perniagaan**

SCHOOL OF BUSINESS MANAGEMENT

Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PENYELIDIKAN
(Certification of Research Paper)

Saya, mengaku bertandatangan, memperakukan bahawa
(I, the undersigned, certified that)
AMIRA RAFHAN BINTI JAFRI (817297)

Calon untuk Ijazah Sarjana
(Candidate for the degree of)
MASTER OF SCIENCE (MANAGEMENT)

telah mengemukakan kertas penyelidikan yang bertajuk
(has presented his/her research paper of the following title)

**PERCEPTION OF STUDENT'S SATISFACTION TOWARDS ONLINE LEARNING: A STUDY AMONG SBMS'
STUDENTS IN UUM**

Seperti yang tercatat di muka surat tajuk dan kulit kertas penyelidikan
(as it appears on the title page and front cover of the research paper)

Bahawa kertas penyelidikan tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that the research paper acceptable in the form and content and that a satisfactory knowledge of the field is covered by the research paper).

Nama Penyelia : **DR. KHAIROL ANUAR ISHAK**
(Name of Supervisor)

Tandatangan : 
(Signature)

Tarikh : **8 JUN 2016**
(Date)

PERMISSION TO USE

In presenting this dissertation/project paper in partial fulfillment of the requirements for a Post Graduate degree from the Universiti Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this dissertation/project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or in their absence, by the Dean of School of Business Management where I did my dissertation/project paper. It is understood that any copying or publication or use of this dissertation/project paper parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my dissertation/project paper.

Request for permission to copy or to make other use of materials in this dissertation/project paper in whole or in part should be addressed to:



Dean of School of Business Management
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

UUM
Universiti Utara Malaysia

ABSTRACT

Online learning is one of the biggest concerns in Ministry of Higher Education in order to achieve Malaysia's goal towards access, quality and efficiency. Online learning is known to be one of the medium in education that reduce the space, time and cost for students and at the same time provide a competitive advantage to the university. This study attempts to examine the perception of School of Business Management students in online learning satisfaction towards online learning system in Universiti Utara Malaysia. Factors used in this study to evaluate the satisfaction over online learning system are user interface design, online course design, perceived ease of use and perceived of usefulness. It is important to know the levels of student satisfaction towards online learning system from the perspective of student's behaviour and the design of system in order to enhance the quality of online education. This study also examined the level of usage for online learning system used in Universiti Utara Malaysia among School of Business Management students. A total of 331 students participated in the research from four different courses; Marketing, Human Resource Management, Entrepreneurial and Business Administration. In order to test the hypotheses, SmartPLS version 2.0 was used and the findings of this study showed that the user interface design, online course design, perceived ease of use and perceived of usefulness have a significant relationship to student online learning satisfaction.

Keyword: user interface design, online course design, perceived ease of use, perceived of usefulness and online learning satisfaction

ABSTRAK

Kementerian Pengajian Tinggi memandang tinggi kepentingan pembelajaran dalam talian dalam usaha untuk mencapai matlamat Malaysia ke arah akses, kualiti dan kecekapan. Pembelajaran dalam talian merupakan salah satu medium dalam pendidikan yang mengurangkan ruang, masa dan kos untuk pelajar dan pada masa yang sama ia memberikan kelebihan daya saing terhadap universiti. Kajian ini bertujuan untuk mengkaji persepsi pelajar School of Business Management dalam kepuasan pembelajaran dalam talian ke arah sistem pembelajaran dalam talian yang terdapat di Universiti Utara Malaysia. Faktor-faktor yang digunakan dalam kajian ini adalah untuk menilai kepuasan ke atas sistem pembelajaran dalam talian ialah reka bentuk antara muka, reka bentuk kursus dalam talian, persepsi kemudahan penggunaan, persepsi tanggapan kebergunaan. Adalah penting untuk mengenal pasti tahap kepuasan pelajar terhadap sistem pembelajaran dalam talian dari perspektif tingkah laku pelajar dan reka bentuk sistem demi meningkatkan kualiti pendidikan dalam talian. Kajian ini turut mengkaji tahap penggunaan sistem pembelajaran dalam talian yang digunakan dalam kalangan pelajar School of Business Management di Universiti Utara Malaysia. Seramai 331 pelajar dari empat kursus berbeza; Pemasaran, Pengurusan Sumber Manusia, Usahawan dan Pentadbiran Perniagaan telah mengambil bahagian dalam penyelidikan ini. SmartPLS 2.0 digunakan untuk menguji hipotesis kajian dan hasil kajian menunjukkan bahawa reka bentuk antara muka, reka bentuk kursus dalam talian, persepsi kemudahan penggunaan, persepsi tanggapan kebergunaan mempunyai hubungan yang signifikan terhadap kepuasan pelajar dalam pembelajaran dalam talian.

Kata kunci: reka bentuk antara muka, reka bentuk kursus dalam talian, persepsi kemudahan penggunaan, persepsi tanggapan kebergunaan dan kepuasan penggunaan pembelajaran dalam talian

ACKNOWLEDGEMENT

I would like to express my special appreciation and thanks to my helpful supervisor, Dr Khairol Anuar Bin Ishak. The supervision and support that he gave truly help the progression and smoothing of my research. The co-operation is much indeed appreciated.

I would especially like to thank the respondents and my friends for giving their time to help me in completing this research. Without your help I would not be able to finish the study according to what I have been planned for.

A special thanks to my family for their understanding and support throughout the research process. Your prayer for me was what had sustained me this far. Thank you for supporting me in everything I did.

Finally, I thank Allah s.w.t, for letting me through all the difficulties. I have experienced your guidance day by day and with your blessing I was able to finish the research. I will keep on trusting you for my future.

Table of Contents

Title	
Certification of Research Paper	i
Permission to Use	ii
Abstract	iii
Abstrak	iv
Acknowledgement	v
Table of Content	vi
List of Tables	viii
List of Figures	ix
CHAPTER 1: INTRODUCTION	
1.0 Introduction	1
1.1 Background of the study	1
1.2 Statement of problem	5
1.3 Research questions	7
1.4 Research objectives	8
1.5 Significance of study	9
1.6 Organizational study	9
CHAPTER 2: LITERATURE REVIEW	
2.0 Introduction	10
2.1 Theory in online learning	10
2.1.1 Theory of Planned Behaviour	10
2.1.2 Technology Acceptance Model Theory	12
2.2 Online Learning	14
2.3 Online Learning Satisfaction	17
2.4 Perceived variables	19
2.4.1 Perceived Ease of Use	19
2.4.1 Perceived of Usefulness	20
2.5 System design	20
2.5.1 User Interface Design	21
2.5.2 Online Course Design	23
2.6 Research framework	25
2.6.1 Research model	25
2.6.2 Justification of variables	26
2.7 Hypotheses development	27
2.8 Summary	30

CHAPTER 3: RESEARCH METHODOLOGY	
3.0 Introduction	31
3.1 Type of study	31
3.2 Research design	32
3.3 Population and sample	34
3.4 Data collection procedure	36
3.5 Questionnaire design	37
3.6 Pilot study	41
3.7 Statistical analysis	42
3.8 Summary	44
CHAPTER 4: RESULTS AND DISCUSSION	
4.0 Introduction	45
4.1 Response rate	45
4.2 Profile of respondents	46
4.3 Descriptive statistics	48
4.4 Frequency analysis	49
4.5 Open question and opinion analysis	50
4.6 Reliability analysis	51
4.7 Measurement structure model analysis	51
4.8 Discriminant variables of constructs	53
4.9 Hypotheses testing	53
4.10 Summary	56
CHAPTER 5: CONCLUSION AND RECOMMENDATION	
5.0 Introduction	57
5.1 Discussion	57
5.2 Limitations	61
5.3 Recommendations	63
5.4 Conclusion	64
REFERENCES	65
APPENDIX A: Questionnaire	71
APPENDIX B: SPSS and SmartPLS Output	77

LIST OF TABLES

Table 3.3.1	Statistics of SBMs' students	34
Table 3.3.2	Cross section of population for SBMs' students	35
Table 3.5	Constructs in the questionnaire	37
Table 3.6	Cronbach's Alpha for variables	41
Table 4.2	Demographic of respondents	47
Table 4.3	Descriptive statistics of variables	48
Table 4.4	Frequency of online learning UUM usage	49
Table 4.6	Reliability for variables	51
Table 4.7	Measurement model	52
Table 4.8	Discriminant validity of constructs	53
Table 4.9	Path coefficient and hypotheses testing	55



UUM
Universiti Utara Malaysia

LIST OF FIGURES

Figure 2.1.1	Model of Theory of Planned Behaviour	11
Figure 2.1.2	Model of TAM Theory	13
Figure 2.6.1	Research model	25
Figure 4.1	Response rate of questionnaire from respondents	46
Figure 4.9	Results of the path analysis	54

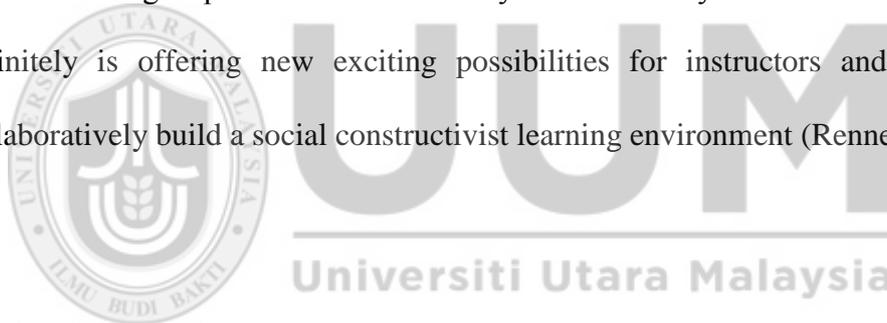


CHAPTER 1

INTRODUCTION

1.0 Introduction

The chapter of introduction will lead readers to understand about the research that will be conducted by the researcher. It provides the necessary background of the study, statement of problem and lead to the research objectives and research questions of the study. Besides that, significance of study and organization of the study will be highlighted. Various term used for online learning to describe the virtual learning experience that is widely used in today's world. Online learning definitely is offering new exciting possibilities for instructors and students to collaboratively build a social constructivist learning environment (Renner, 2006).



1.1 Background of the study

Advanced in technology has changed the nature of learning nowadays and there is major development in providing a good quality of online learning for students in ensuring that they are able to study in a convenient way. Online learning is one of the facilities that have been provided by most universities to facilitate the learning process and improve learning experience among the students and instructors. Online education is defined as an approach to education that is facilitated by information communication technology and promoted by social learning that leads to the creation of a relationship between instruments and students through regular interaction (Lee, 2010).

Online learning in Malaysia has been implemented for several decades as the government realised that education sectors need to follow the latest technologies in easing the method of teaching and learning. According to Malaysia Education Blueprint 2015-2025, in 2014, there are 3.035 billion internet users in the world and the growth in users have facilitated the increased usage of online learning. It clearly showed that most of the users utilised the usage of internet in providing themselves a good learning environment that can ease them whether in present or nearest future.

Due to this circumstance, online learning has become an integral part of Ministry of Higher Education in order to achieve Malaysia's goal towards access, quality and efficiency of higher education. Klopfenstein (2003) stated online learning is part of an effective learning environment that have been offered by most education providers because the use of technology and multimedia in online learning has the potential of meeting different student needs and learning styles and at the same it will enhance the learning process through discussions, content presentation and individualization.

Besides that, the rise of generation of "digital natives" gives a clear indication that demand on online learning is likely to accelerate in the future. The definition of "digital natives" is a group of young people who have grown up in the immergence of digital technologies and immersed in these digital technologies and for whom a life is fully integrated with digital devices is the norm (Malaysia Education Blueprint 2015-2025). The young generation mainly Gen Y have been exposed with information technology and online learning is a new learning experience for these

young students to adapt in their learning process besides increasing the degree of interactivity and engagement of students.

Higher institutions whether public or private noticed the blast usage of information system and they took several initiatives to explore the advantages of online learning to the fullest in order to meet with the flexibility of student's need. Hence, Universiti Utara Malaysia (UUM) have taken a step to utilised the advantages of online learning by implementing Learning Management System (LMS) since the year of 2000, known as *learning zone UUM* (Loon, Yamin & Yaacob, 2013). However, recently it changed its name to *Online Learning UUM* starting from session 2014/2015.



Online learning is part of educational service that provided by an institutional provider and in September 2014, Ministry of Education of Higher Learning had launched the Massive Open Online Courses (MOOCs). MOOCs are online courses that targeted at unlimited participation and open access of education via internet and the courses offered usually taught by experienced and effective professor (Malaysia Education Blueprint 2015-2025). According to Malaysia Education Blueprint 2015-2025, MOOCs also gave the ability for students to access world-class learning materials and knowledge with minimal or no fees incurred. Therefore, it creates borderless knowledge boundaries for student to gain any information that they need or want.

Nevertheless, the issue of satisfaction may arise in the emergence of the online learning system especially among students. To view student as a customer is a bit risky as Hom (2002) mentioned researcher still facing a problem of constructing a standard definition for student satisfaction from the perspective of a customer. However, in current situation of education system, students have the right to act like a customer as they become the fee payer and it is reasonable to hear their point of view over a service that they are using.

Hom (2002) explained more about satisfaction or dissatisfaction was more than a reaction to the actual performance quality of a product or service and it was influenced by prior expectation regarding the level of quality. Nowadays, researchers trying of to figure out until to what extent the students respond to the online learning is the level of satisfaction that need to be look at because it will decide the survival of the online learning.

Bolliger and Martindale (2004) identified two important factors in determining student satisfaction which are technology and interactivity as students need to be given a plenty of opportunities in discussions in order to feel involved and stay engaged in the online course. It is also has been highlighted that satisfaction may contributes to the motivation and motivation is a forecasting factor of student success, thus, level of satisfaction of student experience in online learning is one of the good reason to be concerned (Bolliger & Martindale, 2004).

1.2 Statement of problem

The current trend of education especially in higher education is to apply the information technology in learning process. Information technology is an important tool that if it is used appropriately to utilize the usage of technology, it will enhance the capacity of the system (Kuong, 2015). Nevertheless, there are few problems in adopting information technology, as it has been studied widely and various attempts have been made to understand the factors that affect the acceptance and usage of any given information technology innovations (Ramayah, 2010).

Dabaj and Basak (2008) listed out few problems in adopting technology towards online learning such as difficulty in non-verbal communication, incompetence of using the technology required and most of the students' belief in traditional face to face learning more than online learning. Student is the customer of an educational institution and their acceptance and satisfaction over a system should be considered as prime indicator of the success of online learning system. As supported by Song (2010) student is considered as a customer of online learning system and satisfaction is one the result from the interactions between the student and the online learning environment such as instructional course website, instructors, peer students and support service.

Satisfaction indeed as an important factor to evaluate the system, however, satisfaction is related to the behaviour of students. To rely solely on the behaviour of the student is not adequate to measure the success of online learning system. The online system design especially in term of user-interface design and online course

design is a crucial part to determine the satisfaction of students towards the online learning system. Thus, it is important to know the levels of student satisfaction towards online learning system from the perspective of student's behaviour and the design of system in order to enhance the quality of online education. Besides that, the level of usage of online learning UUM among students need to be exploring in order to give a clearer direction to the system developer on which of the functionality of the online learning has the most frequent used.

Moreover, the previous researches was conducted outside Malaysia and the setting area of this research is only restrict in UUM as it is not appropriate to be generalise to other universities. Different environment of the university lead to different perception of students as it depends on the culture and policy of the university. Besides, respondents for this study will be from School of Business Management (SBM) students, thus, it cannot be generalise to the whole students in UUM.

Students from SBM are chosen as they were exposed to the usage of technology from their early education and information technology is part of the skills they need to have before entering to the industrial field. The industrial field nowadays used information technology to ease the task and trying to increase the accuracy and performance of any information that they obtained. Therefore, determining the student's satisfaction on online learning is the beginning of evaluating whether students are motivated and ready to use the technology in the future.

1.3 Research questions

This research designed to find the online learning satisfaction among undergraduate students in Universiti Utara Malaysia (UUM) based on the following research questions:

- i. Is there any relationship between user interface design and perceived ease of use?
- ii. Is there any relationship between user interface design and perceived of usefulness?
- iii. Is there any relationship between online course design and perceived ease of use?
- iv. Is there any relationship between online course design and perceived of usefulness?
- v. Is there any relationship between perceived ease of use towards online learning satisfaction in online learning system?
- vi. Is there any relationship between perceived of usefulness towards online learning satisfaction in online learning system?

1.4 Research objectives

The objectives of this research are:

- i. To determine the relationship between user interface design and perceived ease of use.
- ii. To determine the relationship between user interface design and perceived of usefulness.
- iii. To determine the relationship between online course design and perceived ease of use.
- iv. To determine the relationship between online course design and perceived of usefulness.
- v. To determine the relationship between perceived ease of use towards online learning satisfaction in online learning system.
- vi. To determine the relationship between perceived of usefulness towards online learning satisfaction in online learning system.

1.5 Significance of study

The online learning if it used appropriately will potentially elevate the performance of students in their studies. Therefore, it is important to observe perception of students in online learning system and how it will result in student satisfaction. This research will help academicians and management to identify whether the online learning system has meet its objectives and meet student's expectation on improving the learning experiences. Education providers also will be able to know the quality level of existing online learning system and develop a better system that will benefit both parties for long term experience of online learning system. Besides that, this study will also be added and fill the gap in the literature review and none of studies have been done in Malaysia boundary.

1.6 Organisational of study

This study will be structured according to its appropriate chapter. Literature review and theoretical framework that is related to the research will be used to prove the findings of this study. Hypotheses also will be developed in order to help the researcher to acquire reliable information on the differences between independent variable and dependent variable. To determine the approach that will be used in the study and important information needed or to be collected during the research period will be discussed in research methodology. Analysis of data will be run as it will deliver the results of the research and last but not least, an overall conclusion including its limitation and recommendations will be outline according to the results acquired in the study. Hence, the following chapter will elaborate on literature review and theoretical framework chosen by researchers in this study.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter will discuss the critical review of the literature related to the study, theoretical framework and hypotheses. Literature will be emphasised on the selected topic which have chosen by researcher and the areas cover are perceived usefulness, perceived ease of use, user interface design, online course design and online learning acceptance and student's satisfaction in online learning system.

2.1 Theory in online learning

2.1.1 Theory of Planned Behaviour

The behaviour of human has been studied by Ajzen and the author had proposed the Theory of Planned Behaviour (TPB) which links the beliefs and behaviour of human in determining their intention and behavioural action. According to Ajzen (n.d.), TPB is guided by beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes (behavioural beliefs), belief about the normative expectations of others and motivation to comply with these expectations (normative beliefs) and beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of these factors (control beliefs).

Generally, TPB was concerned with the prediction of intention in human being and whether those intention predicts the behaviour is depend on the factors beyond the individual's control for example, the strength of certain intention behaviour relation is moderated by the actual control over the behaviour (Ajzen, 2011). Figure 2.1.1 represents the model of TPB.

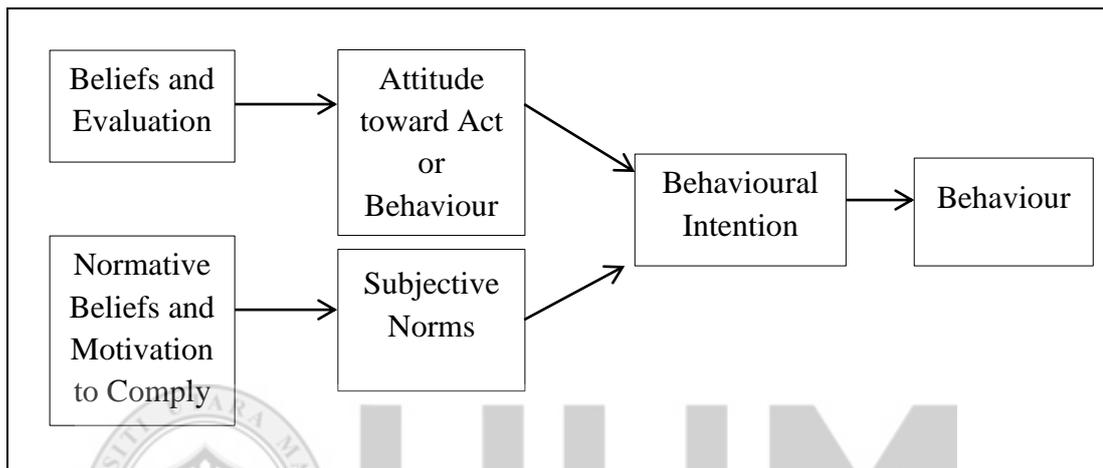


Figure 2.1.1:
Model of Theory of Planned Behaviour

Ajzen (1991) elaborated that TPB incorporate with attitude towards the behaviour, subjective norms with respect to the behaviour and perceived control over the behaviour are usually found to predict behavioural intention with a high degree of accuracy and in turn, these intention, in combination with perceived behavioural control could be accounted for a proportion of variance in behaviour. This can be supported by finding from Liao, Chen and Yen (2007) a customer's behavioural intention towards e-service continuance is mainly determined by customer satisfaction and additionally affected by perceived usefulness and subjective norms. Using the basic of TPB, Davis (1989) developed Technology Acceptance Model Theory which will be explained in next sub-topic.

2.1.2 Technology Acceptance Model Theory

Technology Acceptance Model Theory (TAM) has been derived from TPB by Davis. Davis (1989) proposed TAM theory to identify the impact of technology on user behaviour and the model focuses on the process of using technology and two perceptions was involved in the theory which are “Perceived Ease of Use” and “Perceived of Usefulness” that affect a person acceptance behaviour.

The author defined perceived ease of use as the degree to which an individual believes that using a particular system would be free from physical and mental efforts and perceived of usefulness is defined as the degree to which an individual believes that using a particular system will enhance his or her job performance. Difference between TAM theory and TPB was that TAM did not include subjective norms as a determinant of intention (Selim, 2003). Figure 2.1.2 represents the model of TAM that has been proposed by Davis (1989).

Fredericksen, Pickett, Shea, Pelz and Swan (2000) stated students who reported technical difficulties impeded their learning reported significantly less learning than students who did not report the technical difficulties. This showed that student who has a high perception on the online learning system will ensure that the system able to satisfied their need in learning.

It can be related to the two variables of perception in the TAM theory where perceived ease of use and perceived usefulness played a major role in determining the attitude of students over the system used and how it will affect the intention to use in the future and as a result the usage of the system will be evaluated.

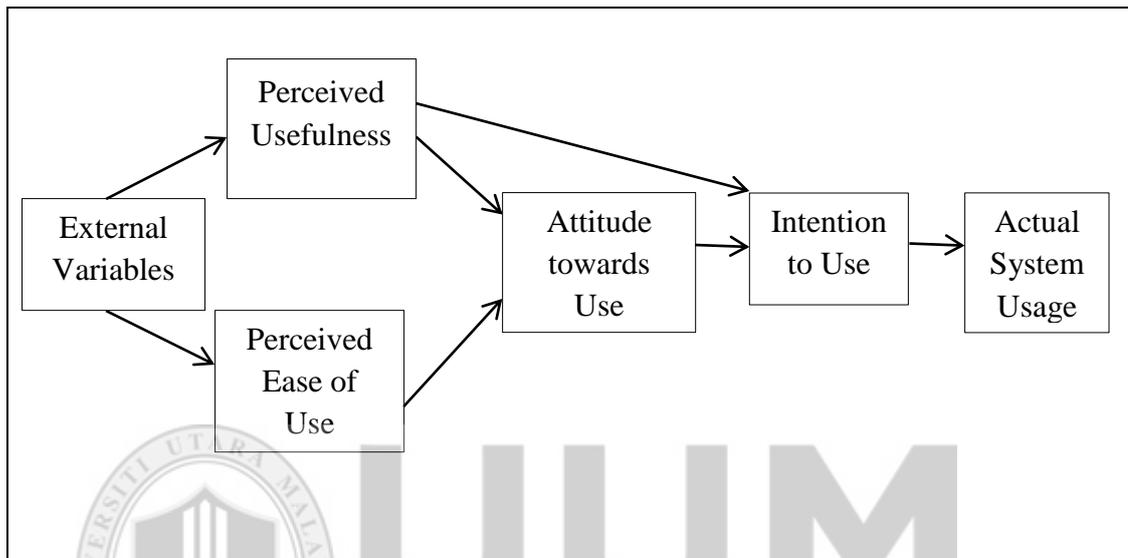


Figure 2.1.2:
Model of TAM Theory

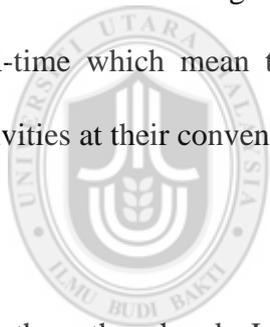
This was supported by Raaij and Schepers (2008) TAM was the first model to mention psychological factors affecting computer acceptance and the model assumes that both perceived usefulness and perceived ease of use of the new technology are central in influencing the individual's attitude towards using that technology and at the same time the individual's attitude is hypothesized to influence the behavioural intention to use a technology, finally relating to actual use.

Lee (2010) also mentioned TAM theory predicts that user embrace new technology when their perceptions of the ease of use and the usefulness of the technology are positive. Lee and Lee (2008) mentioned the potential of online learning as a tool to enhance the education and training system and its value will not be realized if users still cannot accept online learning as a learning tool. Thus, to utilized and explored the online learning, TAM is very useful for research in an online learning context to predict the attitude, intention and usage of the system. As for this study, TAM will be used to predict the attitude of students over the online learning system. The attitude of students will be evaluated in terms of satisfaction of using the online learning system in order to know the perception of students over the system.

2.2 Online Learning

The emergence of information and communications technology in today's education are changing the style of learning process which give an impact to both parties which is the educations providers and students. The use of information and communications technology (ICT) in education is pivotal in ensuring that the quality of teaching and learning aligns with students' needs and lifestyles and education providers nowadays had implemented online learning system because they offer flexibility in terms of space and time and at the same time giving them a competitive advantage in return (Anshari, Alas, Yunus, Sabtu & Hamid, 2015).

Online learning is not simply a method of teaching and learning via internet but it has different definition according to the characteristics of learning approach itself. There are two approaches in online learning; synchronous and asynchronous learning. Synchronous learning is instruction and collaboration in “real time” via the internet and it typically involved with tools such as live chat, audio and video conferencing, data and application sharing, shared whiteboard, virtual hand raising and joint viewing of multimedia presentations and online slide shows. While, asynchronous learning is a method use the time-delayed capabilities of the internet and it typically involved with tools such as email, threaded discussion, newsgroups and bulletin boards and file attachments (Poe & Stassen, n.d.).The authors did elaborate that asynchronous learning method are still instructors-facilitated but are not conducted in real-time which mean that students and instructors can engage in course related activities at their convenience rather than in specified class sessions.



UUM
Universiti Utara Malaysia

On the other hand, Lee (2010) stated online education in describing all the information communication technology based learning approaches and the author used the terms online education, e-learning, web-based learning and online classes. Lee (2010) also defined online education as an approach to education that is facilitated by information communication technology and promoted by social learning that leads to the creation of a relationship between instructors and students through regular interaction. Despite of various usages of terms regarding online learning system, hence, this paper will use the terms online learning, e-learning, web-based learning, online classes and learning management system throughout the study.

Online learning could be described as an access of learning methods that use technologies in its courses that allow students to have an unlimited access to the knowledge in anytime and anywhere. Hur and Im (2013) believed that e-learning is oriented toward the construction of a user-friendly learning setting by using ICT and at the same time through e-learning also, students may be able to access e-learning context wherever and whenever they like. In an online course, students need to have the sense of being in and belong in the course and have the ability to interact with other students and instructors though physical contact was not available for them (Picianno, 2002).

Picianno (2002) also mentioned online learning requires adjustments on the part of students and teachers for successful interactions to occur and many online courses that have been provided enable the student and faculty and even students and students to have the ability to interact with each other via an electronic board, discussion board, e-mail or synchronous chat areas. Thus, the success of an online learning depends to a considerable extent on student acceptance and the usage of the online learning system (Raaij & Schepers, 2008). Besides that, online learning gives an opportunity to the universities who act as the education providers to take on the role of knowledge intermediaries and can actively helping students to access the information they need and to decide how they will use it (Anshari *et al.*, 2015).

2.3 Online Learning Satisfaction

Understanding student's attitude towards online learning system is a critical issue for improving online learning usage and effects (Liaw, 2008). This attitude will come in two different behaviours whether it will be satisfaction over the online learning system or dissatisfaction over the online learning system. Danesh, Hasheminia, Sirousbakht and Danesh (2012) believed learner's satisfaction is one of the most important factors in learning process ever since the emergence of the modern education methods such as by using online learning system. Different studies will receive different result as it depends on the behaviour of students in certain places.

In general, students who are more active in courses, be it online or off, will be more satisfied from the courses and they will learn more from it. Swan (2001) found that student who rated high level of activity was significantly had higher level of course satisfaction. Besides that, Danesh *et al.* (2012) found instructor characteristics, teaching material, design of learning content and playfulness have a significant relationship with satisfaction and technology in online learning was the second effective factor on learner's satisfaction.

Every system has its own drawback that will lead to different perception of attitude of a system. Online learning system is one of it and dissatisfaction may arise and affect the student's believed to use the online learning system. Bouhnik and Marcus (2006) stated that student's online learning dissatisfaction was based on the following disadvantages:

- i. Lack of a firm framework to encourage students to learn
- ii. A high level of self-discipline or self-direct required
- iii. Absence of a learning atmosphere in online learning system
- iv. The distance – learning format minimizes the level of contact, as well as the level of discussion among students. It means that online learning is lacking in interpersonal and direct interaction among students and teachers.
- v. The learning process is less efficient as compared to the face to face learning format; online learning requires students to dedicate more time to learn the subject matter.

Despite all this pro and con of online learning system, it is depends on the individual behaviour to evaluate their satisfaction. An understanding of the factors that influence student satisfaction with online learning in a particular context can be used as an input to the appropriate design of learning environments (Palmer & Holt, 2005). Min, Yamin and Ishak (2012) found a positive effect of students' satisfaction on the design and use of the online learning system. The authors also added that students feel confident and satisfied with the online learning design such as easy to access, navigation and interface design. Therefore, this study will test on the user interface design and online course design as the external variables that will assess the causal effect on the perceived ease of use and perceived of usefulness to the online learning satisfaction.

2.4 Perceived variables

The individual acceptance and use of technology has been studied extensively and a long tradition of research on technology acceptance has been established that the perceived ease of use and perceived of usefulness are the central factors in clarifying the acceptance and use of the new technologies (Raaij & Schepers, 2008).

2.4.1 Perceived Ease of Use

Davis (1989) referred perceived ease of use as to how effortless he or she perceives using the technology in the future. On the other hand, Chang and Tung (2007) stated perceived ease of use is a degree of how effortless a person when they believe in using a particular system especially the online learning system. Perceived ease of use in an online learning system was defined as learner's perception of how easy it is in adopting the online learning system (Sun, Tsai, Finyer, Chen & Yeh, 2008). The author also include an e-learning system ease of use makes it possible for individual to devote their attention to learn the course materials instead of spending additional effort of learning the instrument. Selim (2003) had applied TAM theory to assess university student's acceptance of course website as an effective learning tool and the result showed that perceived ease of use and perceived of usefulness of course website proved to be the key determinants of the acceptance and usage of course website as an effective and efficient learning technology.

2.4.2 Perceived of Usefulness

Davis (1989) referred perceived of usefulness as to the degree that the user believed in using the technology may improve their work performance. Perceived of usefulness is a degree of a person who believed that using an online learning system will enhance his or her job performance (Chang & Tung, 2007). Other than that, learner perceived of usefulness in online learning system was defined as the perception of degree of improvement in learning effect due to the acceptance of a system (Sun *et al.*, 2008). Liaw (2008) showed perceived satisfaction and perceived usefulness were predictors of learners' behavioural intention to use e-learning and perceived usefulness was the biggest contributing factor and it support the flow of model structure in the TAM theory. Calisir and Calisir (2004) found that perceived usefulness has the strongest impact on end – user satisfaction. These findings proved that the usefulness of a system trigger the behaviour and intention of individual to use the system.

2.5 System design

System design is the process of defining the architecture, components, modules, interfaces and data for a system to satisfy specified requirements (Wikipedia, 2016). There are two aspects of system designs that become the focus of this study which are user interface design and online course design. These two variables are the external variables that directly or indirectly will affect the student's satisfaction over the online learning system.

2.5.1 User Interface Design

Cho, Cheng and Lai (2009) differentiate user interface design with the usual definition that most technological innovation relied upon user interface design to facilitates users' control and interaction with an innovation and convert their technical capabilities into a usable product. The author defined user interface design as the structural design of an interface that presents the features and instructional support of an information system and this interface at some point will act as a contact that enables interaction between user and system.

Wang and Yang (2005) suggested there are five principles of user interface design that should be used to develop a better user interface that can promote more interaction between learners and the system. The principles are:

- 1) Make the most important information distinct,
- 2) Establish a visual order of importance for the user,
- 3) Organize information so that learners can see the big picture,
- 4) Consistent button design, and
- 5) Visual feedback

Cho *et al.*, (2009) had greatly discussed about user interface design in online learning in order for it to be meaningful and useful to the learners. User interface design did provide some implications for the design and implementation of self-paced e-learning tools and in order for it to be more effective, system architects need to address specific issues of user interface design such as how the interface can enhance

the visibility of different features in e-learning tool and how the interface can provide users with enough supports.

If the online learning system did not have an interactive user interface design, it may lead to lack of synchronous interaction or collaboration among students (Kuong, 2015). This was supported by Sun *et al.* (2008), course content should be carefully designed and presented sparingly, and in addition, technological design plays an important role in student's perceived usefulness and ease of use of a course and will have an impact on student's satisfaction.

Navigation is also part of user interface design that interacts with students in attracting students to use the online learning system. Fredericksen *et al.* (n.d) suggested for maximum effectiveness of navigational instructions, they should be consistent and it is recommendable to use the same font, put them in the same location on pages and use consistent wording for instructions. By having a good user interface design, it will increase the perceived ease of use and perceived usefulness that lead to the online learning satisfaction among students. This was supported by Min *et al.* (2012) that learning management system with a good design will help users to use it without having any problems and encourage students to continue using it.

2.5.2 Online Course Design

Fisher and Baird (2005) believed participations of students in online learning was determined by the structure of the course and whether the online learning can provide the availability to provide learner with projects and activities that will allow them to fulfil their dual identity as an individual and member within a learning community. Ehlers (2009) noticed the importance of quality development in education especially in online learning and it has becoming more crucial to evaluate the learning content and processes, certifying and accrediting programs and institutions.

Online course design should include the use of technologies and activities which could enhance the opportunities that allow students to build interest, relevance and motivation to participate in the online learning community and create their learning experience in the course (Fisher & Baird, 2005). The authors also mentioned a good online course design will gain interest of the learners in the subject taken and at the same time allowing the learner to have the freedom to construct knowledge which is necessary in meeting their individual or immediate need.

To have a good online course design, certain standards or criteria's need to be meet and Gibson and Dunning (2012) had proposed the development of a course design that aligns course learning objectives with a module of instruction, the specific course content, the learning strategies and the assessment mechanism that will aid instructors in creating a course that ensures student meet the desired learning outcome.

Eom, Wen and Ashill (2006) relate course infrastructure with online course design because it was concerned with the overall usability of the course web site and the organization of the course material into logical and understandable components that could be understood by students and instructors. These elements basically will affect the satisfaction level and learning outcomes of students especially for distance learners.

On the other hand, Fredericksen *et al.* (n.d) believed that by making information in the online course accessible, it will reduce the risk of disorienting and discouraging the students in using the online learning system. This can be supported by result found by Danesh *et al.* (2012) design of learning content has the most noticeable effect on learner satisfaction.



Basically, the environment of online learning is learner-based and the individual must understand subjects by his own abilities, thus, the simpler are the subjects presented, the stronger the effect on learning quality. This was supported by Selim (2005) initiate students showed a positive attitude towards e-learning course content and design by indicating e-learning encouraged them to search for more facts and participate in more activity in the class than traditional learning methods.

2.6 Research framework

2.6.1 Research model

In the process of developing the research framework for online learning acceptance and student's satisfaction, this research suggests two outcome variables which are the Intention Behaviour and System Use. The model will try to forecast the acceptance and satisfaction of students over the online learning system based on the perception towards online learning system and external variables that could affected the TAM theory which are user interface design and online course design. Based on the listed theoretical variables, the research model is proposed as illustrated in Figure 2.6.1.

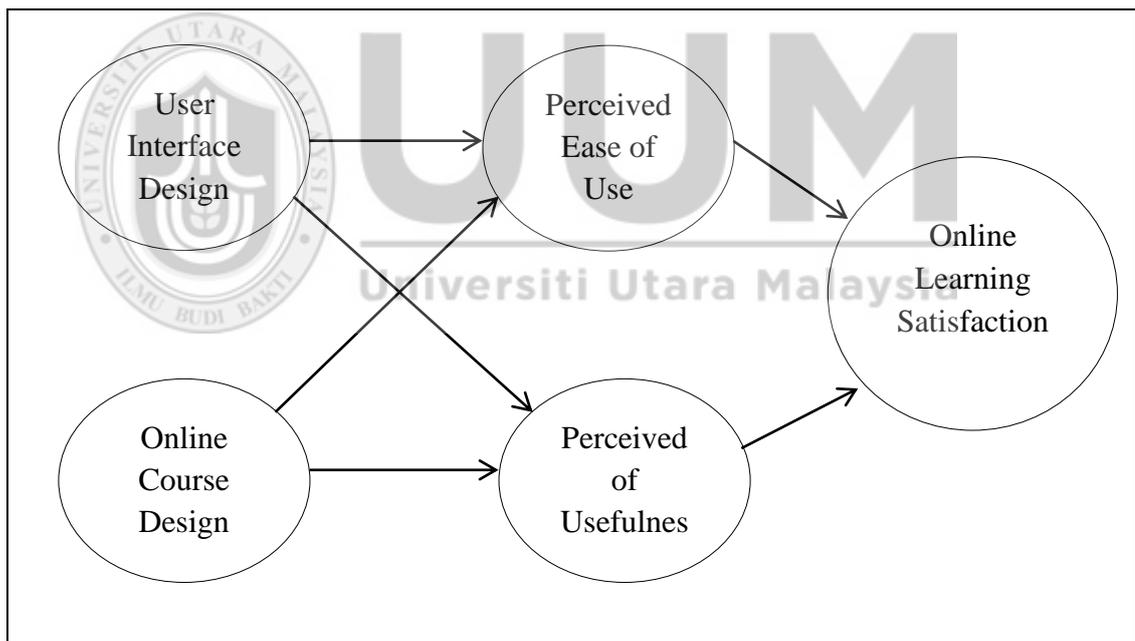


Figure 2.6.1:
Research model

2.6.2 Justification of variables

Different objects or persons or even the same objects or persons that may carry different or varying values can be called as a variable and in general, there are four main types of variables; dependent variable, independent variable, moderating variable and mediating variable (Sekaran & Bougie, 2010). In this study, the researcher had selected three types of variables which are independent variable, mediating variable and dependent variable. Two independent variables that will be tests are user interface design and online course design. On the other hand, two mediating variables that will be tests are perceived ease of use and perceived of usefulness and last but not least, the dependent variable is online learning satisfaction among UUM SBM's student.



User interface design is a structural design of an interface that presents the features and instructional support of an information system and this interface at some point will act as a contact that enables interaction between user and system (Cho *et al.*, 2009). On the other hand, Fisher and Baird (2005) explained online course design should include the use of technologies and activities which could enhance the opportunities that allow students to build interest, relevance and motivation to participate in the online learning community and create their learning experience in the course.

Perceived ease of use and perceived of usefulness are elements in the TAM theory that referred perceived ease of use as to how effortless he or she perceive using the technology in the future and perceived of usefulness as to the degree that the user believed in using the technology may improve their work performance (Davis, 1989). Online learning satisfaction is related to the attitude of students over the system.

2.7 Hypotheses development

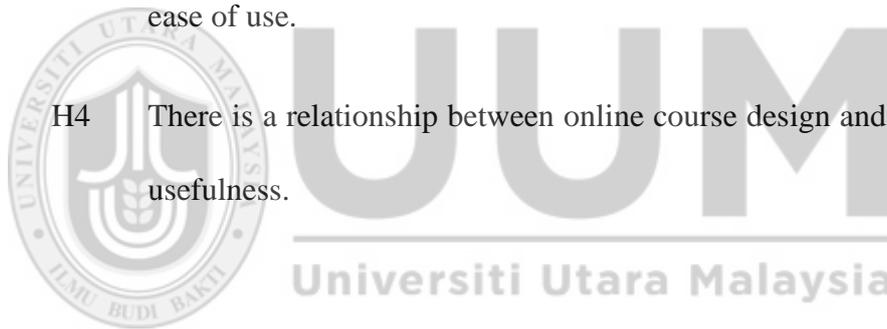
According to Liu, Chen, Sun, Wible and Kuo (2010) user interface design had a significant positive effect on perceived ease of use as it showed that when the system design was developed in a more user-friendly way, users will feel more comfortable and find the system easier to use. Besides that, Cho *et al.*, (2009) found that user interface design had an impact on perceived ease of use and perceived of usefulness and user interface design is an important factor that determined the acceptance of students over online learning tools for their studies. Thus, it leads to the following hypotheses:

- H1 There is a relationship between user interface design and perceived ease of use.
- H2 There is a relationship between user interface design and perceived of usefulness.

The design of an online course may directly or indirectly affects the acceptance of users towards online learning system and in between the process it might influence the perceptions that involved in the TAM theory which is perceived of usefulness and perceived ease of use. Liu *et al.*, (2010) had found online course design had significant positive effect on perceived ease of use and perceived of usefulness. The author also revealed online course design was the most significant factor that directly affect perceived of usefulness and it showed that as the users had a greater satisfaction over the online learning system, the stronger their feelings on perceived of usefulness in the future. Thus, it leads to the following hypotheses:

H3 There is a relationship between online course design and perceived ease of use.

H4 There is a relationship between online course design and perceived of usefulness.



Both perceived ease of use and perceived of usefulness were deliberated as distinct factors in influencing the user's attitude towards using the technology. Masrom (2007) found that perceived ease of use and perceived usefulness has a significant effect on attitude towards using. Besides that, Sun et al., (2008) obtained a positive significant influence of learner perceived ease of use and perceived of usefulness over perceived e- learner satisfaction. Lee (2010) acquired result indicating that both perceived of ease of use and perceived of usefulness had significantly positive relationship with attitudes toward online learning satisfaction. It showed that perceived ease of use and perceived of usefulness was positively influenced behavioural intention toward online learning satisfaction. Recently, Sharma, Chandel

and Govindaluri (2014) found significant relationship between perceived ease of use and perceived of usefulness on web learning acceptance and satisfaction among students in Oman and India. Thus, it leads to the following hypotheses:

- H5 There is a relationship between perceived ease of use and online learning satisfaction.
- H6 There is a relationship between perceived of usefulness and online learning satisfaction.



2.8 Summary

In general, under this chapter readers will gain an understanding about the definition and conceptualization of the online learning, TAM theory, user interface design and online course design. Online learning is the use of information and communication technology (ICT) in education as they are offering flexibility in terms of space and time and at the same time ensuring the quality of teaching and learning that aligns with the students' needs and lifestyles (Anshari *et al.*, 2015). There are two independent variables used for this study which are user interface design and online course design, two mediating variables of perceived ease of use and perceived of usefulness and the dependent variables is online learning satisfaction of UUM SBMs' students.



Moreover, six hypotheses have been developed; H1 There is a relationship between user interface design and perceived ease of use. H2 There is a relationship between user interface design and perceived of usefulness. H3 There is a relationship between online course design and perceived ease of use. H4 There is a relationship between online course design and perceived of usefulness. H5 There is a relationship between perceived ease of use and online learning satisfaction and H6 there is a relationship between perceived of usefulness and online learning satisfaction. The following chapter will explain on the research methodology that will be used in this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This chapter will discuss on data and methodology used in the research. Methodology is any details of approach or related concept that will be adopt in the study and any necessary information that required. Besides that, it will explain on the method of collecting data used in order to achieve the objectives of study.

3.1 Types of the study

The type of study for this research is quantitative research. Quantitative research is about collecting numerical data to explain a particular phenomenon and particular questions that seem immediately suited to being answered by using the quantitative method (Sekaran & Bougie, 2010). Quantitative research is used because results that will be acquired from this study are based on a large sample sizes that are representative of the population. Moreover, questionnaires and computer software such as SPSS version 20 and SmartPLS version 2.0 will be used to collect and analyse the numerical data needed (USC Libraries, 2016).

3.2 Research design

Research design is a plan outlining how the information is to be gathered for an assessment or evaluation that includes identifying the data gathering methods, the instruments to be used, how the instrument will be administered and how the information will be organized and analysed (Mondofacto, 2009). Purposes of study for this research are hypotheses testing study and descriptive study. The aim of this research is to determine the online learning satisfaction among undergraduate students in UUM.

The element to measure the online learning satisfaction were based on user interface design, online course design, perceived ease of use and perceived of usefulness. Hence, hypotheses testing is use to “explain the nature of certain relationships or establish the differences among groups or the independence of two or more factors in a situation” and the type of hypotheses for this study is alternative hypothesis as it express the relationship between two variables (Sekaran, 2003, p.124).

Meanwhile, the descriptive study is use to determine the relationship between the variables used in the research and as mentioned by Sekaran and Bougie (2010) descriptive study is undertaken to describe the characteristics of the variables of interest in the study. This research is undertaken in UUM and it was specifically focus to SBM students in terms of gender, age, qualification, courses taken, current semester and experience in using the Online Learning UUM. Descriptive studies will help to understand the characteristics and help the researchers to describe the relevant aspects of interest from an individual or organization.

In this study, the researcher may realized the factors and level of satisfaction of SBM students over Online Learning UUM before considering certain corrective steps that could be taken. Since the types of study for this research are hypotheses testing and descriptive study, thus, survey or questionnaire is the best method to use by the researcher to collect data for an evaluation under this study.

Survey or questionnaire was chosen as a mechanism to obtain information and opinion needed from the respondent in this research. This is because; survey is the most efficient way in collecting certain kind of data as it will bring closer to uniformity. Uniformity could be explained as the respondents will receive identical set of statement, therefore, the response could be standardised and it will reduce the bias in the study (Economics Network, 2011).

Furthermore, the survey applied in this research was adopted and adapted from previous researcher's survey. The accuracy in determining the result will increase because it has been tested by previous researchers and it will be more relevant and reliable as it has been well organized by the previous designer of those surveys. As the survey has been collected, the researcher will run statistical analysis of data by using SPSS software version 20 and Smart PLS version 2.0.

The sources of data for this research are a primary data. According to Sekaran and Bougie (2010), primary data is information that obtained first-hand by the researcher on the variables of interest for the specific purpose of the study. The author also

explained some examples of sources of primary data are individuals, focus groups, panels of respondents were specially set up by the researcher and from whom the opinions may be sought from time to time. The advantage of using primary data is the data obtained is original and unbiased and it will also give the amount of control to the researcher which it will allow them to determine the type of method that will be used in collecting the data and the period taken to get the acquired data (Sekaran & Bougie, 2010).

3.3 Population and sample

Group of population chosen in this research is from students of SBM in UUM from first year to final year student for session 2015/2016 and the population for this study consists of 2,805 students from SBM with four different courses. Courses that offered by SBM are Marketing, Entrepreneurial, Business Management, Business Administration and Human Resource Management. The total number of population of SBMs' students was acquired from Department of Academic Affairs of UUM. Table 3.3.1 below showed the statistics of SBMs' students according to their courses.

Table 3.3.1:
Statistics of SBMs' students

Courses	Number of students
Marketing	551
Entrepreneurial	372
Business Admin	1,272
Human Resource Management	610
Total	2,805

Sources: Department of Academic Affairs of UUM

According to Krejcie and Morgan (1970), a minimum sample size of 338 is required for 2,800 to represent a cross-section of the population; however, sample for this study will be 350 out of 2,805 populations of SBMs' students. By having a larger sample size, more data could be collected and it will increase the response rate of this study. At the same time, it will strengthen the result found for this research.

Table 3.3.2 showed the cross-section of the population for SBMs' students. It is important for the researcher to consider whether the sample size is adequate in order to provide sufficient accuracy to base the decisions on the finding with confidence. Purpose of choosing this population is that undergraduate students were exposed in using the online learning system and more IT savvy as compared to postgraduate students. At the same time, it will minimise the bias that may happen during the research being conducted.

Table 3.3.2:
Cross section of population for SBMs' Student

Courses	Number of students	Percentage of sampling (%)	Number of sampling
Marketing	551	20	70
Entrepreneurial	372	13	45
Business Admin	1,272	45	158
Human Resource Management	610	22	77
Total	2,805	100	350

Besides that, sampling method that will be used in the research is purposive sampling. Purposive sampling was chosen because it confined to specific types of people who can provide the information needed by the researcher, because they are the only group who have it or match to some criteria that has been set by the

researcher and at the same time it will ensure the balance in size of group as the population will come from various group of student (Sekaran, 2003), (Sekaran & Bougie, 2010).

Due to the constraint in doing the research, purposive sampling is the most suitable as it will ease the collection of data of opinion of student from target population within short period of time. As the duration period of research is only limited to certain period of time, thus, purposive sampling is more appropriate to be used as it is less time consuming. There are certain criteria that respondents need to fulfil before answering the questionnaire which are:

- i) Respondents must be from SBM
- ii) Respondents are users to the Online Learning UUM
- iii) Respondents had used the Online Learning UUM more than a year

3.4 Data collection procedures

In order to get the data needed, researcher will distribute the questionnaire among SBMs' students from first year to final year student and it will be dispense according to the specified number of sampling which has been decided by researcher. The distribution of the questionnaire will be done after end of respondents' classes, in the library and at their accommodation places. Before answering the questionnaire, researcher needs to ensure that respondents are eligible with certain criteria that have been decided. A total of 350 questionnaires were distributed among respondents. From the total of 350 questionnaires distributed, only 331 questionnaires were useful for this research. Another 19 questionnaire could not be used due to incomplete questionnaires.

3.5 Questionnaire design

There are five variables (perceived ease of use, perceived of usefulness, user interface design, online course design and online learning satisfaction) tested in the research and each survey for each variable was taken from different author. The survey for perceived ease of use, perceived of usefulness and online learning satisfaction was adopted and adapted based on survey developed by Lee (2010). On the other hand, survey for user interface design and online course design was adopted and adapted based on the questionnaire developed by Liu *et al.* (2010) and Min *et al.* (2012) and survey of level of usage for Online Learning UUM was taken from Min *et al.* (2012). Table 3.5 showed constructs used in the questionnaire.

Table 3.5:
Constructs in the questionnaire

Variables	Items	References
Perceived Ease of Use	1. I find it easy to use the online learning system to do what I want it to do.	Lee (2010)
	2. I find the online learning system is clear and understandable for me.	
	3. It is easy for me to become skillful at using the online learning system.	
	4. I find the online learning system easy to use.	
Perceived of Usefulness	1. Using online learning system enables me to accomplish programs more quickly.	Lee (2010)
	2. Using online learning system improves my ability to accomplish academic tasks.	

-
3. Using online learning system increases my productivity in accomplishing academic tasks.
 4. Using online learning system enhances my effectiveness in accomplishing academic tasks.
 5. I find online learning system useful in my study completion.

- | | | |
|------------------|---|--------------------------|
| User | 1. The layout design of the Online Learning | Liu <i>et al.</i> (2010) |
| Interface | UUM makes it easy to read. | and Min <i>et al.</i> |
| Design | 2. The front style, colour, layout of the interface make it comfortable for me to read. | (2012) |
| | 3. The language used in Online Learning UUM is easy to understand. | |
| | 4. The link between the pages is clear. | |
| | 5. Navigation buttons consistent with general web usage. | |
| | 6. In general, I am satisfied with the design of the interface on Online Learning UUM. | |
| Online | 1. The course content is interesting. | Liu <i>et al.</i> (2010) |
| Course | 2. The course content level is mid-range. | |
| Design | 3. The course content meets my needs. | |
| | 4. In general, I am satisfied with the design of | |
-

the course content and quality.

Online Learning 1. I would expect to use the online learning system for other courses. Lee (2010)

Satisfaction 2. If asked, I would likely recommend the online learning system as an ideal learning platform.
3. I would probably use the online learning system for future courses.
4. Overall, I am satisfied with the online learning system.

Level of Usage 1. View lecture notes Min *et al.*(2012)

2. View announcements
3. Read message
4. Send message
5. Discussion with lecturer using News Forum
6. Discussion with classmate using News Forum
7. Download course documents
8. View general resources
9. View upcoming events or activities
10. View profile of other participants

The questionnaire will be divided into five sections; Section A will regard upon demographic factor. Demographic factors that involved under this section are gender, age, highest qualification, courses taken, year of study and years of experience in using the Online Learning UUM. Nominal scale will be used to measure the demographic factors involved because it is more appropriate and mutually exclusive.

Section B will determine the perception of SBMs' students in online learning of UUM. It will consists of 19 statements of four variables; four statements on perceived ease of use, five statements on perceived of usefulness, six statements on user interface design and four statements on online course design. Moving on to section C, it will determine the level of online learning satisfaction among SBMs' students and it will comprise of four statements. Measurement for perception of SBMs' students in online learning and level of online learning satisfaction among SBMs' students will be based on Likert scale. The Likert scales will be rank from 1 to 5 (1= Strongly Disagree, 2= Disagree, 3=Neither Agree Nor Disagree, 4=Agree and 5=Strongly Agree).

On the other hand, section D will determine the level of usage among students in online learning system. Measurement for level of usage of online learning system will be based on frequency. The frequency will be rank from D= Daily, S/TPW= Several/Time per Week, W= Weekly, M= Monthly, OPQ/SM= Once per quarter/Semester, OPY= Once per year and N=Never. Finally, section E is an open question and students may give their opinion on how to improve the UUM online learning system.

3.6 Pilot study

Pilot study is a pre-testing of a research before it will be conduct to a large scale of respondents and it is also used to test and idea or hypothesis of the study (Stachiowiak, 2008). Before distributing the questionnaire to the actual sample of study, researcher had completed a pilot study to examine the reliability of the questionnaire and the reliability test was done by using SPSS 20. 50 questionnaires had been randomly circulated among SBMs' students, however, only 44 were returned completed and the rest of it cannot be used due to incomplete questionnaire.

44 respondents of the pilot study were consists of 23 students from Business Administration, 12 students from Entrepreneurial, 5 students from Human Resource Management and another 4 from Marketing course. The Cronbach's Alpha for perceived ease of use was 0.880, perceived of usefulness was 0.903, user interface design was 0.879, online course design was 0.805 and online learning satisfaction was 0.866. It showed that the questionnaire is reliable as the result is above 0.8 and it also indicates the stability of the data. Table 3.5 showed the summary of the Cronbach's Alpha for all variables used in the study.

Table 3.6:
Cronbach's Alpha for variables

No	Constructs	Items	CA
1	Perceived Ease of Use	4	0.880
2	Perceived of Usefulness	5	0.903
3	User Interface Design	6	0.879
4	Online Course Design	4	0.805
5	Online Learning Satisfaction	4	0.866

3.7 Statistical analysis

This study will use SPSS version 20 and SmartPLS version 2.0 to analyse data that will be collected. There are few analyses that will be done by using the SPSS version 20 such as descriptive study and frequency of data. Each variables used in the study will be run through descriptive study to ensure there is no data error while entering the data. Descriptive studies will be divided into two parts which are descriptive statistics for five mainly variables of the study; user interface design, online course design, perceived ease of use, perceived of usefulness and online learning satisfaction. The second part of descriptive study will be on the level of usage of online learning UUM. Frequency of data will be analysing using SPSS too for demographics factor that have been decided by researcher and it has been listed out in the Section A of the questionnaire.

By using SmartPLS, researcher need to consider the background of model, the distributional characteristics of the data, the psychometric properties of variables and the magnitude of their relationships when determining the sample sizes (Wong, 2013). After analysing the descriptive study, frequency and reliability analysis by using SPSS and SmartPLS will be used for measurement structure model analysis, discriminant validity of constructs and hypotheses testing. Reliability analysis will be done to ensure the consistency and stability of the questionnaire and generally, it is reliable if the result obtain are 0.07 (acceptable) and 0.08 (good) (Sekaran & Bougie, 2010).

Measurement structure model analysis will cover the loading of every item in each construct, consistency reliability (CR) and average variance extracted (AVE). Generally, value for loading of item for each construct and consistency reliability should be 0.7 or higher is much preferable and it shows the reliability of the result (Hair, Ringle & Sarstedt, 2011). Besides that, AVE is assessed in order to check convergent validity of each variable. If the value of AVE is higher than 0.5, it is acceptable and the convergent validity is confirmed.

Next, discriminant validity will be analysing by square root of AVE value from every variable. If the value is higher than other correlation value with other variables, it indicates the result is well established (Fornell & Larcker, 1981). Last but not least, the hypotheses testing will be done. T-statistics for significance testing of the model created in the SmartPLS can be generating by running a bootstrapping procedure. A sample of 5000 will be taken from the original sample with replacement to give bootstrap standard errors which in return, it will gives approximate T-values for significance testing of the structural path. After reviewing the path coefficient for model that have been developed, T-statistics in the “Outer Loadings (Means, STDEV, T-values)” window can be check. If the value of T-statistics is greater than 1.96, the outer loading is highly significant. However, if the outer weight of T-statistics value is below than 1.96, the outer is not significant. Researcher may remove the indicator that is not significant in the research model (Hair, Ringle & Sarstedt, 2011).

3.8 Summary

Overall, this chapter discuss on relevant methodology that will be used to conduct the research. The methodology include the details of the approach to be adapt and adopt, details of information that necessary to taken into consideration and method on collection of data. The type of study used in this research was based on hypotheses testing and descriptive study. Sample taken for this research is 350 students from overall population of 2809 students. The respondents were from SBMs' students from four different courses; Marketing, Human Resource Management, Entrepreneurial and Business Administration comprises from first year to final year students for session 2015/2016. Survey was adopted and adapted from Lee (2010), Liu *et al.* (2010) and Min *et al.* (2012). Besides that, SPSS version 20 and SmartPLS version 2.0 used to analyse the collection of data.



CHAPTER 4

RESULTS

4.0 Introduction

This chapter will discuss the result of data analysis that has been acquired from the data collected through questionnaires. All variables used in the study will be analysing by using SPSS software version 20 and SmartPLS software version 2.0. It is also aim to answer the research questions and objectives that have been designed in Chapter 1 and at the same time to verify the hypotheses that have been developed in Chapter 2. Besides that, it will include the overview of data collected, reliability analysis, descriptive analysis and validation of measurement scales.

4.1 Response rate

There were 350 set of questionnaires distributed among respondents which comprises of SBMs' students from four different course; Marketing, Entrepreneurial, Business Administration and Human Resource Management. Out of 350 set of questionnaires disseminated, only 331 could be used for this study and another 19 could not be used due to incomplete of answering the questionnaire. The percentage rate of response for this research is 95%. Figure 4.1 showed the pie chart of the response rate of questionnaire from respondents.

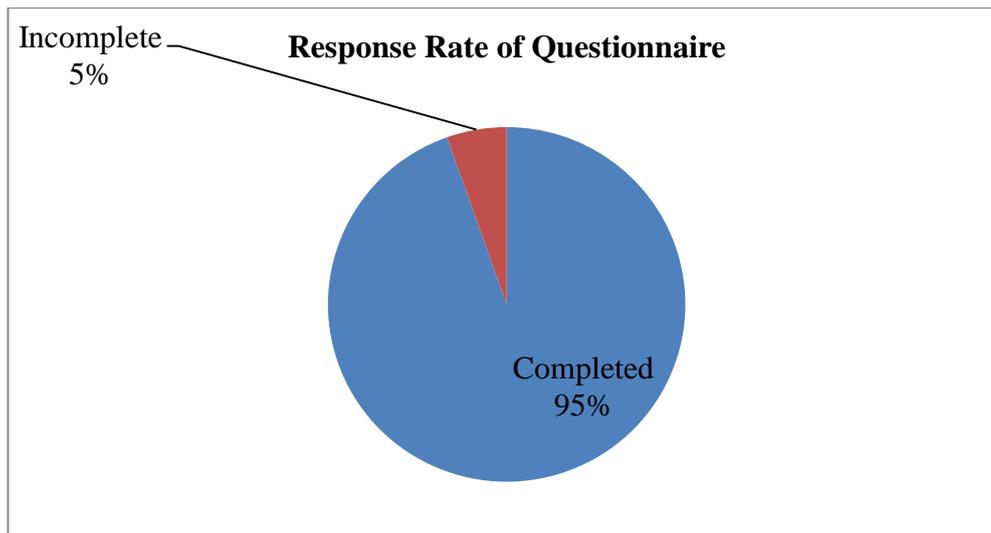


Figure 4.1:
Response rate of questionnaire from respondents

4.2 Profile of respondents

There were six demographic factors that have been included in this study; gender, age, highest qualification, bachelor of, year of studies and year of using online learning. According to Table 4.2, there were 101 male students and 230 female students participated in this study. Besides that, most of the respondents age ranging from 22-24 years old (247 students), followed by 19-21 years old (68 students) and more than 25 years old (16 students).

Followed by highest qualification, it showed that most of SBMs' students were from STPM/STAM level (215 students), Matriculation (62 students), Diploma (28 students) and others (26 students). Students from Business Administration participated the most in the study because they are the major students for SBM which are 154 students, followed by Marketing (66 students), Human Resource Management (60 students) and Entrepreneurial (51 students). For year of studies,

third year students participated the most in this research with 133 students, fourth year students (76 students), second year students (75 students) and first year students (47 students). Finally, for year of using online learning, it showed most of students had used online learning for 3-4 years (186 students), 1-2 years (108 students) and less than 5 years (37 students). Following Table 4.2 described the frequency of respondents from different demographic factor.

Table 4.2:
Demographic of respondents

Demographic	Categories	Frequency	Percentage (%)
Gender	Male	101	30.5
	Female	230	69.5
Age	19-21	68	20.5
	22-24	247	74.6
	>25	16	4.8
Highest Qualification	Matriculation	62	18.7
	STPM/STAM	215	65.0
	Diploma	28	8.5
	Others	26	7.9
Bachelor	Business Administration	154	46.5
	Marketing	66	19.9
	Entrepreneurial	51	15.4
	Human Resource Management	60	18.1
Year of Studies	First Year	47	14.2
	Second Year	75	22.7
	Third Year	133	40.2
	Final Year	76	23
Year of Using Online Learning	1-2 years	108	32.6
	3-4 years	186	56.2
	>5 years	37	11.2

4.3 Descriptive analysis

Descriptive statistics was used to describe the minimum value, maximum value, mean and standard deviation of variables used in the study. The descriptive analysis for user interface design (UID) acquired the minimum value = 1.50, maximum value =5.00, mean = 3.579 and standard deviation = 0.658. For online course design (OCD) the minimum value = 1.25, maximum value = 5.00, mean = 3.571 and standard deviation = 0.681. On the other hand, perceived ease of use (PEOU) minimum value = 1.75, maximum value = 5.00, mean = 3.738 and standard deviation = 0.688. For perceived of usefulness the minimum value = 1.00, maximum value =5.00, mean =3.738 and standard deviation = 0.693. Meanwhile, online learning satisfaction acquired the minimum value = 1.00, maximum value = 5.00, mean = 3.637 and standard deviation = 0.777. Table 4.3 showed data of descriptive statistics.

Table 4.3:
Descriptive statistics of variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
UID	331	1.50	5.00	3.579	.658
OCD	331	1.25	5.00	3.571	.681
PEOU	331	1.75	5.00	3.738	.688
POU	331	1.00	5.00	3.619	.693
OLS	331	1.00	5.00	3.637	.777

Remarks:

User Interface Design (UID), Online Course Design (OCD), Perceived Ease of Use (PEOU), Perceived of Usefulness (POU) and Online Learning Satisfaction (OLS)

4.4 Frequency analysis

Students were asked about the frequency of using Online Learning UUM based on 10 activities inside the system. It showed that all respondents involve in all activities inside the system, but the frequency varies with one another. Table 4.4 showed the frequency of Online Learning UUM usage.

Table 4.4:
Frequency of online learning UUM Usage

Activities	Frequency (%)						
	D	S/TPW	W	M	OPQ/SM	OPY	N
View lecture notes	34.7	34.4	17.5	8.2	2.1	1.2	1.8
View announcements	20.2	32.6	19.6	13.6	3.9	2.1	7.9
Read message	10.9	29.0	19.9	15.7	6.6	2.7	15.1
Send message	3.6	19.0	14.2	16.9	13.6	6.0	26.6
Discussion with lecturer using News Forum	3.3	16.0	15.7	15.4	16.6	5.4	27.5
Discussion with classmate using News Forum	3.3	11.5	12.1	13.0	16.6	3.9	39.6
Download course documents	28.7	37.8	16.9	6.9	4.2	2.4	3.0
View general resources	18.1	26.3	19.0	13.0	5.1	3.6	14.8
View upcoming events or activities	13.6	20.8	18.7	12.4	10.0	3.3	21.1
View other profile of other participants	5.1	13.3	6.6	16.6	19.0	10.6	28.7

Source: Questionnaire

Remarks:

D: Daily, S/TPW: Several / time per week, W: Weekly, M: Monthly, OPQ/SM: Once per quarter/semester, OPY: Once per year and N: Never

4.5 Open questions and opinion analysis

For this section, only 114 students point out their opinions regarding to online learning system in UUM. 40 students preferred if the online learning become easier, understanding, simple, attractive and user friendly. This include by having a simple interface and colour of the font and background of website that is more calm and professional. Besides that, 20 students criticized that the online learning system was down most of the time and cannot be log in especially during peak hour.

10 students stated that the administrator should not update and do any maintenance during critical week of study or during class time and 10 students believed that the UUM Wi-Fi need to be improved in order to surf the online learning system much faster. 4 students suggested that administrator should refine the platform of online learning system to perform well in smartphone and 6 students recommended that to improve the online learning system as application that can be downloaded on smartphone for student use.

3 students also recommended that administrator of online learning should provide a larger space to enable students upload their video or audio with big size and 2 students preferred if online learning system provide a general details of lecturer. Moreover, 5 students suggested the online learning system should be link with email to ensure that student get the latest update from the site. Finally, 14 students were overall satisfied with the current online learning and they said it was useful and easier for students to communicate with each other.

4.6 Reliability analysis

Table 4.5 showed result obtained from the Cronbach's Alpha test for all variables used in the study. The reliability for online learning satisfaction is 0.875, perceived ease of use is 0.852, perceived of usefulness is 0.809, user interface design is 0.793, and online course design is 0.828. As the Cronbach's Alpha close to 1.0, it showed that the internal consistency reliability is higher (Sekaran & Bougie, 2010). Hence, result of Cronbach's Alpha attained from all variables showed the excellent reliability as it was over than 0.80.

Table 4.6:
Reliability for variables

Constructs	Items	CA
OLS	4	0.875
PEOU	4	0.852
POU	5	0.809
UID	4	0.793
OCD	4	0.828

Remarks:

User Interface Design (UID), Online Course Design (OCD), Perceived Ease of Use (PEOU), Perceived of Usefulness (POU) and Online Learning Satisfaction (OLS)

4.7 Measurement structure model analysis

The measurement and structural model were tested by using SmartPLS software version 2.0 in order to evaluate the validation of measurement of scales and to verify the hypotheses that have been developed. Table 4.7 showed the result of measurement structure model. Result obtained for composite reliability (CR) reveals that all constructs have sufficient reliability value. Besides that, the result for all measurement items loading which above the recommended value of 0.675 demonstrate high levels of internal consistency reliability.

On the other hand, the average variance extracted (AVE) are above the minimum required level of 0.50 which range from 0.628 to 0.766. However, there are two items from user interface design that need to be eliminated due to the value of loading that below 0.675 which are item 2 and 3 of the construct. According to Hair *et al.* (2011) any indicators that display very low loading of 0.40 and lower, it should be eliminated from reflective scales because it will affect the value of the composite reliability.

Table 4.7:
Measurement model

Constructs	Item	Loading	CR	AVE
OLS	OLS1	0.885	0.929	0.766
	OLS2	0.865		
	OLS3	0.890		
	OLS4	0.860		
PEOU	PEOU1	0.855	0.914	0.726
	PEOU2	0.880		
	PEOU3	0.834		
	PEOU4	0.838		
POU	POU1	0.733	0.904	0.654
	POU2	0.827		
	POU3	0.838		
	POU4	0.833		
	POU5	0.808		
UID	UID1	0.787	0.854	0.628
	UID4	0.764		
	UID5	0.771		
	UID6	0.780		
OCD	OCD1	0.829	0.897	0.685
	OCD2	0.782		
	OCD3	0.850		
	OCD4	0.848		

Remarks:

User Interface Design (UID), Online Course Design (OCD), Perceived Ease of Use (PEOU), Perceived of Usefulness (POU) and Online Learning Satisfaction (OLS)

4.8 Discriminant validity of constructs

Discriminant validity is the shared value between each construct and the off-diagonal matrix indicates the correlation between the latent constructs. Each loading was compared across the columns and result of the loading of its construct showed that it was higher than all of its cross loadings with other constructs. The result showed that discriminant validity is acceptable and good. Table 4.8 showed the discriminant validity which is the square roots of AVE for each constructs.

Table 4.8:

Discriminant validity of constructs

Construct	OCD	OLS	PEOU	POU	UID
OCD	0.828				
OLS	0.747	0.875			
PEOU	0.685	0.739	0.852		
POU	0.705	0.718	0.719	0.809	
UID	0.766	0.704	0.664	0.655	0.793

Remarks:

User Interface Design (UID), Online Course Design (OCD), Perceived Ease of Use (PEOU), Perceived of Usefulness (POU) and Online Learning Satisfaction (OLS)

4.9 Hypotheses testing

The path analysis was used to verify hypotheses that have been developed in this study. The researcher uses 5000 PLS-SEM estimation for bootstrap procedures in order to create the empirical sampling distribution for each model parameter. At the same time, the standard deviation of the empirical sampling distribution was used as a proxy for the empirical standard error for the parameter (Hair *et al.*, 2011). Next, the T-test was done to measure the relationship of path model relationship. Figure 4.9 showed the results of the path analysis.

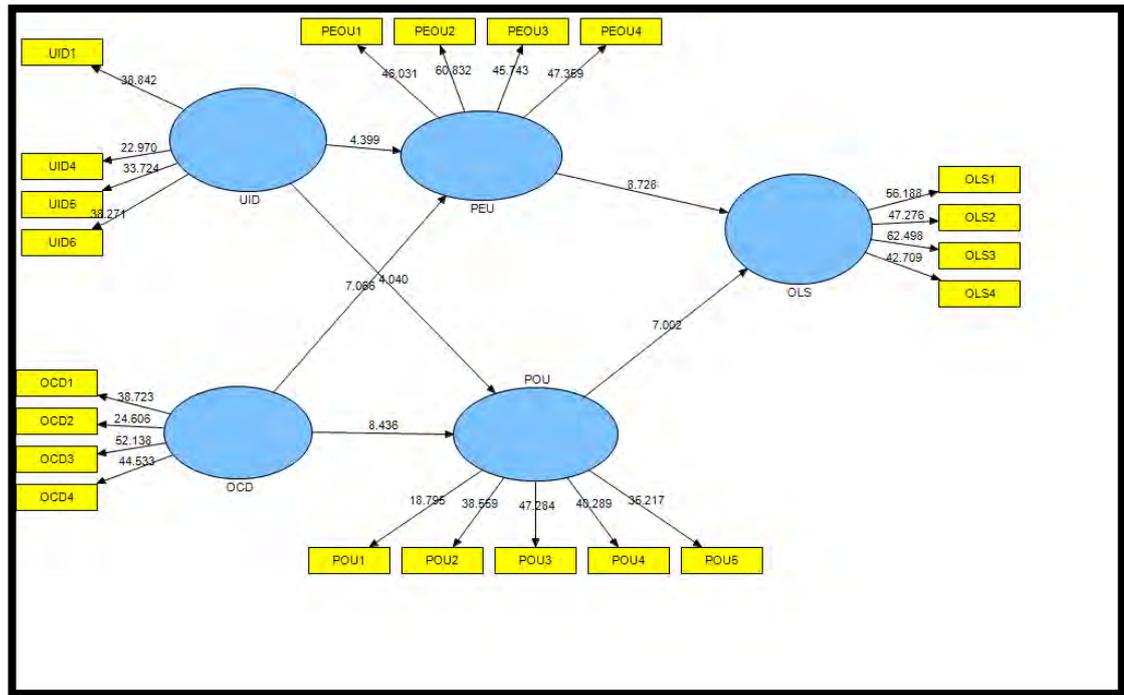


Figure 4.9:
Results of the path analysis

On the other hand, Table 4.9 disclosed the results of the hypotheses testing and it showed that all hypotheses in the research were supported at T-value > 1.96 . The result displayed in Table 4.9 showed there is a relationship between user interface design and perceived ease of use with the coefficient value of 0.317 and T-value = 4.399. Besides that, there is a relationship between user interface design and perceived of usefulness with the coefficient value of 0.253 and T-value = 4.040.

In addition, there is a relationship between online course design with perceived ease of use with the coefficient value of 0.443 and T-value = 7.066 and there is a relationship between online course design with perceived of usefulness with the coefficient value of 0.511 and T-value = 8.436. Results displayed in Table 4.9 also showed that there is a relationship between perceived ease of use and online learning

satisfaction with coefficient of 0.460 and T-value = 8.728. Finally, there is a relationship between perceived of usefulness and online learning satisfaction with coefficient of 0.387 and the T-value = 7.002. Hence, all hypotheses in this study; H1, H2, H3, H4, H5 and H6 were accepted. In addition, it showed that perceived ease of usefulness had the greatest effect on online learning system as compared to perceived of usefulness.

Table 4.9:
Path coefficient and hypotheses testing

Relationship	Coefficient	T-value	Result
UID -> PEOU	0.317	4.399	Supported
UID -> POU	0.253	4.040	Supported
OCD -> PEOU	0.443	7.066	Supported
OCD -> POU	0.511	8.436	Supported
PEOU -> OLS	0.460	8.728	Supported
POU -> OLS	0.387	7.002	Supported

Remarks:

User Interface Design (UID), Online Course Design (OCD), Perceived Ease of Use (PEOU), Perceived of Usefulness (POU) and Online Learning Satisfaction (OLS)

4.10 Summary

There were 331 students who participated in this study in order to get their perception of UUM online learning system. Few analyses were done by using SPSS software version 20 and SmartPLS version 2.0. SPSS software version 20 was used to analyse the descriptive statistics and reliability analysis for variables used and level of usage. While, SmartPLS version 2.0 was used to analyse the measurement structure model, discriminant validity of construct and hypotheses testing. All hypotheses developed for this study were accepted. The following chapter will elaborate on the limitation and recommendation for future research, hence; conclude the whole research in general.



CHAPTER 5

CONCLUSION

5.0 Introduction

This chapter will discuss on the conclusion of the research based on the findings that have been acquired throughout the study. It will summarize the entire study which includes the background of the study, problem that arises in the study, research methodologies used and findings of the study. Besides that, it will briefly discuss the limitations and recommendation for the future research.

5.1 Discussion

This research was conducted to evaluate the perception of SBMs' students in online learning satisfaction towards online learning system in UUM. Online learning has become an important agenda of Ministry of Higher Education as it is part of the nation goal towards access, quality and efficiency in higher education. UUM has taken this opportunity to implement Learning Management System (LMS) and currently known as Online Learning UUM. Main advantage of online learning is the flexibility in terms of space and time and in return it will give the education provider a competitive advantage (Anshari *et al.*, 2015).

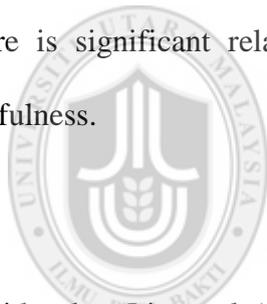
There are four main variables used in the study that play important role in determining the level of online learning satisfaction among students which are user interface design, online course design, perceived ease of use and perceived of usefulness. The user interface design and online course design were acted as the external variables that give an impact to the perceived ease of use and perceived of usefulness that will resulted to the attitude towards using the online learning system.

User interface design is a structural design of an interface that presents the features and instructional support of an information system and it will act as a contact that allow interaction between user and system (Cho *et al.*, 2009). On the other hand, Fisher and Baird (2005) suggested that a good online course design will enable interest from the learners in the subject taken and it will allow learner to have freedom in constructing knowledge which is suitable for them in meeting their individual or immediate need.

Perceived ease of use and perceived of usefulness are two variables that contained in the TAM theory. TAM theory has been proposed by Davis in order to identify the impact of technology on user behaviour and it focus on the process of using the technology (Davis, 1989). Perceived ease of use and perceived of usefulness in general will affect a person acceptance behaviour. It is supported by Raaij and Schepers (2008) perceived ease of use and perceived of usefulness is influencing the individual's attitude towards using that technology and at the same time the individual's attitude is theorized to influence the behavioural intention to use a technology and finally relating it to the actual system usage.

Six hypotheses have been developed in the study and to verify it, 350 sets of questionnaire were distributed among SBMs' students from four different courses; Marketing, Entrepreneurial, Business Administration and Human Resource Management. Items used in the questionnaire has been adopted and adapted from various authors; Lee (2010), Lin *et al.* (2010) and Min *et al.* (2012). Generally, all of the hypotheses in the research were supported.

Cho *et al.* (2009) found that user interface design had an impact on perceived ease of use and perceived of usefulness. Thus, it support the hypotheses of there is significant relationship between user interface design and perceived ease of use and there is significant relationship between user interface design and perceived of usefulness.



UUM
Universiti Utara Malaysia

Besides that, Liu *et al.* (2010) had found online course design had significant positive effect on perceived ease of use and perceived of usefulness. Hence, it supported the hypotheses of there is significant relationship between online course design and perceived ease of use and there is significant relationship between online course design and perceived of usefulness.

Finally, Lee (2010) obtained significant positive relationship of both perceived ease of use and perceived of usefulness with attitudes toward online learning satisfaction. Thus, it supported the hypotheses of there is significant relationship between

perceived ease of use and online learning satisfaction and there is significant relationship between perceived of usefulness and online learning satisfaction.

Based on the result, it showed that most SBMs' students satisfied with the online learning system in UUM. When the system is easy to use, students will feel it is more useful; therefore, they will have satisfied with the online learning. Thus, in future, they will have intention to use online learning system in their studies. This is aligned with the TAM theory which has been proposed by Davis (1989).

Application of information technology become more sophisticated from time to time, hence, it is important to ensure that user interface design and online course design to be structure accordance to the ability of students. Each student has different ability in mastering the system, thus, it will be much better if the system is simpler. Not only students will benefit from it but instructors as well.

Interaction is important in the teaching and learning process and by having some interactive elements to the online learning system will give an added value to the system. Most of students used online learning system for discussion with their classmate and by having an interactive learning environment; it will strengthen their satisfaction on using the online learning. The interactive elements that can be added to the online learning system are notifications that link with students email to know latest update in the online learning system.

5.3 Limitations

Generally, this study had met its objectives but there are several limitations recognized in this study. These limitations should be taken into consideration by other researchers for the purpose of future research. First limitation is the sample size for this research. The sample size was limited to only 350 respondents and to have better results, opinions and response, the sample should be increased. Besides that, the sample was only focused on SBMs' students and the result obtained was only from the perception of these students. It will be much better to have different perceptions of students from other schools as well for their usage of Online Learning UUM.

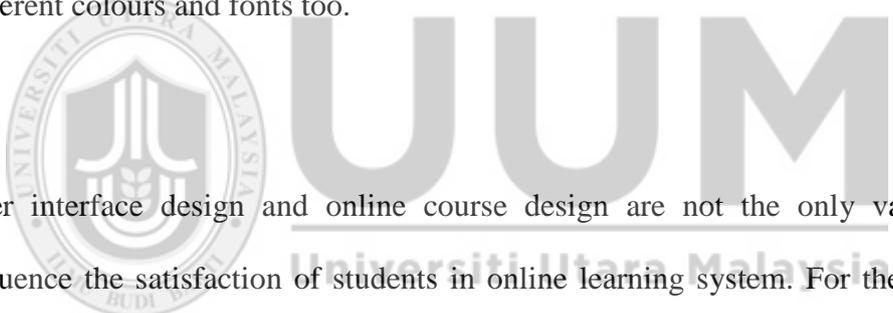
Moreover, time and budget constraint is one of the limitations for this study. This research needs to be submitted within a three-month period which has been set by the authority of the postgraduate management. Due to the time and budget restraint, the result was only based on 331 respondents who had completed the questionnaire. The main limitation for time is that the researcher could not reach the respondent personally and have a better understanding of respondents' opinions over the online learning system.

Last but not least, selected variables are a limitation for this study because the environment of online learning is not only composed with the variables that have been chosen. In order to explore the perception of students from different angle, additional variable may be an added value that could be done to identify the online learning satisfaction among students. The variables used in this study were just focusing on the system design and perception of students which lead to the attitude of usage toward online learning system. There are external variables that could be taken into consideration such as service quality of the online support management and instructor experience which may lead to a better opinion and response over the online learning system.



5.4 Recommendations

Based on the results and discussion of the research, the researcher has several recommendations that might be useful for future research. The finding of this study is important to the system developers of the university in order to identify the level of satisfaction of students over the online learning system. Based on the result, most of student satisfied with the online learning system, however, certain criteria need to be look up such as making the online learning system become easier, understandable, simple, and attractive and more users friendly. System developers need to develop the user-interface in meaningful and useful way by organizing related things together and separate the unrelated thing and having different contents separated with different colours and fonts too.



User interface design and online course design are not the only variables that influence the satisfaction of students in online learning system. For the purpose of future research, researchers may study the satisfaction of students on online learning system course variables such as instructional design and instructor experience. This study may also be extending to evaluate the students motivation and student empowerment on using the online learning system.

Besides that, researchers may examine the TAM theory and online learning satisfaction from demographic factors of students. It is important to relate the demographic factor with the variables as it will give a clearer view on which students use the online learning system the most. Demographic factor may lead to another result that can contribute to the effectiveness of the online learning system.

5.5 Conclusion

As a conclusion, the user interface design, online course design, perceived ease of use and perceived of usefulness have a significant relationship to student online learning satisfaction. Therefore, this study had answered the research questions projected and the objectives of it. Online learning system is one of the best ways for instructors to interact with students in order to improve the efficiency of teaching and learning process. Besides that, the environment of online learning may provide students the ability to acquire more knowledge that what have been provided besides the traditional teaching method and students may as well to pursue further knowledge.



REFERENCES

- Ajzen, I. (n.d.). Behavioural interventions based on the theory of planned behaviour.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health*, 26(9), 1113-1127.
- Anshari, M., Alas, Y., Yunus, N., Sabtu, N. I. & Hamid, M. H. (2015). Social customer relationship management and student empowerment in online learning systems. *Int. J. Electronic Customer Relationship Management*, 9(2/3).
- Bolliger, D. U. & Martindale, T. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-Learning*.
- Bouhnik, D. & Marcus, T. (2006). Interaction in distance-learning courses. *Journal of the American Society for Information Science and Technology*, 57(3), 299-305.
- Calisir, F. & Calisir, F. (2004). The relation of interface usability characteristics, perceived usefulness and perceived ease of use to end-user satisfaction with enterprise resource planning (ERP) systems. *Computers in Human Behaviour*, 20, 505-515.
- Chang, S. C. & Tung, F. C. (2008). An empirical investigation of students' behavioural intentions to use the online learning course websites. *British Journal of Education Technology*, 14 (3).
- Cho, V., Cheng, T. C. E. & Lai, W. M. J. (2009). The role of perceived user-interface design in continued usage intention of self-paced e-learning tools. *Computers & Education*, 53, 216-227.

- Dabaj, F. & Basak, H. (2008). The role of gender and age on students' perceptions towards online education case study: Sakarya University, Vocational High School. *International Journal of Social, Behavioural, Educational, Economic, Business and Industrial Engineering*, 2(2).
- Danesh, S. Y. S., Hashemina, S., Sirousbakht, S. & Danesh, M. M. S. (2012). Education of effective factors on electronic learning and satisfying learners in virtual universities of Tehran. *Interdisciplinary Journal of Contemporary Research in Business*, 3(9).
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Economics Network. (2011). What is the purpose of questionnaire? Retrieved April 17, 2016, from <http://www.economicsnetwork.ac.uk/handbook/questionnaires/13>
- Ehlers, U. D. (2009). Web 2.0 – e-learning 2.0 – quality 2.0? Quality for new learning cultures. *Quality Assurance in Education.*, 17(3), 296-314.
- Eom, S. B., Wen, H. J. & Ashill, N. (2006). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. *Decision Sciences Journal of Innovative Education*, 4(2).
- Fisher, M. & Baird, D. E. (2005). Online learning design that fosters student support, self-regulation, and retention. *Campus-wide Information Systems*, 22(2), 88-107.
- Fornell, C. & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fredericksen, E., Pickett, A., Shea, P., Pelz, W. & Swan, K. (2000) Student satisfaction and perceived learning with on-line courses: Principles and examples from the SUNY learning network.

- Gibson, P. A. & Dunning, P. T. (2012). Creating quality online course design through a peer-reviewed assessment. *Journal of Public Affairs Education*, 18(1), 209-228.
- Hair, J. F., Ringle, C. M. & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139-152.
- Hur, M. H. & Im, Y. (2013). The influence of e-learning on individual and collective empowerment in the public sector: An empirical study of Korean government employees. *I4*(4).
- Hom, W.C. (2002). Applying customer satisfaction theory to community college planning of counselling services.
- Klopfenstein, B. J. (2003). Empowering learners: Strategies for fostering self-directed learning and implications for online learning.
- Kuong, H. C. (2015). Enhancing online learning experience: From learner's perspective. *Social and Behavioural Sciences*, 191, 1002-1005.
- Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Lee, J. W. (2010). Online support service quality, online learning acceptance, and student satisfaction. *Internet and Higher Education*, 13, 227-283.
- Loon, O. K., Yamin, F. M. & Yaacob, N. A. (2013). Communication in learning management system (LMS): The impact on academician satisfaction. *Prosiding Simposium Pengurusan Teknologi, Operasi & Logistik*.
- Liao, C., Chen, J. L., & Jen, D. C. (2007). Theory of planning behaviour (TPB) and customer satisfaction in the continued use of e-service: An integrated model. *Computers in Human Behaviour*, 23, 2804-2822.

- Liaw, S. S. (2008). Investigating students'perceived satisfaction, behavioural intention, and effectiveness of e-learning: A case study of the Blackboard system. *Computers & Education*, 51, 864-873.
- Liu, I. F., Chen, M. C., Sun, Y. S., Wible, D. (2010). Extending the TAM model to explore the factors that affect intention to use an online learning community. *Computers & Education*, 54, 600-610.
- USC Libraries. (2016). Research Guide. Retrieved June 15, 2016, from <http://libguides.usc.edu/writingguide/quantitative>
- Masrom, M. (2007). Technology acceptance model and e-learning. *12th International Conference on Education*.
- Ministry of Education Malaysia. (2015). Malaysian Education Blueprint 2015-2025 (Higher Education).
- Min, K. S., Yamin, F. M. & Ishak, W. H. W. (2012). Design, purpose of usage and the impact of LMS on student learning: A preliminary findings. *Knowledge Management International Conference*.
- Mondofacto (2009).Research Design. Retrieved March 15, 2016, from <http://www.mondofacto.com/facts/dictionary?research+design>.
- Picianno, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *JALN*, 6(1).
- Poe, M. & Stassen, M. L.A. (n.d.). Teaching and learning online, communication, community and assessment.
- Palmer, S. R. & Holt, D. M. (2009). Examining student satisfaction with wholly online learning. *Journal of Computer Assisted Learning*, 25, 101-113.

- Raaij, E. M. V. & Schepers, J. J. L. (2008). The acceptance and use of a virtual learning environment in China. *Computers & Education*, 50, 838-852.
- Ramayah, T. (2010). The role of voluntariness in distance education students' usage of a course website. *The Turkish Online Journal of Educational Technology*, 9(3).
- Renner, W. (2002). E-learning 2.0: New frontier for student empowerment. *EDU-COM International Conference*.
- Sekaran, U. (2003). *Research methodology for business: A skill building approach* (4th edition.). New York: John Wiley & Sons.
- Sekaran, U. & Bougie, R. (2010). *Research methods for business: A skills building approach* (5th edition.). New York: John Wiley & Sons.
- Selim, H. M. (2003). An empirical investigation of student acceptance of course websites. *Computers & Education*, 40, 343-360.
- Selim, H. M. (2005). E-learning critical success factors: An exploratory investigation of student perceptions. *Managing Modern Organizations Through Information Technology*.
- Sharma, S. K., Chandel, J. K. & Govindaluri, S.M. (2014). Students' acceptance and satisfaction of learning through course websites. *Education, Business and Society: Contemporary Middle Eastern Issues*, 7(2/3), 152-166.
- Stachiowack, J. (2008). Pilot Study. About. com Guide. Retrieved April 24, 2016, from http://ms.about.com/od/newsresearch/g/pilot_study.htm.
- Song, S. M. (2010). E-learning: Investigating student's acceptance of online learning in hospitality programs. *Graduate Theses and Dissertations*. Paper 11902.

Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y. & Yeh, D. (2008). What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50, 1183-1202.

Swan, K. (2001). Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance Education*, 22(2), 306-331.

Wang, S. K. & Yang, C. (2005). The interface design and the usability testing of a fossilization web-based learning environment. *Journal of Science Education and Technology*, 14(3).

Wikipedia. (2016). System Design. Retrieved June 17, 2016 from https://en.wikipedia.org/wiki/Systems_design

Wong, K. K. K. (2013). Partial least squares equation modelling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, 24(1).

